YOUTH CARE KNOWLEDGE EXCHANGE THROUGH ONLINE SIMULATION GAMING

DESIGNING AND APPRECIATING ONLINE SIMULATION GAMES TO ENHANCE YOUTH CARE NETWORK EXCHANGE

To my parents Lena and Rinus

Youth Care Knowledge Exchange through Online Simulation Gaming

Designing and appreciating online simulation games to enhance youth care network exchange

Kennisuitwisseling in de Jeugdzorg door Online Simulatie Gaming

Het ontwerpen en waarderen van online simulatie games ter ondersteuning van kennisuitwisseling in jeugdzorgnetwerken

(met een samenvatting in het Nederlands)

PROEFSCHRIFT

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Preface

This dissertation describes an adventurous exploration of the value and significance of online simulation gaming to support knowledge exchange in multi-disciplinary networks of youth care. Child, youth and family care workers are often confronted with complex problems, which they try to disentangle in favor of small and simple steps forward. In systems theory, complexity and simplicity are closely related. Simple systems can generate complex forms and the question is whether complexity can be brought back to simplicity. The complexity of youth care problems tends to increase in proportion to the diversification and interdependence of systems elements. The idea in this research is that simple interfaces, such as online role-play simulation gaming may improve the accessibility of complexity in problem situations. To design good representations of complex problems, we have to unravel their elements. Understanding the complexity in youth care problem situations is the first platform of learning in this research. Role-play in online simulation games demands an understanding of relationships and interaction patterns. Discourses are the second level of learning. The third level of learning is performance, which takes place in the debriefing and entails a good comprehension of the interconnectedness of the worlds of practice (understanding complexity), game play (discourse participation) and future progress (the commitment to situational advancement).

In this research we investigated online simulation gaming as an extra tool and method in youth care networks to find and justify strategies of intervention that may change problem situations into states that are more desirable or at least more acceptable for the parties involved. Online simulation gaming is no cure to all sorts of issues; however, it can be a way to change perspectives and to shake up jammed positions, assuming that this leads to richer views on the potentials in networks and situations.

The reader of this dissertation will gain an understanding of the difficult, yet rewarding route of this innovative research, across the domains of simulation gaming design and scientific analysis. The content addresses a wide variety of audience and the knowledge domains of youth care intervention and game theory may seem difficult to harmonize. Computerization in social care services usually refers to less popular 'paperwork'; not to critical (inter-)thinking and interaction. Since social media take such a central place in society, it would be wonderful if the use of online simulation gaming for knowledge exchange turns out to save time and to work more efficiently. In the end, workers might find more time and energy to devote to clients and face-to-face contacts. We hope that online simulation gaming may engage youth care workers in attractive and fast ways of deep reflection on complex issues. This research is a first step into that direction.

Utrecht, April, 2014, Kees JM van Haaster

Acknowledgment

I am grateful that the Utrecht University of Applied Sciences has granted me the opportunity to carry out this study, under the approval and authority of the Utrecht University for Humanistics. My PhD project is a prime example of the co-creation of knowledge and of using the 'extended mind' of a group of experts and respondents. Therefore, I owe much to all people involved, and in particular to the youth care experts, who participated in the role-play simulation sessions. They devoted much time and enthusiasm to the practical experiments and shared their positive attitudes, reflections and insights on the value and significance of online simulation gaming for network exchange. My earnest respect and thanks to everyone who participated in the realization of this research!

I would like to express my most sincere appreciation to Prof. Dr. Roelof Hortulanus and Dr. Lia van Doorn, my research supervisors, for their esteemed guidance and valuable advices and their endless support and time to bring this project to success. In the complexity of the subject and context of my research, Roelof has taught me the value of scientific accuracy, combined with the virtues of creative thinking and optimistic experimenting. His generosity of time and energy, his humor and wittiness, and his rich advices and comments helped me through the toughest parts of my research. I would like to express my special thanks to Lia for her continuous support and encouragement and her constructive comments and suggestions. In particular I am obliged for her faith in the project and her support in the Utrecht University of Applied Sciences.

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Furthermore, I am grateful to have met so many theorists, practitioners and researchers in the field of gaming and simulation, in the Cyberdam User Group, above all Pieter van der Hijden, and through the networks of Saganet and ISAGA. The exchange of knowledge and experience and collaborative learning are exceptional, highly prized virtues of these learning communities and I owe much to the people who I have met in these gaming and simulation networks.

I also take the opportunity to express my thankful feelings to all students, who I had the pleasure to guide in research projects and daily lectures. Their hard work and pleasure in discovering, interacting and learning helped to make me a better teacher and researcher. In particular, I learned valuable things from students who were engaged in study programs of designing simulation games for youth care. They showed an eagerness to experiment and to try out new and unusual ideas that appeared fruitful in designerly ways of learning and change.

Most importantly, I owe my deepest and warmest feelings of gratitude to my wife Laurence and to my children Arnaud and Aimée-Claire, for their support and trust, their company and understanding, and their love and confidence during the often arduous stages of this research.

ONE

1 *The issue*

Abstract

This study is about youth care network exchange through online role-playing simulation gaming in view of complex social problem solving. The social actors in youth care networks are engaged in deliberations that aim at advancing future opportunities, while dealing with a variety of uncertainties. We can look at youth care network exchange as a way of problem framing: a process in which we interactively name the elements and attributes that we consider relevant, and frame the contexts in which we pay attention to them (Schön, 1983; Klabbers, 2009). The objective is to excavate all information that helps to control risks and to change undesired social situations into more preferred ones. Discussions about uncertainty in social problem situations often seem to depend on the notion that lack of control in risky situations is due to inadequate scientific knowledge and evidence-based practice. Wynne (1992) states that knowledge validation not always depends on uncertainty as a consequence of imprecision. Imprecision can be addressed by further research. However, knowledge cannot always be fully determined by its empirical nature, in particular when knowledge is constructed in a social context. Youth care networks are engaged in epistemic questions about situational cognition, to favor desired change and developmental chances. These processes are subject to social valuation and dialogue, which does not mean that truth is negotiable or simply the result of a social choice. Situational cognition and the justification of youth care strategy and intervention gain persuasiveness from mutually agreed social constructions of reality and scientific standards of validation. The issue of this research is online simulation gaming to facilitate youth care network exchange and to support the study of processes and results from these exchanges. We investigate artifact design in relation to user-experiences to build a theory on its value and significance for professional network proficiency.

Keywords: youth care networks, bottle-necks in network exchange, youth care network collaboration, youth care professionals, youth care performance, tensions between 'what is' and 'what should/could be', social problem solving, facilitating change in youth care institutions, youth care multi-problem situations.

1.1 OVERTURE

This dissertation opens with short descriptions of three complex problem cases from youth care practice as an overture to the question what the value and significance could be of designing and using Cyberdam[1] as a virtual environment for network exchange through online simulation gaming, in the interest of timely, more effective and durable intervention. The first example describes the multi-disciplinary quest to find the most appropriate action and to assemble the varied perspectives on the case. The second concerns the introspection of a network approach that reveals a clear degree of underperformance. The third case is about how to find a way out of a stuck situation, in which no progress has been made during one-and-half year of fruitless efforts. Despite their differences, all cases show a need for flexible, inspiring and effective tools and methods of multi-disciplinary exchange of practical know-how, experiences and feasible options for change. What would be the possible benefits of using online simulation gaming and which artifact design requirements emerge from the situation and problem description?

ANNE

It is the third time that Anne has been caught for shoplifting. She is 15, an intelligent girl, and her results at school used to be excellent. The last months however, she refuses to attend school. She fell in love with Roy, who is known to the police as a lover boy. The home situation bears high risks for Anne and her younger sister Sophie (9). Anne's mother, Suzan, has severe financial problems. She has taken up two jobs, and she works most of the time. The household situation is chaotic and home life is marked by disorder and a lack of routine and safety. Both children show disruptive behavior Something has to be done before things go seriously wrong.

The network actors are

- Marilyn, probation officer;
- Ronald, public prosecution officer;
- Carmen, youth care case manager;
- John, youth resource officer of the police

The network partners in the above example are involved in attempts to change the situation for the better and to protect Anne and Sophie from serious threats in their development. The consultations concentrate on future scenarios and interventions to improve the situation. Networks in social care services are the purposeful grouping of actors and experts in chains of caregivers, whose respective knowledge and skills combine with and complement each other in a competent and effective total service to the children and their

families. Many youth care networks imply multi-disciplinary cooperation and the necessary fine tuning of information and strategies, as in the above case. One of the main and ever-occurring problems is to find enough time and appropriate moments for meetings. With all the varying work shifts, getting everyone to attend a meeting requires an almost logistical genius. Care-givers have a double bind, a responsibility to their organization and to the families and children in their cases. Although the clients' needs may prevail, social professionals won't easily renege the agenda of meetings in spite of the inconvenience this may cause the families they serve. All of these problems relate to the above network and the partners see a clear risk that the situation gets out of hand soon. Quick and adequate help is needed. And yet, the network partners have no clear picture of the situation, nor of the network perspectives on intervention in this particular case.

STEPHANY AND RALPH

Six professionals are involved in the protection of two children in a hazardous family situation. Vera, the mother, has a sever personality disorder. The father is out of sight. The children show major learning and behavioral problems. Case manager Ben is new on the job, and discovered that despite the involvement of the different professionals, no change for the better has been reported, since the care program started nine months ago. He asks himself how to mobilize change and achieve durable improvement, even if progress would only be in small steps. The actors in this case are:

- Vera, the mother of Stephany (10) and Ralph (7);
- Ben, youth protector and case manager;
- William, a social worker and family counselor;
- Lea, the school attendance officer;
- Deborah, a youth probation officer;
- Jason, the tutor of the children at school;
- Amy, a mental health psychologist.

In this example we see a larger network group and although each partner is doing his/her assigned task, there is no improvement of the situation since the start of the outreach care program for this family. Ben, the case manager, has brought the actors in this case together to find a breakthrough, even if this would mean to go off the beaten track and to pass certain disciplinary boundaries. Ben is determined not to give up, until durable improvement is achieved in the problem situation, and thinks shaking up the network team could make a difference. In network groups that exist over a longer period, personality differences and hidden conflicts of power and disciplinary views may hamper the exchange and may even

obstruct effective decision making. Rather than to evade those personality and power struggles, we should learn how to appreciate the strengths and differences in a network, and thereby act more effectively as a team. It can be hard to break through the confusion of competing values and points of view and instead to focus on the care in the family situation. Perceived differences in attitudes and performance may lead to distancing or withdrawing from collaboration and collectiveness. A worker may fulfill the functional requirements of the job, while retaining too much distance to the network demands. It may be difficult to indicate one's own ineffectiveness to the mutual established criteria of performance. What would be the best way to re-inspire the actors and at the same time to start effective self-reflection on network proficiency?

MOUAD

According to the child and family supervisor of a regional youth care office, the parenting situation of Mouad (16) is critical; notwithstanding the fact that his father says, there is nothing wrong. After one-and-a-half year of fruitless efforts, the situation remains perilous and has even worsened. The supervision order is actually unworkable and unenforceable, because the family lacks problem insight and has no understanding of the critical conditions for a healthy pedagogical development of Mouad. The relationship of family and care workers is thoroughly disrupted and even hostile. The family rejects all help and avoids every contact with care workers. The family guardian is much concerned; however, she does not see any options for further help. She does not know what to do and asks herself, whether giving up and renouncing further intervention and support is a viable option. What, if the situation deteriorates? What about liability and responsibility, if youth care retreats from the situation? What are the ethical implications of 'doing nothing' and of 'wait and see'? Are there really no other options?

Apart from the family members, father, mother, Mouad and his younger brother, the following actors are involved to find a way out:

- Fatouch, who represents the family and their interests as a mediator;
- Patty, a family therapist;
- Karim, the school tutor;
- Harm, the probation officer;
- Anna, the family guardian.

One feels tempted to reflect in retrospect on this case with questions such as what have the care workers done so far? What should have been done and what else more could have been done? How can we analyze the effectiveness of contact and communication between organizations, professionals and the family members? What can we say about the appar-

ent fruitless methods of intervention that have been chosen in the approach to solve the family problems? These questions may be important for workplace learning and network improvement. Obviously, the actual actors involved, including the family members, failed to find a reasonable and acceptable solution. What can we do to explore the situation, strengthen the network and reflect on new and workable propositions? What if we ask other content experts to empathize with the situation and to engage in role-play simulation to find out whether they come to solutions and appropriate strategies?

1.2 BACKGROUND

The above three cases show recognizable, complex problems and dilemmas from youth care practice. Each case is both unique and generic as a problem. Unique, as the problem situation narrates about specific actors, family background and circumstances. And at the same time the cases reveal generic constraints that are structural and that have to do with dysfunctional network operations in youth care practice. A youth care network can be defined as a group decision support system (Hevner, 2004), which is a concept that challenges questions of effective and timely intervention. Child-rearing and parenting problems can be complex and complicated, with intertwined problems that are difficult to disentangle. It can be challenging to find the situational knowledge and expertise that suits the characteristics of a particular problem situation, such as in Anne's case. Another often reported problem is caused by the compartmentalization of youth care services, when everybody does his job, without any structural progression of the situation, as in the case of Stephany and Ralph. Sometimes the worlds of families and care institutions collide, as we see in the situation of Mouad. Disparities in culture and vision may thwart and hinder the search for feasible solutions. During recent years many researchers and theorists have reported structural problems of youth care practice in the Netherlands of which the above cases are examples. The problems have to do with finding, fine-tuning and maintaining the best methods and strategies to the particularities of complex situations. Coordination and cooperation of different actors and disciplines appears of crucial importance for the effectiveness (Leijsen, 2008 ;Van Yperen et al., 2010). There is little or no research that looks into network exchange and the way care partners co-construct situational knowledge and participate in reasoning processes of strategies and reflection on intervention (Hall, 2009, 2006, 2003, 1999; Nikander 2003; Eijgenraam, 2006; Dronkers, 2010). Youth care faces an urgent need for effective integration and coordination of methods and strategies in the delivery of high quality family-centered services. Rapidly changing social care practices demand tools and methods for quick access and dissemination of information and to engage all stakeholders to find feasible and justified solutions to complex problems. This research

& development project starts from the idea that it is valuable to study knowledge construction in networks of youth care professionals in digital simulation games[2]. We investigate the design and use of simulation games as online information and interaction systems for collaborative knowledge development and for the analysis of exchange processes and performance. There are two lines of research. The first concerns model development, designing the artifact[3], and the second involves model appreciation, this is the analysis of user-experiences, reflecting the utility of the model and method.

Youth care in the Netherlands is under huge pressure to achieve greater efficiency and effectiveness. In recent years, youth care has received lots of negative media attention. It seems that youth care is the usual suspect in cases of neglect or tragic developments in family life. Negative public discourses may threaten the recognition of youth and child care professions and it could lead to professional uncertainty and hesitation in responding to difficult practice problems. Major shifts in the organization and management of Dutch social services, as a result of changing policies, budget cuts and localization of help, must lead to the elimination of a paralyzing segmentation of disciplines, and to better, well-timed help. A key thought of this shift is the socio-political encouragement of self-reliance, active citizenship and the reinforcement of local support and help in social networks (Duyvendak, Knijn and Kremer, 2006). However, the spread of knowledge over professionals and organizations has become larger and within the dynamics of the present changes, it may become difficult to identify and mobilize the necessary expertise and help at the right moment (Van Montfoort and Tilanus, 2007). Good horizontal and vertical chain cooperation in programs of prevention, identification, indication and referral, asks for adroit ways of inter-professional consultation and collaboration. The overall hypothesis in this research & development project is therefore that youth care network practices need better tools and methods for collaborative practice research and deliberation. Modern ways of contact, communication, sharing of information and learning, might inspire to add digital tools and methods to the existing professional repertory.

During the last decade, we have seen many technological innovations being installed in all kinds of societal and economic sections of life. The computer and the Internet have shifted the way we organize information and how we engage in contacts and communication. Social media influence and are influenced by work procedures and exchange practices. Modern digital devices and software have an impact on the way people build and share stories about identity and relationships, and about problems and solutions. New infrastructures emerge from the unceasing stream of technological innovations and they modernize learning and working. This applies also to youth care services, where workers try to keep pace with societal change. Many earlier ideas about how to organize youth care services are be-

coming obsolete and new skills become more and more necessary. Up till now, research on the content and processes of youth care network exchange is scarce and we lack insight in the needs and particularities of inter-professional consultation in view of efficient and effective intervention and help (Eigenraam, et al. 2004; Van Yperen, 2007; Van Woudenberg, 2009; Bartelink et al., 2010; Boonstra, 2011). This is a serious problem, bearing in mind the current challenges in the field. New societal demands and technological innovation urge institutional transformation, in order to respond to professional skills and client behavior. Considering that the core business of youth care is change and evolution, it is far from controversial to expect youth care to take up the role of game changer, instead of follower. This; however, is far from reality, and it seems that youth care practice is not much influenced by innovations that are initiated by digital communication and social media. Youth care should do more research into converging directions of new technologies in networks and teams to reach more efficacy of service. A conducive factor in this respect may be that practices are changing already. A growing digital literacy changes the way workers and clients get into contact, learn and share information. There is a sensed urgency to develop new co-constructive tools and methods and the use of online possibilities for exchange and reflection seems only obvious.

A characteristic of complex youth care problem situations is the singularity, or uniqueness, of actors, needs, conditions and circumstances, and the ambiguity and uncertainty of information. The recurrent question is how to activate the right expertise in each network of professionals and context actors. Often, it can be helpful to shake up the situation by changing perspectives and positions, in order to see things from a different angle. Role-play in simulation games could be a useful tool, taking into account the various forms, such as offline, synchronous[4], face-to-face simulations and online, a-synchronous, computer-mediated simulations, each with different potentials and possible effects and results. In other cases, we may need extended communities of expertise to enlarge the range of disciplinary knowledge or practice experience. It may be feasible to organize online communities of expertise around hard to solve practice problems. Playful interaction, as in anonymous online role-play, may help to work out different virtual scenarios, provided that the artifacts have enough representational value for the actors. The proposition is that online simulation gaming can be beneficial for network exchange and for the improvement of professional proficiency. Online reflection can strengthen knowledge-to-action[5] repertory and the actors' self-referential capabilities and communication skills. In view of the changing learning and working styles of care workers and care clients, it is advisable to start experimenting with collaborative digital exchanges and with digital intervention tools.

We can recapitulate the central idea behind this research in the following design-based problem-solving proposition:

Online simulation gaming may contribute to the renewal of tools and methods for timely and durable intervention in youth care network exchange practices.

1.3 RESEARCH FRAMEWORK

This research combines the investigation of design and user-experience of the tool and method of digital simulation gaming for online knowledge exchange in youth care network practices. We follow two lines of model design (system-artifact) and model appreciation (reflection – operation), as shown in Figure 1. Online simulation gaming may support, analyze and enhance the inter-, intra- and multidisciplinary exchange, cooperation and coordination in complex youth care problem situations.

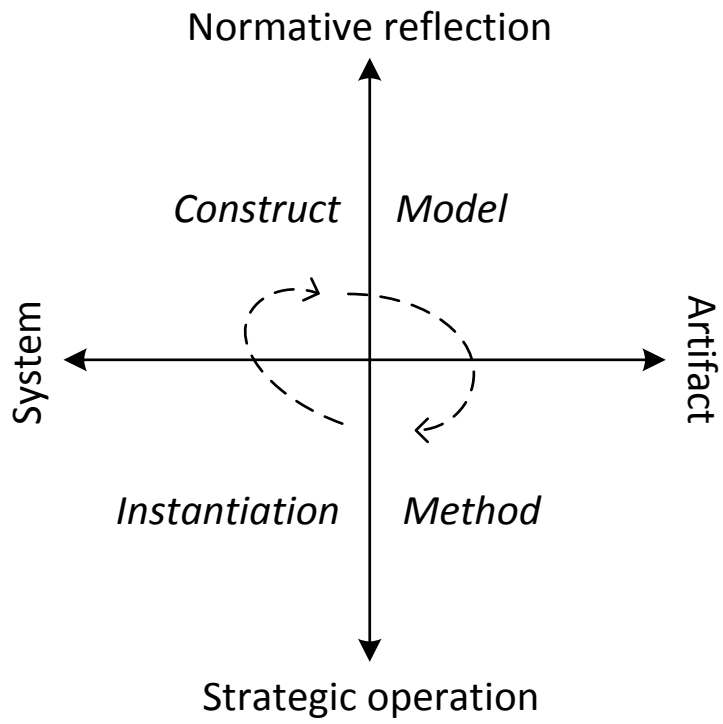

Figure 1: Design (system-artifact) and appreciation (reflection-operation)

The session results can be used to explain, predict or refute choices and behavior, in attempts to improve the efficacy of the exploration, participation and accountability of intervention. The main research objective is to develop a theory of design and use of simulation gaming to study knowledge-to-action an action-to-knowledge patterns. The position of the researcher receives special attention, to ensure scientific accuracy. The researcher alternates three different positions as designer, facilitator and observer[6]. Knowledge development in simulation gaming demands changing positions from practitioner to observer,

through the practicing of exchange and the evaluation of performance in debriefings. The interlocking positions of practitioner and observer are an integral part of the research & development approach, as we shall see in chapters 3 and 6. This approach highlights the idea that online simulation games function as joint projects of practitioners and observers to improve the efficacy of network exchange and ultimately to enhance youth care intervention.

Theories about information systems design are rooted in scientific analyses of model, methodology and results and are affiliated to the behavioral science paradigm. These theories describe principles of design, evaluation and justifying phenomena of systems information that explain and predict the change of problem situations into preferred directions. Hevner et al (2004) draw attention to the comprehensive character of designing information systems in contexts that are dominated by human behavior. Simulation games, as we have in mind, cover systems information in artifacts that enable network interaction for the sake of normative reflection and strategic operation. Our research framework implies the design, methodology and utility of simulation games for youth care network exchange. Youth care situations, network exchanges and simulation games are considered and studied as information systems. Choices of design, methodology and effectuation have strong impacts on, and are impacted by, the functional capabilities of the artifact, the content and actor behavior. It is for this reason that we seek close cooperation with practice to realize outputs that not only resemble work practices, but also comply with the needs and standards that apply to the innovation of exchange methods and tools. We propose to structure this research with a model by March & Smith (1995) of four interrelated design research outputs: construct and model, method and instantiation[7]. We position them on two dimensions of design and analysis (Figure 1). The design dimension refers to model-development, for which we use systems information from youth care practice to construct and model simulation artifacts. The dimension of appreciation covers user-perceptions of the simulation artifact for normative reflection and strategic operation in network exchange. This research builds around these axes of the design of systems information and the analysis of user-experience. The four recurrent outputs of construct, model, method and instantiation apply to working with the artifact and structure the chapters of the dissertation. The logical consistence of the dissertation was obtained through the iterative alternation of constructing, modeling, methodizing and instantiating, which is further explained in chapter 5. The same steps are used to propose a method of simulation gaming for youth care knowledge exchange in practice. Constructs define the vocabulary of problem issues and their situational details (Schön, 1983). Construct is the main focus of chapter 2. Models use abstractions or representations of real world prob-

lems. Simon (1996) speaks of 'the design problem and its solution space' to indicate the relation between problem situation and artifact. This relationship is the core of chapter 3. Constructs and models help to understand problem-solution connections, which is essential to normative reflection in youth care intervention. The artifact needs a method of practice codes and process prescriptions, which is elaborated in chapter 4. The instantiation in chapter 6 concerns the prototyping and demonstration of viability and describes the debriefing in practice. Strategic exploration in this research proceeds through theorizing and methodizing of the instantiation, evaluation and improvement of choices of design and implementation (Hevner et al., 2004).

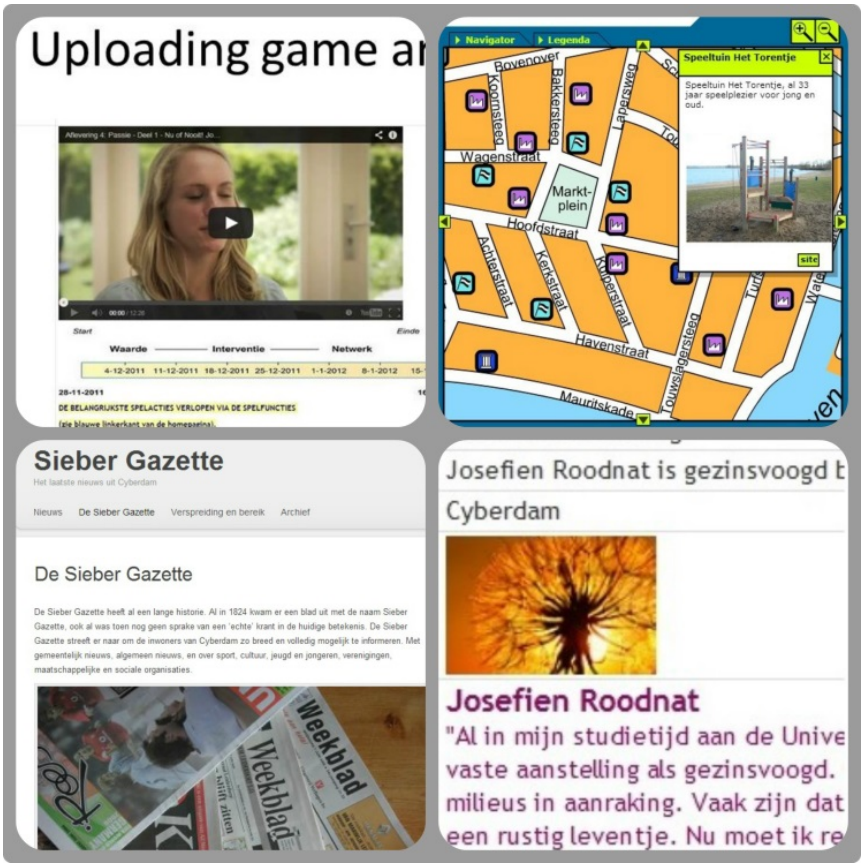

Figure 2: Impression of the simulation environment

The type of simulation games that we envision is a computer-assisted role-playing game, in which the actors address complex practice problems, while the computer keeps track of the flow of data and interaction. This type of games enables free-form play, time and place independent participation, anonymous role assignment and aims at the unfolding of narratives, scenarios and the elicitation and sharing of expert knowledge and content expertise. Simulation gaming in youth care networks is new and to our knowledge, this is the first design and implementation research on the subject. The study entails a crossover of game and intervention theories and uses elements of design science and behavioral sci-

ence. What could game theory offer to improve youth care network competences to cope with complex multi-problem, multi-actor and multi-reality situations? What are the experiences and views of youth care workers when applying simulation gaming for network consultation? In other words: what could be the added value and significance of simulation gaming in professional youth care networks from user-perspective? This research aims at understanding the effectiveness of online simulation gaming from a user-perspective. Such understanding must defy principles that apply to design and application of simulation games and behavioral laws that govern youth care network exchange (Hevner et al., 2004).

1.4 RESEARCH OBJECTIVES

We know that offline, face-to-face and synchronous simulation is widely used in social work and social care methodologies to train and practice perspective change and to prepare for future action. The constraints are also known: not everybody is an convincing stage actor and in face-to-face performance there is little time to reflect and to prepare for answers and actions. The learning benefits in offline simulations are for that reason rather confined. In education we see remarkable results with online simulation gaming in e-learning environments. Is it possible to adopt some of these good practices in workplace learning? Besides e-learning, we see quite some astonishing advances with web-based applications of e-health and e-therapy in mental health care. It appears that in those social care practices a turn is made toward digitalization and the use of the Internet to reach new clients and to achieve different and better results. These considerations are the background and driving force to build an environment and method of online simulation gaming for knowledge exchange in youth care networks and to find out what the intended users - youth care professionals - think of the relevance, usability and usefulness[8] of this new way of exchange. The operational goals of the present research & development project are twofold: model design and model appreciation. Model design refers to the development of the environment, the artifacts and the simulation model, while model appreciation aims at investigating the use and perceived value and significance of simulation gaming. We want to establish a solid ground for the ongoing development of the tool, method and theory of online simulation gaming in youth care, based on the needs, experiences and feedback from practice.

With model design and model appreciation, we contribute to the 1st and 2nd order[9] research objectives that are interdependent and in line with each other:

- *The generation of knowledge and explanatory theories, relating to the development and implementation processes of online simulation games for youth care network exchange;*
- *The improvement of network effectiveness and efficiency of the participating professionals as a result of online simulation gaming, in view of timely and durable help in complex problem situations.*

The quality and credibility of artifact design is conditional to achieving a well-balanced opinion about its implementation. The duality of the 1st order objective of creating a suitable exchange tool, and the 2nd order objective of the enhancement of exchange practices shows similarity with double loop learning (Argyris, 1976, 2002). During the process, the researcher and participants will seize opportunities to modify, alter or even reject the set goals. Double loop learning[10] is a feature of online simulation gaming, when participants explore a particular problem in view of solutions and strategies and at the same time endeavor to analyze and improve their processes of inter-thinking and exchange (Greenwood, 1998). In simulation games we mirror the reflective practice of youth care by bringing together information, theory and action, in order to instigate deep learning. This mirroring process is likewise applied in the multiple case study[11] of our research. We evaluate the learning processes and effects in simulation game sessions, through collaborative reflection on processes and performance, together with all stakeholders. In our approach, we purposely shift positions of in-game and out-of-game reflection. We deliberately pursue shifting positions of information processing and meta-cognition on problem cases and professional performance. This applies to the researcher, in his role of observer, creating a grounded theory[12] on the design and implementation of simulation games, as well as to the youth care professionals in their role of practitioners, who reflect on the relevance, usability and usefulness of this tool and method of exchange. The linkage of design and analysis in this research is described in chapter 5, where we explain how the design elements are combined with the rigor of scientific analysis. The aim of scientific research is to generate new theories and to add knowledge to the domain of study. It is important therefore, to test the validity of theory that establishes the claim to knowledge about the value and significance of simulation gaming for youth care knowledge exchange, in the perception of the users. It is however beyond the scope of this research to construct theories about the effectiveness of simulation gaming in comparative research. That type of validation research could be a follow-up in an extended longitudinal research program on simulation gaming in youth care practices.

1.5 Research questions and method

To reach optimum help and timely intervention, we should find out if and how we can use simulation gaming for the improvement of youth care network exchange. The research question, resulting from the objectives is likewise twofold and refers to model design and to user experience. The research question is formulated as follows:

What are the design and implementation requirements of online simulation gaming for youth care network exchange and how do youth care professionals value online simulation gaming for network deliberation about complex problem situations?

The first part of the research question, about design and implementation, leads to a series of empirical sub-questions, addressed in chapters 2, 3, 4 and 5:

1. *How can we define online simulation gaming and which features are of importance for youth care services? (chapter 2)*
2. *What are the prospects of simulation gaming in youth care practices according to the practitioners? (chapter 3)*
3. *How can we match the needs of youth care network exchange with the functionalities of online simulation gaming? (chapter 3 and chapter 5)*
4. *What are the design fundamentals that are appropriate for simulation gaming in youth care network exchange? (chapter 3)*
5. *How can we relate artifact design to program design to find a suitable implementation method and strategy for online simulation gaming in youth care practice? (chapter 4)*
6. *How can we bridge the positions of practitioner and observer for the analysis of processes and results in sessions of simulation games? (chapter 5)*

The second part of the research question, about the value and significance, is closely related to the first one. The focus lies on user-experience with online simulation gaming for network exchange. This part of the research question results in sub-questions that are dealt with in chapter 6. These empirical sub-questions are linked to the study of outcomes on case level (relevance), session level (usability) and task level (usefulness):

7. *How do youth care professionals value the relevance of online simulation gaming for the exploration of multi-problem situations? (case level)*
8. *How do youth care professionals judge the accessibility, practicality and usability of simulation gaming to strengthen network exchange? (session level)*
9. *What are the experiences of youth care professionals as to the usefulness of online simulation gaming for the enhancement of professional proficiency? (task level)*

The two parts of the research question show coherence. We want to find out how online simulation gaming might fit in with the needs of youth care knowledge exchange in networks (development). And to serve that purpose, we need to know how users of online simulation games value the significance of the designed artifacts for professional exchange (appreciation). With the outcome, we hope to be able to build a theory of how to improve both model and practice.

The research method has qualitative aspects in an explorative and emergent development form that responds partly to characteristics of design science and partly to analytical science. The design features refer to building systemic representations of youth care network exchange, whereas the evaluative and dialoguing features aim at analyzing genuine and authentic opinions and experiences of the users. We avoid the term validation in this respect, as it suggests the pursuit of references to positivist research, which is questionable in this type of research. The research quality is achieved by a continuous awareness of and dialogue about what is important and by seeking transparency of all design and implementation choices in each stage of the inquiry, and through the processing of feedback from all respondents in reiterative improvements. The guiding principle is the pursuit and incorporation of practical purposes that are considered worthwhile by actors in youth care network exchange practices. There are many ways of knowing in parenting and child-rearing situations and there are many possible views on the potential of simulation gaming for network exchange. There is not one truth; however, through dialogue with all parties involved, we seek consensus about the findings that unfold in this research & development project. The emergent approach supports the iterative learning process and the gradually evolving instrumental insights may enforce trustworthiness and reliability of outcomes. The step by step progression affects the choices of research, as shall see in the subsequent chapters of this dissertation. The dynamic interchange and cooperation between the researcher, and the respondents led to a gradually better understanding of the needs and requirements of exchange practices. The bandwidth of adaptations in our approach was ruled by the successive empirical results and was influenced by the contextual arguments on meaning and value.

Explorative inquiry is inherently open-ended, which does not mean that it is random. Notwithstanding this openness, we started off with a variety of suppositions and starting points. These suppositions are clustered in three categories of perspective, simulation and performance, which came forth from the practice inquiries. The category *perspective* refers to assumptions about youth care practice. Suppositions in the category of *simulation* concern choices and effects of artifact design. Category *performance* describes assumptions about processes and results of knowledge exchange through online simulation gaming.

1. *Perspective.* Suppositions about the use of media, narratives, perspective change and empowerment may inspire social work practice and feed dialogical discourses about problem situations. The idea is that narratives define youth care problem situations and network exchange. The consequence of this is elaborated as the substantiation of game methodology. We start from the premise that life histories and contextual experiences are inspiring and motivating sources of social work. Personal accounts of experiences and future plans may reveal multi-realities, and as such, they may be used as starting points and resources for dialogue about probable, possible and preferable future developments. We imagine that narrative approaches inspire practices and help to analyze functions, methodologies and competences of professional exchange. We think that the transformational power of perspective change is highly significant for social learning and for constructional, collaborative evolution of future scenarios. We believe that social work and social care practices can benefit from the use of digital devices for organizational and network knowledge[13] development and exchange. The voicing of perspectives could be encouraged by multimodal expression in online simulation gaming, to raise awareness of the actor's position and to support empowerment. We think that anonymous role-play in online simulation games can help to diminish inequities in problem situations and in multi-disciplinary network gatherings. Playful interaction could induce equality of input and participation, focusing on solutions and neutralizing ineffective positional power relations. All in view of the achievement of developmental prospects or transformational change. The question arises whether it is possible to elicit tacit knowledge, which is embedded in action. Do the participants miss the embodied experience and body language, and how do they compensate for the absence of visual information when trying to establish a complete picture of the information and interpretation?
2. *Simulation* Suppositions about online simulation gaming for youth care network exchange are based on practice inquiries about bottlenecks and needs of network exchange. They include an epistemological view on the narrative nature of youth care exchange, which could be integrated in simulation gaming methodology. The quality of knowledge exchange in youth care networks is of crucial importance to successful intervention and can be improved. We think that online simulations encourage authentic, transactional learning and a free exchange of information, knowledge and know-how, and help to understand the systemic complexities of youth care problem situations. Enacting and exploring tough situations in online role-playing games might help to cope with competing forces and contextual dynamics of situations and problems. On the other hand, we are aware that experiences in simulation games are difficult to ana-

lyze, and that we have to be careful with introspections that might lead to invalid suppositions with respect to reality. Simulation gaming helps to find options and strategies and supports dialogues about the justification of interventions. A condition is that processes and results are thoroughly debriefed and analyzed. Simulation gaming affords chances to study collaborative explorations of problem cases and results. To analyze the unpredictable and capricious courses of interaction and exchange in simulation games, we need models, methods and theories that sprout from the relevant knowledge domain (Evans, 2004). The expectation is that youth care workers show interest in offline, online and mixed methods of simulation for learning in team interaction, client support and training. And yet, we can imagine that practice workers prefer face-to-face contact and communication above online variants. This might affect the perceived significance of simulation gaming by the envisaged end users. We think however that, once they have experienced the possibilities of extended, online deliberation, the respondents will agree that simulation gaming could have positive effects on the course of severe cases, and that this way of knowledge exchange might support the quest for the improvement of problematic situations. The effects of simulation gaming depend on the consistency of the inside culture of the game and the external culture in youth care practice. The guidance of processes of in-game culture and behavior and the supervision of the transfer of results to real practices imposes requirements on the moderation and guidance of the actors. We need suitable methods and strategies in this respect. Besides that, we have to develop a theory of design fundamentals that can be applied for simulation gaming in social work practices. We have to acquire a sufficient level of expediency of design and implementation, before starting experiments with simulation games in youth care practices. We are aware that it requires a considerable effort to model problem situations and to construct artifacts such as simulation games, and that the quality of the implementation and follow-up is of paramount importance to its success.

3. *Performance.* Suppositions about participation, co-construction and the enhancement of professional performance refer to the relevance, usability and usefulness of simulation gaming in the perception of youth care professionals. We start with the assertion that poor alignment and lack of coordination in youth care networks causes underperformance. We think that the collaborative study of professional rationality in networks might be the key to improving the performative quality of care services. The first question to be addressed is what youth care practitioners think about the relevance of simulation gaming to achieve effective knowledge-to-action in networks that deal with complex problems. The central presumption is that simulation gaming serves practical purposes in youth care networks. We want to know whether simulation gaming helps

to bridge, understand and combine different forms of disciplinary know-how. Besides, we think that online simulation gaming may function as a tool to study individual and team performance and behavior. Detailed analysis of the outcomes from dialogues about processes and the tangible results of exchange may lead to a better understanding and enrichment of network cooperation and professional proficiency. Is it true that playful ways of exchange refresh reflection and decision making and enhance the professional responsiveness to challenges in social care practices? We anticipate the co-construction of situational knowledge and future scenarios in simulation games as a method to come to a broader understanding of complex problems. We agree to the assertion of Evans (2004) that we should try to engage a maximum input from practice and session teams in our effort to apply a domain-driven design approach and to place the simulation model in the center of discourse. We count on the encouragement of network partners to collaboratively work out practical questions, experiences, perspectives and options in playful, yet serious, explorations of simulation gaming. If we introduce attractive and flexible ways of online discourses, we might persuade everyone involved to participate in dialogues about perspectives and solutions. One of the presumed qualities of simulation gaming is free experimentation, without the constraints and risks that are often at stake in real life situations. We want to investigate the impact of reflective dialogues on the comprehension of the perceived value and significance of processes and effects in sessions of simulation games. Finally, we think that the professional views on the potentials and possibilities of online simulations are essential for further development of this kind of online exchange in youth care practices.

1.6 Overview of the dissertation

This research & development project is positioned on a crossroad of intervention theory, game theory, science paradigms and research approaches. The chapters of the dissertation have different accents that reflect this crossover of insights and that bridge the domains of knowledge and practice. Besides the introduction and conclusion, there are four chapters that give a partly chronological display of the methodological steps towards the main empirical data in chapter 6. Chapters 2, 3 and 4 deal mainly with model development, while in chapters 5 and 6 the accent is on model appreciation. Chapter 2 describes the common ground of scenario development in social work practice and in digital simulation design and links narrative approaches to a selective use of game theory and design requirements. Narrative methodologies and techniques are helpful in social work practices for the exploration of problem situations, the exchange of declarative knowledge (knowing what) and procedural knowledge (knowing how) among care professionals. They support the crea-

tion of joint strategies of change and provide ways to shape appealing approaches for help to children and families. When we agree that life histories and contextual experiences are the working material of social work, we might accept that narratives are the main ingredients for simulation game methodology. We emphasize the highly needed convergence and accommodation of different perspectives on youngsters who got trapped, to generate timely and effective solutions to the problems at hand. Narrative approaches improve the ability of youth care professionals to interpret the layers of meaning that characterize requests for help that are often concealed in situational narratives. The dialogues among youth care professionals, their shared interpretation of the situation, and joint appreciation of the various perspectives are preconditions to successful youth care problem solving. Chapter 3 focuses on this idea and underpins our choice of principle-based games for youth care practices, as opposed to rule-based games. In rule-based games the content is defined by the designer to provoke a certain game behavior. Principle-based games are free-form games that allow free space to experiment with choices of action and interaction. Free-form games enable to adapt design choices to standards of performance that apply to a certain domain of knowledge and to a specific problem case and network constellation. We think that online games for network exchange in youth care practices should be conceptual, open-ended and instrumental. Games, designed to model real world situations, simulate the dynamic behavior of their referent systems. As artifacts they generate a certain form of play and mirror what is happening, or what could happen, in a particular real-world social setting. For this class of games often the hybrid term simulation gaming, or simulation game is used in literature. In chapter 3 we describe how simulation games facilitate and enhance various functions that are common to many youth care practices.

The design requirements for artifact development are incomplete without a good comprehension of the program requirements for which the artifact is used. The program requirements for artifact design in youth care practice must be derived from practice and from development programs of network efficacy and professional proficiency. We need to link program conditions and objectives to the design agenda of online simulation gaming. This means that we need situations, in which we can study the reciprocal impact of change programs and online simulation games. It seems evident to test simulation games in contexts of youth care practice, which would require full cooperation of practice organizations to conduct such empiric research. This implies certain practical conditions, such as institutional competence to handle model design and implementation and the necessary skills to effectively operate the application. In this stage of research & development a more or less independent implementation was out of reach. First of all, we need to develop a feasible model and implementation method and convincing arguments from a user-perspective that shows the advantages of this new approach of professional knowledge exchange.

Therefore, we decided to address youth care professionals directly and outside organizational structures. There was an important consequence of this strategy. Applying tests with simulation gaming outside institutional frameworks, would leave the question unanswered of how to assess game design choices to bigger contexts of change programs in real work situations. The empirical part of our research must entail an impact assessment of design choices of online simulation games in a specific change program, with a focus on normative reflection and strategic operation in a professional context, such as in a case from practice. In order to build a good understanding of the dependencies between simulation games and program requirements, we seized the chance to conduct the empirical design and development of new simulation games in curricular programs of higher education, in the context of the training of future social professionals. In chapter 4 we briefly describe the methodologies and design choices in these programs. We developed seven games in different study programs, each with its own program requirements, features and strategies. The experiments helped us to combine game methodology and program development. The project appeared indispensable to build knowledge and experience to construct solid relations between the design of the model and artifact and the assessment of program objectives and to enable dialogues about the potential and impact value of simulation gaming for larger contexts of application (Klabbers, 2003, 2006, 2009; Warmelink & Mayer, 2009). We applied the levels of evaluation of Blasi & Alfonso (2006) to create a clear view on the effects of the artifact and the relation to each program. The evaluation of the design and effectuation of the seven games aims at the functionality and fidelity of the artifact and its accessibility, utility and impact on the actors' performance. This approach permitted us to relate the potential and impact of the design of online simulation games to longer-term goals in change programs, including the advancement of professional competences. The experiments with the seven new games helped us to construct an appropriate overview of design fundamentals and implementation strategies that appeared functional for the multiple case study of simulation gaming in youth care networks.

In chapter 5 we match the needs and requirements from practice with the functional qualities of simulation gaming and describe the guidelines for a design science approach to youth care knowledge exchange. The design science approach requires to study user-experiences against the relevance of practice and the rigor of scientific analysis. The research method builds on the distinction between paradigms of analytical science and design sciences (March & Smith, 1995; Klabbers, 2003; Hevner et al., 2004; March & Storey, 2008; Klabbers, 2009). The primary goal is to deliver a conceptual framework of guidelines for conducting and evaluating simulation games, and ultimately to build a better understanding of simulation games as information systems in youth care practice. As a practical

elaboration of the theory of March & Smith (1995), we propose an analysis tool to structure and manage the data produced in simulation sessions. The intention is to provide insight in processes and performance in sessions, in view of comparative analysis with the qualitative user-statements in the debriefings after the game. The 6th and most extensive chapter describes a multiple case study of online network exchange through simulation gaming. We want to give a complete picture of the case study and its theoretical and empirical foundation, which explains the extent of the chapter. The case study is structured in an explorative and iterative strategy that enabled us to improve the artifact and its model variants, based on the incremental results of various rounds of sessions. The outcomes show that online simulation gaming has relevance for network exchange, in the perception of youth care professionals. Most respondents believe that the feasibility and practicality of this online method of inter-disciplinary deliberation might be tempered by the lack of necessary conditions and prerequisites in work practices, including probable hesitations amongst practitioners to use digital media for communication. The simulation sessions in the multiple case study revealed many clues for the analysis of individual and team proficiency. The participants reported a changed insight in their personal network effectiveness and an enrichment of their network knowledge and strategic abilities. In chapter 7 we summarize the findings from the positioning chapters and the multiple case study in a constituting theory of simulation gaming in youth care network practices. The conclusions and discussion are presented and the research questions are answered. We are aware of the complicated nature of this research and the fact that it could be hard to find your way in the text, which addresses a rather wide range of subjects and fields of application and theory. Therefore we composed a scheme as a reading guide with a chapter overview and a reader menu (Figure 3). Please note that the appendix to this dissertation offers explicative samples and illustrations, in addition to the practice inquiries (chapter 3), the simulation games (chapter 4 and 6) and the game session results (chapter 6).

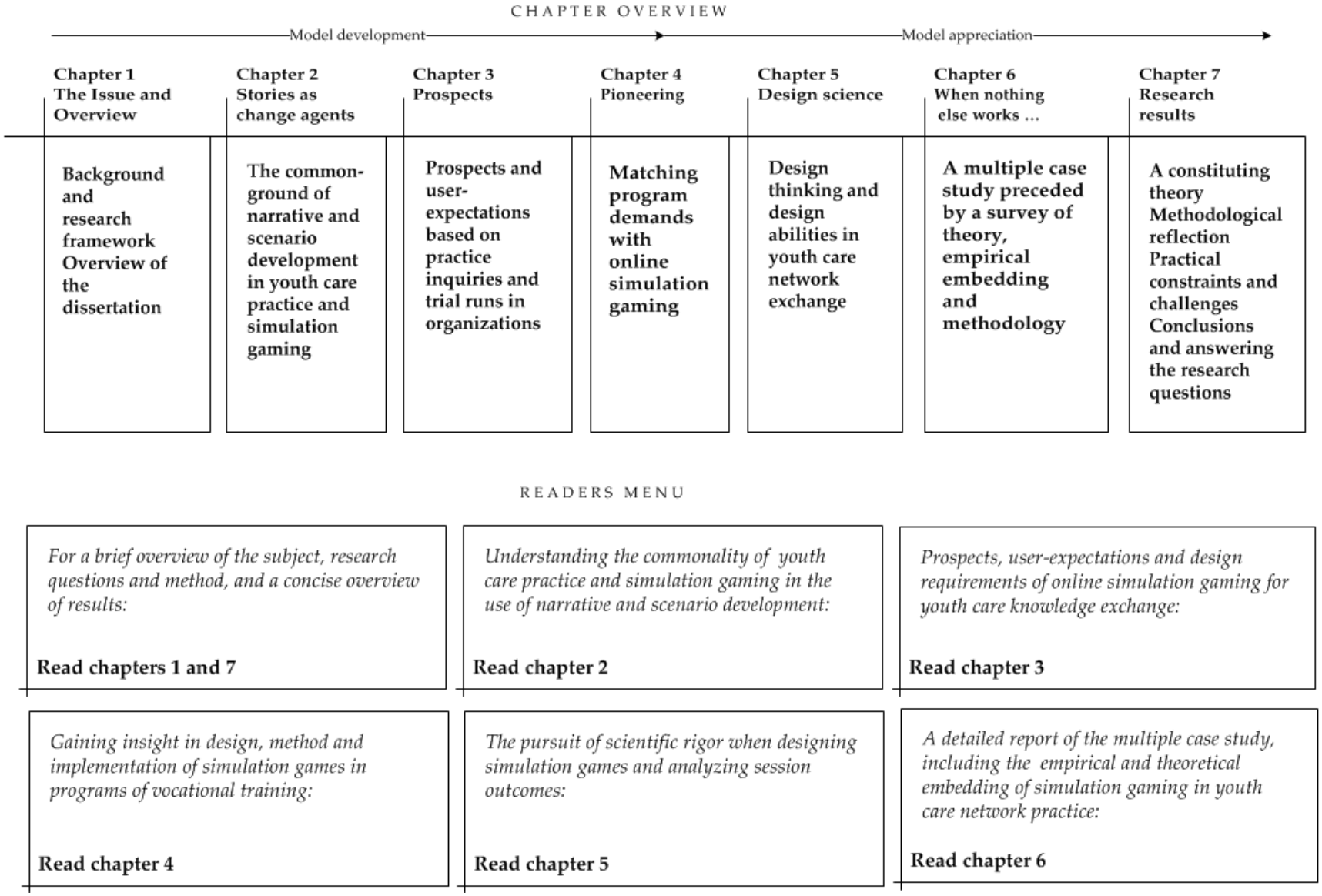

Figure 3: Chapter overview and reader menu

TWO

2 *Framing stories as change agents*

Stories, scenarios and multimodal expression for the co-construction of positive futures

Abstract

Present-day society shows an increased individuation and an exponential growth of the use of media for contact, communication and participation in frequent changing virtual and real-life networks. Modern modes of communication are abundant, troubled and restless, and they renew our methods of building relationships and exchanging life stories. Social work practices and role-playing simulation games[14] *have in common that they produce narratives as instigators of experiential learning and change. Narratives can feed dialogical discourses about problem situations and simulation games can foster the construction of future scenarios. The issue of how to optimize communication with clients and networks has moved right into the center of urgency and is growing ever more complicated. Dialogue is a major necessity for effective social work and asks for an ongoing renewal of methods and skills. This article deals with the kinship of social work practice and online simulation gaming. We look into the potential of simulation games for the multimodal exploration of narratives and for the encouragement to express opinions, ideas and thoughts. What could be the contribution of narratives and scenario development in simulation games to attain a good understanding of people, problems and situations and does it make sense to investigate opportunities in this respect to enhance exchange in social practices?*

Keywords: social stories, co-creative social change, empowerment, co-creative social development, narrative methodology, multimodality, voicing of people, ambiguity in social work and simulation gaming,

[This chapter is based on Van Haaster, 2007, Narrativity and multimodality in Social Work – media usage and multimodal thinking in social design. In: *Organizing and learning through gaming and simulation. Mayer & Mastik* (eds.), 2007. Nijmegen - NL, Eburon, Delft: 77-83)]

2.1 STORIES: THE IMPETUS TO CHANGE

Narrative[15] methodologies and techniques are conducive to social work practices for the exploration of problem situations and the creation of scenarios for change, providing ways to design the future positive[16]. When we assume that life histories and contextual experiences are the inspiring and motivating sources of social work, it is easy to imagine how narrative approaches might inspire practices and reframe functions, methodologies and competences of professional exchange. A well-known feature of social work is the concurrency of several perspectives on one and the same situation. Narrative approaches can have a positive influence on the ability to interpret layers of meaning. Dialogues, interpretations and the positive appreciation of various perspectives might be considered as the key to successful social problem solving. We think that simulation gaming, with its co-constructed narratives and scenarios, might help to maximize the empathic imagination of the actors, involved in complex problem situations. The exploration of perceptions and mindsets in narrative and dialogue supports understanding and appreciation of divergent reasoning (Comer Kidd & Castano, 2013). Following Hermans (1996), we agree that dialogue implies the interchange of mutually influencing voices (persons) and perspectives (content).

In this research, we make use of computers, to study information-processing, and of stories, as resources for the exploration and construction of probable, possible and preferable scenarios. The computer enables the use of a plurality of modal expressions, such as text, image, sound and animation, whereas the building material for scenario development is found in stories or in other accounts of personal experience and impression. We accept the idea that social work network exchange is information-processing to explore histories, problems, perspectives and solutions. The analogy of multimodal expression and narrative allows for playful interaction in simulation games, as self-organizing systems of information-processing. Simulation games can be designed and read as multi-layered stories to study perspectives, interests, participation, strategies and experiences. Narrative, in the context of this research, is the rhetorical mode of discourse and refers to the concept of story, as the account of connected events, from the perspective of the narrator. Stories recite personal experience through the description and argumentation of events, circumstances, conditions and developments. In narratives we can distinguish between 'what is told' and 'who tells', thus differentiating perspective from voice; and telling from interpreting (Bal, 2006). Studying dialogues and mutually influencing voices and perspectives might help to contextualize information from social problem situations, as located in time and place and connected to persons and views. Narrative approaches offer a wide range of theories, methods and techniques for the analysis of situations, experiences, perspectives and objec-

tives in stories about life history, future development and personal development. We envision social work professionals as story-agents, intermediating between people and influencing situations, to help people acquire the necessary or desired abilities and support to solve problems.

Role-play simulation games might serve as performative arenas to explore scenarios for individual, group and context development. Multimodality[17] of expression and modern digital devices[18] could (re-)vitalize practical research, care and social intervention. The concept of narrative is since long associated with social sciences and humanities, although it has by no means an univocal meaning. This may have to do with the diversity within the epistemological and theoretical framework of narrative (Somers and Gibson, 1993). For social professionals the substance of narrative is not only the representational (interpreted) form of lived experience. Social life is itself storied and narrative is an ontological condition of social life, according to Somers and Gibson. Stories guide action (lived experience) and construct identities and meaning (interpretation). People exchange, compare and interpret life experiences through constituted narratives. Narrative approaches in social work practices involve the study of social action, social intervention and of help and care. Hazel (2007) presents a clear description and says that narrative is the primary means of the comprehension and expression for human experience of events, changing over time. Hazel states that narrative construction has two crucial functional elements: event selection and event sequencing, which are reciprocally related to the subjective experience of time, described in the narrative. Narrative time is subjective, not objective; elastic, not metronomic. A narrative is the re-presentation of reality, from a particular perspective, to express meaning. Narrative configuration is involved in the efficient organization and encoding of memory, and in abilities to establish events in a chronological order and in cause-effect relationships. Narrative is located in the heart of learning processes.

In this chapter we examine narrative strategies for social problem solving in the context of investigating the potential of simulation gaming for knowledge exchange. The definition of narrative approaches is vital to our understanding of what we see, when applying certain 'lenses', or perspectives. As Wallace Martin (1986) puts it: *"By changing the definition of what is being studied, we change what we see; and when different definitions are used to chart the same territory, the results will differ, as do topographical, political, and demographic maps, each revealing one aspect of reality by virtue of disregarding all others."* This is an interesting point of view, and when we relate the definition to the characteristics of social work, it may explain our interest in narratives. To map the territory we briefly discuss some narrative themes within discursive, collaborative strategy development in social care and social work. By

doing so, we intent to link narrative approaches to the investigation of contextual, personal and cultural facts, interpretations, histories and perspectives of all actors in social practices. The framework that arises, will serve as a resource for design choices of online simulation gaming for professional knowledge exchange in networks of social professionals.

2.2 MULTIMODAL CONTEXTS OF SOCIAL WORK PRACTICE

Contexts of social care problems present themselves in many ways, through stories, images, sounds and text and can hardly be considered as objective, rather as perceived. From an interpretative standpoint, the context of social problems can be seen as enacted, and as co-created, by social interaction of the actors involved. We consequently distinguish objective, perceived and interpretive ways of looking (Smircich & Stubbart, 1985). We believe that contexts of social care problems can be addressed as multimodal sets of information from which observations, experiences, goals, perspectives and strategies emerge in all sorts of expressive forms. The art of social work is to support and understand as much different modalities of expression as necessary. It enables social workers to interact with clients as effectively as possible. We might see it as a core task of social intervention to build and maintain systems of shared meaning that support positive action and behavior. A social environment, in a real world situation and in its virtual counterpart of the simulation, is the representation of how people construct meaning through narratives in action and interaction processes. A problem situation can be seen as an enacted environment from which challenges emerge as ambiguous fields of experience that are triggered by physical and symbolic actions and interactions. Narrative approaches in social and care services concern the positive influencing and support of processes of meaning and significance. Social professionals could be regarded as strategic moderators of meaning through narrative investigation. By creating meaningful connections between persons, situations and problems, social professionals determine actions that facilitate positive change. Thinking and acting in intervention processes consists of on-going action-reaction patterns between problem states and more desirable states. To achieve results, they explore the diversity of perspectives, experiences, interests and concepts of reality. According to Bamberg (2006) narrativity implies the concurrent presence of multiple, interlinked realities, which makes it well-positioned for capturing the diversity and complexity in discourses about solutions to social problems. The central proposition in our research is that online simulation gaming supports the construction and exchange of stories about perceived and interpreted realities. Storytelling, as an integrated part of simulation, is the preferred sense making currency of human relationships among all situational stakeholders (Boje, 1991). In our research, we use simulation gaming as computer-assisted games[19]. In computer-assisted games the narrative unfolds by the actions and interactions of the players. The computer

takes care of the administrative processes by keeping track of the data flow in the exchange between players and the construction of narratives.

Narratives are communicated and distributed through a countless variety of substances. From articulated (spoken or written) language, images, gestures, tactile information (braille or the physical traces of events), sound and music, to any mixture of expressive media. Narratives are all over: in myths, legends, fables, tales, novellas, epics, history, tragedy, drama, comedy, mime, visual arts, music, images, photos, videos, the Internet, cinema, comics, news items and in daily conversations. Narrative is present in every age, every place, every society in an infinite variety of forms, and is simply there, like life itself. (Barthes, 1977; Czarniawska, 2004; Hazel 2007). In *Acts of Meaning* (1990), Bruner says that, perhaps, the principal property of narrative is its inherent sequentiality: *"a narrative is composed of a unique sequence of events, mental states, happenings involving human beings as characters or actors. These are its constituents. Yet, these constituents do not, as it were, have a life or meaning of their own"*. Meaning is given by the place of a narrative in the overall configuration of a sequence of events and interpretations. Hazel (2007) says that we do not use narrative only to re-present our past. He describes how we also use narratives to predict and plan future actions. Following Gee, he explains that simulations *"help us prepare for action in the world. We can act in the simulation and test out what consequences follow, before we act in the real world"* (Gee 2010). Narratives are by definition selective in who is telling and in how, where, and what is told and simulations afford the possibility to act out stories and scenarios. Different scenarios ('what-if' situations) of the same story might lead to equally varied outcomes, which makes them suitable for dialogue, analysis and decision making in strategy development and problem solving. Hazel (2007) says that we may run several different 'what if…' versions of scenarios to evaluate possible outcomes, or to experience a situation from another person's (imagined) perspective.

2.3 NARRATIVE APPROACHES IN SOCIAL PRACTICES

The umbrella-term of 'narrative approaches' refers to the undefined area of tools and methodological notions that find their origins in narratology. It covers a gamut of theories and studies within literature sciences, anthropology and social studies. There is no definite theory or definition of narrative, due to the semantic diversity and the interdisciplinary nature of the concept (Ryan, 2004; Hazel, 2007). In social studies, narratives are objects to understand life experiences and views on situations, problems and future prospects (Gee, 2010). For this research we propose a selective use of aspects of narrative theory to the extent that they serve the aim of the study of simulation gaming in social work practices. Narrative inquiry, narrative discourse and narrative analysis are examples of 20th century

developments in the human sciences. Scholars and practitioners mainly disagree on the origins, definitions and uses of narrative approaches. Riessman & Speedy (2007) recognize 'realist', 'post-modern', and constructionist strands. They state that the term narrative *"has come to mean everything and anything"*, like any other fashionable buzzword. The authors fear that the specificity of the word has been lost with its popularization. Nevertheless, narratives and stories, with their usual complexity of context, plotlines, characters, human relations and scenarios, are important ingredients for simulation and social intervention. Besides that, simulations are built on other forms of discourse, such as plain information, arguments, questions and answers, reports and impressions. Stories and narratives play an important role in life-history and in living accounts of perspectives on social problems and solutions. We believe that the co-creation of future scenarios is a key factor to success in social care and intervention. Stories reveal the context from which they emerge, through the lens of individual experiences (Hall et al., 1999, 2006; Patton, 2002; Nikander, 2003). It is the context that is relevant to solving social problems. Therefore, one of the main questions is, how can we be sure that normative narratives are understood or interpreted in such a way that they deliver reliable information about the life and culture (context) that created them? This could very well be the most elemental question in social care practices. People project desires for the future in narratives, in accounts of preferred conditions and developments. Narrative can serve as an overarching paradigm for worldview (Riessman & Speedy, 2007), or more precisely, for the perception of problem situations, and can be used as an object of investigation. Closely related to the idea of narratives as objects for analysis or as instruments to learn more about the way people experience life, is the duality of narrative inquiry and narrative analysis. In much the same way, we want to use narratives in this research to collaboratively construct 'realities' and to analyze data from simulation games.

The so-called narrative turn[20] in qualitative research embraces stories as research data and recognizes the potential of narrative analysis of human experiences. Pinnegar and Daynes (2007) point out that this turn to narrative inquiry concerns four sides: the move to words as data, the focus on the particular, the attention to relationships among actors and the recognition of knowledge as a blurred concept. In social sciences, narratives are perceived as partly constructed in stories that people tell about lived experience. This turn to perspectivized life experience is connected to post-modern science and its perceived skepticism toward the unconditioned reliance on the transcendent and universal truth of the grand stories, as in the Bible, the Koran, mythology and in modern ideologies[21]. For social scientists, this opened up new options to explicitly frame and realize research in terms of both being and using narratives (Sikes & Gale, 2006). And yet, this increased appreciation of the collection and analysis of life experiences, this narrative turn, may as well prove to

be 'a blind alley' (Atkinson, 1997), in the case that the researcher assumes that narratives are offering privileged access to true and genuine data. This way, narrative approaches may lead to inaccurate interpretations of the relation between human action and memory or experience. Barbara Czarniawska (2004) warns for the pitfall of having a blind faith in narratives in social sciences. She subtly indicates that narratives can easily lead to an inextricable tangle of facts, fictions and fantasies. Some scholars developed theories that help to deconstruct perspectives or narratives. Hernadi (1987), for instance, has elaborated a hermeneutic triad that demands to first understand and explicate the text and then to disassemble the text to see how it is made and to explain it. The third side of the triad is to bring in one's own life and preoccupations into the narrative, in order to avoid fixations or misinterpretations and to come to dialogue and understanding. Other reliability techniques are the deconstruction with the intention of identifying hidden ideologies and implicit assumptions or false dichotomies, or to consider very carefully the temporal, local and historical contingencies of narratives. Riessman (1993); however, dismisses the relevance of reliability, arguing that narrative research is about the study of fluid, evolving, uncertain and context-specific accounts of personal experience and is not about stable findings. Riessman denotes 'trustworthiness' as the central criterion in her quality framework. Atkinson and Delamont (2006) acknowledge the significance of narratives in many aspects of social life; however, at the same time express their concern of unreflective use of personal accounts. The ubiquitous influence of the 'interview society' and the popularity of narratives and all sorts of 'testimonies' might lead to lack of substance or to poor systematic analysis.

Small stories feed practice-based theories by linking ways of speaking with the production of social life, and become the primary means for encoding and expressing particular orders of knowledge and experience (van Haaster, 2006, Georgakopoulou, 2006). Small stories are unofficial, fragmented and subjective and offer a glance at identities-in-action. They are locally accomplished, jointly drafted and contested, open to various interpretations and to revision or refashioning and they are inextricably interrelated to persons. The general conceptualization of a context, such as a care situation, bears no specific significance, apart from its abstract notion and linguistic meaning. From an interpretative point of view however, a situation refers to a specific quality of circumstances and human interaction and the interesting questions are about how patterns of events, behavior, actions are achieved, sustained and changed (Smircich & Stubbart, 1985). In social work practices, the interpretative perspective on care situations refers to the ecological space of thought, feeling and action. The people involved enact the ecological setting of such situations and possess the contextual and social knowledge that constitutes their view on the social envi-

ronment. Strategic social interventionists question these spaces of thought, feeling, knowing and acting, and influence the conditions that produce the impact of the environment on the persons affected. This should be done on the basis of a thorough analysis of the values and believes of everyone involved. From there, contexts can be charted as situations *that-are* and as situations *that-are-going-to-be*. Objectives of social intervention, as well as their results, can be found by comparing the problem situation (*that-is*) with the desired or changed situation (*going-to-be*).

Hazel (2007) says a narrative is a re-presentation of reality from a particular perspective, a re-configuration of past events in order to create and shape meaning. Stories are internally consistent, self-contained units of expression. Hazel cites Bruner (1990) in acknowledging that the inherent sequentiality of a narrative is the principal feature, and that its constituents are events, mental states, happenings, with human and non-human beings as characters or actors. The constructed overall configuration of the sequence of narrative events leads to an intended significance that is shaped in the head of the narrator (the storyteller) and the other (the listener). As explained above, a distinction can be made between the big stories or grand narratives (Lyotard, 1984) that, from ancient times on, give meaning to life and that contain legitimated knowledge, and small stories that refer to the smallness of talk and the tellings of experiences, future dreams or hypothetical events in personal life (Bamberg, 2004; Georgakopoulou, 2006). Small stories are ongoing, unfinished and can contain elements of the unsaid, the unsayable, allusions, deferrals and refusals to tell. Voicing of people may lead to empowerment and requires openness and multi-partiality, in particular when narratives are perceived as unusual, radical or contentious. This stresses the necessity of careful analysis and of dialogue about content, context, form and representation. Social communication takes place through narrative. Narratives can easily complicate communication, as the selection and structure of narratives and the choice of storytelling techniques implies a wide interpretive variety.

2.4 SOCIAL DESIGN: STORY WORLD MEETS REAL WORLD

For social professionals narratives, as accounts of situations, experiences and observations, are evident starting points for intervention. Narratives can be considered as the natural habitat for social workers. In programs of higher education in the Netherlands during the last years, narrative techniques and theories were used in especially developed digital applications and in multiplayer role-playing simulation games[22]. Multi-user online simulations are a further development in a long tradition of role-playing, storytelling and narrative inquiry in social work. Role-playing simulations induce dynamic discourses, in which the actors compare static narratives and scenarios with constructed accounts of perspectives, interpretations and dialogues. Narratives, representing problems and situations, can

be conceived in realistic game design that aims at safe and controllable experimenting and learning. Trustworthiness and persuasiveness are important narrative criteria when it comes to the representation of social problem situations. Role-playing games challenge creativity and artistic performance by combining arts and humanities. Storytelling, in particular the digital variant that makes use of multimodal expression, evokes whole brain thinking (Herrmann, 1996) and holistic representations of life experiences in seeking the best combination of image, text, utterance, sound, movement and audiovisual effects. Another point is that we may achieve effective learning-by-doing and new ways of coaching professional performance through the use of multimodal expression of stories and scenarios. In narrative approaches of applied social research, the objective might be to explore experiences, perspectives and discourses, in attempts to co-construct knowledge about specific problem situations. Narrative analysis helps to scrutinize aspects of professionalism, ethics and difficult problems. Social networks and organizations are challenged to take the shape of listening and to intensify field research in order to develop better services to clients and to cope with changing needs.

Narrative approaches in role-playing games offer possibilities for what is called social design, in the sense of shaping social reality and designing human interaction. Social workers are skilled at 'reading' the life stories of individuals and groups, to search for 'loose ends' and prospects of change and development. They are proficient in drawing achievable scenarios for the progress of social situations, life conditions, rehabilitation and community work. Narrativity and multimodality enable ways of exploring 'story worlds' and of enhancing dialogue about care, change and development. The story world reveals how persons attribute meaning to life experience, how they perceive personal history, how they see their present life and how they construct their dreams, hopes and expectations for the future. Multimodality, interactive media and social software, offer opportunities to actively participate, through the Internet, in sharing and exchanging ideas of how the future can be designed. Contemporary professionalism acknowledges ambiguities in many dimensions of professional practice: in policy, in tasks and assignments, in interaction and interplay, in function and performance criteria. The polyphony of interpretations of those aspects troubles good understanding of the contribution of different actors in the context of social work. Scenario development and experiential learning through simulation gaming might open new horizons for interpretation and understanding. Exchanging perspectives in simulation games could possibly support the quest for consensus about doing the right thing and in doing it right. Generating and transforming practical know-how in playful, yet, serious settings is an inspiring, innovative idea to cope with the high demands and the ever changing, dynamic context of social care practices. To challenge the promises and

ambiguities of validation and generalization of narrative approaches in simulation games we need to develop theories that explain the possible correlations between model design and subjective accounts of narrative and game experience.

Social professionals use media, stories and interviews as basic information gathering tools, and are trained to reflect on actor perspectives in problem contexts and social development (Denzin, 2001). Role-playing games can be used to explore conflicts of ethics and personal or professional dilemmas. Though narrative approaches have always been in the heart of social work practice, modern multimedia and multimodal ICT environments broaden the tools (Dettori et al., 2006). New paradigms in social work methodology show a revitalization of social work through cooperative and participatory ways of problem solving and the focalization on empowerment (Van Unen, 2003; Baart, 2004; Baart & Keinemans, 2008; Payne, 2005; Adams et al., 2009; Van Ewijk, 2010b). In difficult social problem situations it is imperative to find consensus about practical and durable solutions through dialogue and understanding. Narrative approaches can be helpful in this respect and the gathered stories can be made available for all stakeholders to support problem analyzing and the understanding of different cultural and social perspectives and behavior. Story worlds that are based on real life experiences can be discussed and remodeled according to changing insights. In stories clients of social work can experiment with characters, environments, conditions and rules and this may offer a safe distance for reflection on personal experiences. Once people acknowledge alternatives in a story world, then change in the real world might seem more feasible. Experiences, captured in digital stories, can be analyzed with more objectivity and dissociation, provided that we compare and discuss interpretations. Stories can engage people and professionals in exploring multiple perspectives towards solution-driven attitudes.

2.5 EXPLORING UNANSWERED QUESTIONS

The world of social work and social care is filled with ambiguity and unanswered questions. The intention of professionals should be to unconditionally accept the 'not knowing', however not to move away from doubt and uncertainty. Instead, professionals should stimulate curiosity and be open-minded to new facts, perspectives and insights. They should acknowledge uncertainty as a source for dialogue and progressive insight. The pursuit of unquestionable and practice based evidence needs not to be the only objective in interventionist practices and yet, we need methods and instruments to monitor performance and to analyze processes that lead to effective operations (Van Yperen, 2013). One of the main tasks of social workers is to investigate backgrounds and conditions of problematic social situations. Doubtful and problematic beliefs are regular issues in social work and can be explored by exchanging perspectives and experiences of the people in-

volved. By examining ambiguity and unanswered questions with an open mind, social professionals are more likely to understand and support people in their quest for personal development, in spite of all the informational gaps, contradictions and conflicts that might arise. The explorative nature of this type of work asks for creative thinking in order to find tailor-made solutions. It is a well-known fact that arts-based experiments can help to find new ways in creative thinking (Dewey, 1997; Eisner, 2002). Creative research methods, across various disciplines of arts and humanities, can generate new effective ways of 'localized data mining'[23]. For communication, methods and strategies this could lead to eclectic intersections of knowledge and techniques, from linguistics, anthropology, arts theory and social sciences. Traditionally the interview is the most appropriate way for exploring situations and contexts. As Denzin (2001) states, the interview has been the basic gathering tool of the social sciences and in the present 'cinematic-interview society' social professionals and social researchers increasingly use the reflective gaze of multimedia representations of world models and life experiences. The interview becomes a performance-based, dramaturgical communication channel between interviewee and audience. New generations, growing up with the clip world of MTV, You Tube and with fresh textual images on mobile communication devices, come up with different performative ways of communication, where various layers of dissimilar meanings between text, speech and image are often limited to the space and time of moment, medium and context. Nevertheless, these modern cinematic performances can be used as opening to dialogue, exchange and informal learning.

Kress and Van Leeuwen (2006) have shown us that environments can be read as semiotic landscapes. The same may be applicable to social problem situations. Many social problems show conflicts in truth seeking personal beliefs and quests in small stories ('*petits récits*'[24]). Small stories in social work contain patterns of events that are structured by human attempts to prevent, to avoid, to deal with or to resolve problems. Social constructionists argue that people construct their experiences from reality through mental activity, resulting in stories about their history, present and future. Stories are semiotic landscapes that show and structure personal and social development. Social interaction in role-playing simulations can possibly challenge existing fragments of beliefs (Dettori et al., 2006). Its transformational power is highly significant for social learning and for experiments of constructional, collaborative scenario development. Alternating performance in simulation games and analysis of processes and results may extend the array of learning. Role-play and storytelling evoke a particular need to change position from performer to observer, looking back on processes and results. These processes belong to the triad of briefing, play, debriefing. Bourdieu (1993) speaks of a '*réflexivité réflexe*', the immediate capacity to criti-

cally observe what is happening during dialogic conversations. This ability belongs to the core competences of social professionals. For players in simulation games, it may take an adventurous attitude and a sincere confidence in the expertise[25] and specific abilities of all actors and to remain open for tangential thinking[26] (Jones, 2006). Associative thinking in social work may ask to pursue seemingly irrelevant topics of thoughts, just in order to keep pace with the other person, until one has found the necessary information. Much like in creative processes, simulation gaming is about being present, following intuition, leaving and exploring boundaries, uncovering unknown areas. Professionalism in social work requires nevertheless a sound balance between tangential thinking, action and analysis. This comes down to balancing the positions of practitioner and observer in favor of the reflection on processes and performance. Interactions in social work practice and in simulation games can be read as multi-layered utterances that can be submitted to sincere and critical appraisal toward understanding social and individual contexts. Such understanding must not be viewed as revealing truth or as being true. Instead, we ask, whether it allows to look differently, and to argue from a different perspective.

2.6 Empowering clients and groups

We like to introduce the idea of online simulation gaming as a way to empower professionals and clients of social work by sharing stories, ideas, experiences, and by cooperative ways of problem-solving. In recent years, many scientists wrote on the subject of 'open innovation', which is linked to the idea that finding the best expertise or the most suitable solutions to problems might benefit from the potential of social software and the Internet. Some argue that the concept of crowdsourcing, a term to indicate online distributed problem-solving and design, could be used to mobilize 'crowds' of innovative thinkers and experts to collaboratively solve problems (Brabham, 2008). It can be interesting to borrow some of these notions for the agenda of social professions. Open innovation can offer interventionists and clients fresh insights into practices and situations, and might be used to stimulate citizen participation. The principle of crowdsourcing, or outsourcing, goes beyond the boundaries of contexts and organizations of networks, issuing a challenge to larger group of experts to find different solutions (Seltzer and Mahmoudi, 2013). Citizen involvement in the co-creation of social problem solutions might contribute to the support and legitimatizing of choices of intervention and can support social resilience. By transposing the concept to social work we may achieve fresh ideas of how to activate and stimulate people to take back tasks and responsibilities that in the past have been turned over to institutions and social professionals. Actor-generated social support is an example of co-creation and open community innovation. If carefully applied it may restore ownership and autonomy and it could establish meaningful and helpful liaisons between people that

need help, and people that can provide it. Simulation gaming may be a tool and safe and secluded environment for the involvement of larger groups of people in social problem solutions.

One of the ubiquitous assignments of social work professionals is to support people in exploring their environment and to help them transliterate[27] their life world, story world and dream world into speech, language, text, image and sound, with the ultimate aim to support development (Palmer, 2004). To understand clients and groups, social workers are concerned with how mind styles are represented in different types of narratives about life experience and personal or group development. For better understanding of social contexts, professionals reflect on the triangular relationship between life world (experience), story world (representation) and dream world (reflection). The life world exposes how people behave, how they communicate and how they live. In the story world people give words and images to personal experiences and reveal their awareness of context, views on others and relations between the experienced self and the environment. The dream world is about sense making and builds hopes and prospects for the future. To enlarge the scope of options and perspectives, social professionals look at the different reference worlds of their clients in conversations, in interviews, in stories and through observations.

2.7 Discussion

Nowadays a variety of media is available to examine contexts through written and oral narratives, by historic or contextual reconstruction, with the help of interactive devices and graphic representations (both artistic and expressive), and through role-playing simulations and traditional games and play. By integrating specific combinations of software and media in social work strategies, it becomes possible to focalize on certain problem aspects and to analyze interconnection, interplay and interdependency between different actors in social situations. The multimodality of (old and new) media enables us to choose the right communication channel in each situation and to adapt content to context and awareness. This offers potential to blend the interactive nature of discussion with the reflective nature of different modes of representation into collaborative records of knowledge and reasonable solutions. How can we transform a network, team or context into a multimodal virtual space, where people meet, discuss, share and exchange stories, images, ideas? Simulation and virtual reality can be used for the experimental design of human engagement with the world. In this research, we intend to discover the use of narrative as an information technology tool for learning, exchange and social design. Notwithstanding the potential, it is important to be realistic and to ask, whether there is any added value in using multimodality and technology to realize collaborative understanding

and strategies. In many situations, traditional non-technological communication has proved to be valid and effective and should therefore not be replaced. For scenario development, generic tools of computer and Internet are available. The question is, whether we need specially developed simulation gaming environments for explorations, scenario development and the training of competences. What is the value of free experimentation with ideas about problems and solutions? In real life, human rationality works as rubber bands that keep you back into your comfortable position, and that bounce back ideas that are too wild or weird. What could be the value of a virtual world to train network and individual skills? Is it at all possible to train professional proficiency in virtual reality? The assumption in this research is that it may be useful to engage social professionals in virtual learning environments to experiment with unconventional thoughts and knowledge-to-action patterns, in order to widen boundaries and to break through mental patterns, and to come up with new options that would not be seen within the safety rules of real life. How can we guarantee that simulation games are built on relevant and realistic professional practice? What method would be useful to employ simulation games as an additional tool for network consultation? Apart from these practical questions, it remains doubtful whether the outcomes can be successfully submitted to the rigor of scientific analysis. Narrativity and multimodality might be essential to collaborative social practices; however, research & development of simulation gaming in social work and social care is necessary to produce scientifically tested results, theories and methodologies.

THREE

3 Prospects of online simulation gaming

INTEGRATING NARRATIVE AND GAME METHODOLOGIES

Abstract

Game science literature and research show that gaming is successful for experiential and transitional learning, which leads to the question, whether games could be an effective, additional tool in youth care practices for learning, exchange and change. The narrative features of youth care practices and gaming offer an entry for the development of instruments, methods and theories. This chapter links narrative approaches in youth care with a certain class of serious games to reconstruct complex problem situations as online simulations to facilitate network exchange for agile and effective help. From literature and interviews we developed three sensitizing concepts that cover investigating situational cognition, strengthening discourse participation and justifying choices of intervention. Practice inquiries and field tests show that practitioners and organizations foresee useful options, and reveal a number of constraints to the implementation of online exchange in work practices. In this chapter the prospects of online simulation games are compared with the expectations and needs in youth care practices. The question whether online simulation gaming could be of interest and significance to youth care practices draws attention to several conditions, requirements and prerequisites that are crucial for success of the design and effectuation of simulation gaming in youth care practice.

Keywords: simulation gaming, youth care practices, knowledge exchange, chain cooperation in social services, professionalization, learning and change, situational cognition, discourse participation, professional performance, relevance, usability, usefulness of simulation gaming, requirements and prerequisites of gaming

[This chapter is based on Van Haaster (2008). *"Simulation Games for Knowledge Development and Intervention", Journal of Social Intervention: Theory and Practice 17(4): 29-38* and on "Endeavors of Knowledge Exchange through Online Simulation Gaming in Social Work Practice", In: *Proceedings of the 40th annual conference ISAGA, Singapore, 2009 "Learn to game, game to learn", NUS, Singapore*.]

3.1 INTRODUCTION

The design and implementation requirements that are described in this chapter form the basis for the experiments with simulation gaming in vocational training programs (chapters 4 and 6). The character of this research asks for a careful investigation of practice and literature, in order to catch the potential of simulation gaming for network exchange in social practices. We wanted to effect 25 practice interviews in a well prepared and focused way. For that reason, we worked out a framework of reference points that we found in the most relevant academic sources of game theory and intervention theory and in 25 preparatory conversations and consultations with practice experts. This framework served as a guideline for the interviews with managers and professionals of social services organizations and displayed the foremost promises of simulation gaming for knowledge exchange in social practices. The practice inquiries comprised not only these exploratory conversations with experts and interviews with staff members of social services organizations; however, also entailed introductions to the virtual environment and trial tests of simulation games in current programs of the participating organizations. The outcomes from these tests helped to determine the definite field of research (youth care), and the level of facilitation and moderation of simulation sessions. An analysis of the interviews yielded an overview of conditions and prerequisites for the design and use of simulation games in youth care network practices.

3.2 THE PROMISE OF ONLINE SIMULATION GAMING

Simulation gaming opens up to many appealing promises and attractive prospects for youth care practices, which have not yet been proven in evidence based theories. In this paragraph we picture some of the most prominent potentials of online simulation gaming for knowledge exchange, which we gathered in a scheme of assumptions that structured the preparation of the practice inquiries. As explained, games are used to model real world situations and to simulate the dynamic behavior of actors in referent systems. The designed artifacts of games can generate forms of play that mirror the functions of actions and interaction in social settings. In order to convey the duality of form and function, we adopt the hybrid term simulation gaming or simulation game from the game literature (Klabbers, 2009). For the purpose of this research we decided to focus on a category of free-form games with a basic set of guidelines to encourage freedom of interaction and input by the actors. We assumed that the features of principle-based games match with the characteristics and needs in youth care networks. This assumption is based on and confirmed by what we found in literature. This is further explained in this chapter. Within this game category we narrowed the options further down by selecting multi-user role-playing simulation games. The reason for this is that we wanted to simulate network exchange in

the form and function of action and interaction in social settings of network exchange. For this purpose, we had to find out whether it is possible to reconstruct youth care network deliberations about problem situations in online role-playing simulations. Suppose, we represent essential, contextual, systems information from social problem situations in a realistic, virtual environment for simulation gaming, and experts and social interventionists play roles to explore the key issues and dilemmas in that problem situation, what would be the benefits and constraints? This is the main question that we want to put forward in the practice inquiries. We know that social professionals already use a variety of instruments and methods to share information and expert knowledge and we think of online simulation gaming as an additional tool and method in several ways. As we shall discuss later in this chapter, there are some practical advantages of the use of the Internet and the Cyberdam application. We briefly summarize the main promises of online simulation gaming, to provide the reader with an idea of the potential.

- *Experimentation*. In an interactive learning environment, the participants are invited to learn about and experiment with options and to jointly bring forward feasible solutions;
- *Communication and cooperation*. Simulation gaming aims at various ways of contact and communication, information gathering and dialogue among youth professionals through the Internet infrastructure and the Cyberdam facilities;
- *Exploration and knowledge elicitation*. The simulation game is an environment to explore and tap explicit and tacit knowledge and to uncover unexpected expertise among professionals;
- *Perspective change*. The playful character of role-play offers the opportunity to compare perspectives on the situation and to exchange professional views on problems and solutions;
- *Learning-by-doing*. Gaming may stimulate reflective learning and knowledge exchange, which is a combination of learning-by-doing and reflection-on-action;
- *Participation and commitment*. The game incites to strengthen participation and commitment of youth care professionals by enabling them to co-construct viable outcomes, and to improve their competences;
- *Institutional engagement*. The game invites youth care organizations to provide fruitful working conditions for professionals to produce efficient, effective, and timely approaches to complicated, multi-actor, multi-reality and multi-problem cases that go beyond the practice-as-usual cases, especially when nothing else works. Those cases are wicked and tricky because of dissension among the parties involved about norms and

values, and about varying loyalties. Adequately dealing with those issues is all in the game of youth care.

- *Social innovation*. Youth care institutions should stimulate social innovation and offer conditions for developing and testing new arrangements in networks of professionals. Online gaming offers a rich interactive learning environment for testing and implementing social innovation.

For the preparation of the practice inquiries, we started from the idea that a simulation is an imitation or a model of an object, a concept or a situation that can be used to explore functions and actions from the setting that is represented by the simulation. We hoped the practice interviews would uncover what practitioners expect from the utilization of online simulation gaming for network exchange. To support a good understanding by the respondents, we had to briefly picture the possibilities of simulation games. We suggested the idea of reducing complexity of practice issues and dilemmas to their essential characteristics, or to take a selective part of the problem, to enable experimenting with risks and hazards in playful simulation scenarios. To support the argumentation and to build a theoretical foundation for our investigations, we effected a literature study on the potential of digital simulation games in programs of change and learning, of which we give an overview in this chapter.

We emphasized that simulations, from the realm of play and games, are an essential part of education and social learning. In certain training programs, simulators and simulations are indispensable to improve competences, like in flight engineering and in management and policy. With the growth of computational facilities, digital simulation expanded the last decades in areas, such as environmental studies, public safety and decision analyses. In online simulation games the worlds of simulation and gaming come together, which means that playful interaction and learning are combined. Online simulation games can be played anywhere and anytime, in synchronous and asynchronous interaction[28], and the results can be studied from the database of the application. In social professions, they might be used for informing, exploring, and organizing scenario development. Richard M. Fujimoto (1999) gives us a clear description of one of the advantages of distributed simulations[29]. He says that simulation gaming on geographically distributed computers enables a virtual world with multiple actors, who are physically located at different sites. Fujimoto points at the alleviation of travel expenses and time, associated with joint meetings and exercises, involving participants at different locations. A simulation game in a virtual environment can have a clear-cut goal and can follow a certain and specific run-time. It is also possible to design open-ended simulation games that start off with a certain problem or question and that depend on undetermined progresses of coursea of events and interac-

tion between the actors. Simulation gaming could be a shared channel for dilemmas and problems in a network of practitioners. Digital simulations, as free-form games, can be designed as time-stepped, event-driven or open-ended sequences of interaction. Free-form games, in comparison to their rigid-rule counterpart, enable narratives to emerge through playing. Simulation games are frequently applied in processes of organizational learning and change (Wenzler & Chartier, 1999; Kriz, 2003; Shaffer, 2005; Boonstra & De Caluwé, 2006; Mayer & Mastik, 2007; De Caluwé & Geurts et al., 2012). Many successful experiments have been conducted in higher education, in particular in vocational training programs of social work (Bekebrede et al., 2007; Mayer et al., 2007; Warmelink & Mayer, 2009) and the results lead to the question whether simulation gaming could be a suitable method for knowledge development and intervention in social practices. In this chapter, we explore the promises of online simulation gaming, as a tool and method, and the expectations of the intended users. We want to know whether online simulation could be complementary to the world of 'warm' physical contacts in networks of social care and intervention. Following this mission, we distinguish three areas of research: focus and priority; requirements and conditions; method and theory.

1. *Focus and priority*. Simulation gaming concerns a broad range of applications and if we want to start in the domain of social work, we need to delineate the field of research. It seems wise to start on a small scale, in a context that is in need of new and effective tools and methods of knowledge exchange and with a problem situation that is recognizable and meaningful for exploration in a simulation game. This area is covered in chapters 1, 2 and 3.
2. *Requirements and conditions*. We need to define the necessary conditions that apply to simulation gaming in professional practices, and that have consequences for the design of model and artifacts and for the implementation. We imagine that management commitment and technological facilities are indispensable, when we want to introduce online simulation gaming in organizations and work practices. We anticipate that organizations and professionals need an idea of the possible advantages of simulation gaming, to invest time and energy in experiments. We need expert practitioners to cooperate in processes of model construction, testing and evaluating. The requirements and conditions are the main points of attention in chapter 3 and 4.
3. *Method and theory*. Social work and social care lack a scientific framework for simulation gaming. We need science-based research criteria for the design, implementation and evaluation of simulation games in social practices. We must gradually develop an academic reference for replication research and for the validation of

results. In order to be able to define the active constituents of simulation gaming and to build theories of design, we need a scientifically grounded reference framework that suits the needs and conditions from practice. Method and theory are central to all chapters, although they are more prominent in chapter 4 and 5.

In various evaluation studies the active substances of simulation gaming have been investigated (Van der Hijden, 2005; Mayer et al., 2007; De Caluwé et al., 2008) and these studies reveal that learning by doing, co-constructive ways of working, playful interaction, individual approaches, immediate feedback and immersion are important features for successful simulation gaming. Learning-by-doing is such a notable characteristic. The transactional nature of game assignments and the players' interaction with the other actors and with the 'machine' (the game and the computer) exercises a dynamic effect on learning processes. Co-construction of content is another referred aspect of using online simulation games for knowledge development and learning. In the way we propose to use simulation gaming in social professional networks, the active and interactive co-creation of content by the actors in a game session is essential, as this could give rise to feelings of ownership of processes and results among the participants. The individual approach and immediate feedback on action and interaction and the multimodal expression through image, sound, text and effect offer diversified options for contact, learning and the processing of information. One of the most outstanding features of simulation gaming is the arousal and effect of immersion in playful interaction and role-play. The participation in simulation games can lead to an experience of flow (Csikszentmihaly, 1997), which is an important element of motivation and involvement. The characteristics of simulation gaming refer to favorable conditions for learning in virtual worlds; however, they do not yet provide valid explanations for successful outcomes. Moreover, these assets might apply to more sorts of learning environments. We should acknowledge that simulation gaming could just as well exert negative or undesired effects on participants. For instance, the technological demands of digital devices might block learning, motivation and involvement. Successful simulation gaming depends in the first place on the quality of a tailor made design and on briefing and debriefing, or in other words: on the instruction, guidance and transfer of effects. Ferguson (2011) examined how virtual worlds could help to develop (collaborative) creativity in learning and thinking. Her research[30] showed that the use of virtual worlds provokes active, authentic, constructive, cooperative and intentional learning. Ferguson argues that the use of virtual worlds and simulation encourages a reconsideration of how learning evolves in a context of playfulness, delight and creativity. This resembles experiential learning, in which actors are actively engaged in social interaction, skills and technics and where experiments are possible. Many other scientists explored the effects of

learning in virtual environments and in digital simulations and came to comparable observations (Maharg, 2004, 2009; Liu, 2011; Sitzmann, 2011; Chen 2013).

Simulation games on the Internet encourage informal learning and support experimenting with formal patterns through role-play and the change of perspective: the offender can take up the role of the victim; the professional can be the client, and so forth (Aldrich, 2004; Quinn, 2005; Ali-Hassan, 2007; Veen, 2007; Tapscott, 2009; Van Rooij, 2010). Changing points of view and playing different roles can lead to intensifying perception and experience. Simulation games can be considered as socio-driven applications of new technology and a smart use of their characteristics could support the effectiveness of social intervention practices. Would it, for example, be possible to deploy simulation gaming for the empowerment of groups of clients, and to use its stage for the exchange of experiences or for peer consultation? We assume that enacting and exploring tough situations in a virtual environment and in role-playing games enforces the capability of coping with competing pressures from different actors within the dynamics of problem situations. Simulation gaming may support the training of problem solving and communicative skills and could help to internalize functions that regulate behavior. Games are self-regulating and can help to find answers to questions such as: what do you want to change in your life and how do you want to realize that? Which kind of help do you need and who could assist you? Up till now, there is no evidence for the value, feasibility and significance of simulation gaming for social practices. And yet, social and cultural phenomena of the computerization in communication, the decentering and informalization of social services, and the intensifying of contacts and exchanges through social media offer cues that simulation gaming could be of importance to social practice (Huysmans, De Haan & Van den Broek, 2004).

In the Netherlands a major change in social care services has been introduced several years ago. The main feature of this transition is the contextualization and localization of help and care. The philosophy behind the policy shift that guides this transition is that most of the educational and social problems can best be handled by the persons in contexts from which those problems arise. To that purpose, we should carefully examine situations and try to maximize the potential and chances. However, to build commitment, to activate all actors and to guide and control the delicate processes of problem solving, social professionals need new methods, techniques and specific training. The facilitators of problem solving interventions require tools and methods for cooperative ways of exploring contexts, gathering information, strengthening networks and legitimating choices of action. These tools should be attractive and open to modern ways of communication, in

order to stimulate active participation on a playful and creative level. This leads to the question, whether online simulation gaming could be a valuable and welcome addition to the existing repertoire of intervention methods and techniques and, if so, under what conditions?

The supposition is that online simulation games offer a stage to chart explicit, tacit and hidden expertise and contextual knowledge. Online simulation games might be used to explore situations and scenarios of social intervention and to get a better understanding of professional performance and behavior. For this, quite a number of uncertainties have to be addressed. To start, we need to determine the most appropriate research field. Further questioning needs to address the relevance of modeling practice situations and complex problems. In how far are simulation games a suitable medium to explore complexities in professional practice? Besides, the usability for teams and networks of professionals must be investigated. We need to develop the most suitable design requirements in order to shape a virtual environment and simulation artifacts that have a representational value to the intended users. Finally, we want to find out what the practitioners think of the usefulness of the tool and method to develop professional network proficiency. In chapter 6 we shall reveal what youth care professionals think about these three aspects of relevance, usability and usefulness of online simulation gaming for professional knowledge exchange. To exemplify the purpose of gaining insight in the possibilities and practicalities of simulation gaming, we describe some of our initial questions for the interviews and literature study in the practice inquiry:

1. To what extent is it possible to model the complexity of societal issues and family problems?
2. Which design approach is suitable and what methodological challenges are identified?
3. Which types of issues, concerning knowledge exchange, seem to be appropriate for simulation gaming and what strategies for facilitating, moderating and coaching are effective?
4. Which existing theories and research methods can be used and what could be our contribution?
5. Which type of virtual environment is suitable and what are the functional levels and qualities of the interactivity in the application to meet the standards of professional conduct?

During the preparatory conversations and the subsequent interviews it appeared quite easy to evoke people's enthusiasm for simulation gaming, as the opportunities for learning, exchange and personal development are obvious. This impression is sustained in

much literature (Mayer & Mastik, 2007; De Caluwé et al., 2008). Professionals, managers, trainers and work supervisors in social practices are interested in simulation gaming. In particular, they showed interest in the alleged options of knowledge elicitation. The option of sharing and generating know-how through simulation interaction appeals to the urgency of finding new ways to enhance network efficacy and to study emerging knowledge processes that lead to successful intervention. Markus et al. (2002) define the concept of emergent knowledge processes as an activity pattern that exhibits deliberations without prescribed rules or structures. These deliberations concern issues that are distributed across people, evolve dynamically and have an actor set that is unpredictable in terms of prior knowledge and commitment. Emergent knowledge processes require a design theory that guides the design of a system that supports such processes, and that provides a foundation for academic research. An information system design theory might address all sorts of questions, such as to the relevance, usability and usefulness, or the balance of costs and benefits, or the controllability and technological thresholds. In the context of this research we propose the word relevance to indicate qualities of purposefulness and appositeness of simulation gaming, against criteria of adequate professional work. Usability refers to the practical convenience of simulation gaming for network exchange and usefulness applies to levels of individual, efficacious operation. The principle aim of our research is to to find out what the value and significance of online simulation gaming could be in the perception of the users, who are social professionals, to create a solid ground for further research and development. The relevance of simulation gaming for knowledge exchange in youth care networks is supposed to increase proportionately to the quality of realistic and convincing representations of real or imaginary situations. Relevance is the substantiated consequence of the level of usability, which refers to the operational functions in sessions[31], and to the level of usefulness for individual goals of proficiency. This asks for a design of exchange spaces that facilitate intuitive access to content and task completion (Morville & Rosenfeld, 2008; Cottong, 2012). User-experience design, in this research & development project, is human-centered and envisages innovative solutions in a multidisciplinary and participatory approach. The features of user-experience design are prototyping, testing, implementing evaluating and improving the contextual design choices, in an iterative process, with the ultimate aim to create user value. These design and implementation steps are extensively explained in chapter 4 and 6.

Simulation is the imitative representation of the functioning of one system or process, by means of the functioning of another. Simulating is the practice of mimicking and refers to achieving a close resemblance of one organism, the mimic, to another organism, the model. Simulation, in the sense of mimicry, is a very old principle for learning and for dealing

with the unknown. Simulating and simulation are probably the oldest techniques of learning. When we look at how children, or young animals, learn future behavior, we can identify all kinds of imitation and play. Also for military purposes and in aviation techniques and physics, simulations have a long and rich history (Uricchio, 2005). Simulators and simulation games are often used to train and assess professional performance. The original meaning of the verb to simulate is to pretend, to act as-if. The meaning shifted from pretending to behavior modeling in a dynamic and pedagogical context. Since the rise of computer games the word simulation has got new impulses of play and game[32] (Duke, 1974, Klabbers, 2009). Simulating refers to the representation of certain characteristics of one system by features of or in another system. A simulation is a representation, or a model, that evokes not only the characteristics of the source system, yet, also reproduces that source system as a result of rules and actor behavior in that system. Through this, new conditions and interaction patterns can emerge, which in turn can lead to new representations (Frasca, 2001). This is a crucial fact that stresses the importance of simulations for learning and knowledge development. Knowledge is, just like learning, a construct of dialogical processes and as such, part of human interaction (De Caluwé & Vermaak 2006). It is exactly because of this dynamic changeability that simulations can be used to promote dialogue and critical thinking (Frasca, 2001).

A computer simulation game can be considered as a mathematical sequence of actions (Klabbers, 2009), in which the actors act, interact and reflect, from playing different role perspectives. The online simulation game is a hybrid form of game, play and simulation. We discern between synchronous and a-synchronous forms. In synchronous simulations, player-actions take place simultaneously in time and place, whereas the activities in the a-synchronous variant are time and place independent. By using digital media, it is possible to communicate through images, film and sound and to imply websites, spreadsheets, text documents or to use avatars[33]. The participants play by means of a computer, tablet or other social media devices. A simulation game is a dynamic system or process model that is designed to construct a physical or imaginative environment, based on the features and elements from a real or a hypothetical situation (De Caluwé et al., 2008). In simulation games it is possible to elaborate a problem in a sequence of actions by role-players in a simulated or virtual environment. Hofstede et al. (2010) posit that the potential of sessions of simulation games is to achieve results that cannot be realized by other means or methods, at least not more effectively. The joint use of systemic knowledge about the situation plus the emotional involvement and social and cultural embedding of the actors in a game session, creates individual and collective purposeful action, focused on a particular problem. Simulation games can be used to organize, develop and distribute practical knowledge and change. Although simulation gaming can lead to effective learning, it

might lead to frustration and failure, when the processing of learning experiences is poorly handled. Hofstede et al., (2010) denominate several pitfalls that can frustrate game experiences, of which mistakes in design and (de-)briefing are the most apparent.

1. A game should fit the reality of practice and the mindset of the players.
2. The designer should be aware of the impact of the game rules.
3. The designer should be attentive of hidden, culturally defined, rules and interpretations.
4. The design must anticipate possible effects of emotional immersion of the players.
5. Facilitation (moderation) is a key factor for success, and should mirror the features of the specific situation for which the simulation is designed.
6. The fit between the didactic approach and the context of the game can be different in each situation. A directive style, for instance, can be perceived as supporting safety; however, might just as well be felt as limiting the player's freedom to act and to move around.
7. The proof of simulation games is in briefing and debriefing, which depend highly on the objectives that have been made in the scaffolding program of learning, development or change and on choices of design and tuition.

Some academic roots of simulation gaming

As we have pointed out above, theoretical and empirical research into simulation gaming for change and learning is spread out over many disciplines and for that reason, it is difficult to outline a common field of reference. In literature, we are confronted with a multitude of conceptions and approaches, though culture studies, behavioral studies, computer sciences and technology show much in common as to gaming and simulation. Since the exponential growth of videogames and computer games, more scientific areas show interest in game studies (Aarseth, 2003; Klabbers, 2009). The academic roots of games can be found in the general systems theory and cybernetics and in management theories of the last century. For management, training and organizational change, games are used for narrative and performative inquiry (Duke and Geurts, 2004; De Caluwé & Geurts et al., 2012). Since the 1960s, applied computer sciences have contributed considerably to classifying and developing game design and game applications in fields as economics, urban planning and architecture, ecology and education, health care. After an initial use of games, mainly for industrial and business purposes, we see that since the 1990s gradually more elements of systems dynamics are applied in game design for learning, in teams, organizations and in formal education (Sterman, 2000; Senge, 2006). With the help of transparent, causal structures from systems dynamics, we are able to better identify and ex-

plore values and assumptions as to real world situations. This has strongly influenced the development of classes of simulation games, in which we can study cause-effect relationships. Nevertheless, simulation games can just as well be used as laboratories for less predictable causalities (Senge, 2006), e.g. to study mental modeling processes of people dealing with problem situations, solution finding, strategies and change. Mental models, in particular, are unstable and not easy to assess, and they are almost by definition unclear and incomplete. Yet, mental models are the first reference points, when trying to understand social systems and behavior. Experiences in simulation games are difficult to analyze, and one has to be attentive to the fact that introspections might lead to erroneous assumptions as to reality. Moreover, gaming experiences are highly subjective, which problematizes the analysis of processes and results (Schell, 2008). It is just because of the messy and subjective nature of mental models that in-game and out-of-game exchange and dialogue are essential for interpretation and understanding. Because social systems are social constructs, the knowledge that is produced in simulated social systems, must not be seen as valid reflections of reality, but as outcome of jointly constructed images of reality. The validity of simulation outcomes should be reviewed in the context of construction. Game output does not automatically produce general values. Game results serve the objectives of game design in the first place. The validation of design choices should be made within the context of practice for which the simulation is intended. Design choices are accounted for as functions of task performance in well-defined situations and therefore the results of simulations usually have a limited significance outside the context of the problem situation.

Theories of simulation gaming are related to interdisciplinary fields of academic research and scientific thinking and reveal a strong empiric variety. In the same way, we can look at social work as an interdisciplinary practice, where the dynamics and complexities can be high. It might be precisely this variety that complicates the demarcation of simulation gaming research and that bears the risk of superficiality of analysis and of the definition of its results and effects. Theories of simulation games cover many disciplines, such as gaming and simulation, technology and multimedia, design and systems thinking, psychology, education, behavioral studies, culture and narrativity, game and play (Aarseth, 2003, Cavanagh, 2007; Klabbers, 2009). Konzack (2002) defines seven different layers of analysis and refers to the technical, aesthetic and socio-cultural aspects. He argues that the interconnectedness of these layers of analysis is paramount to understanding effects of simulation gaming. Aarseth (2003) delineates three dimensions of games in virtual environments that can be used for the analysis of content and outcomes: gameplay, game-structure and game-world. Game-structure can be understood as the rules of the simulation game and game-world refers to the fictional content and to the design typology and topology.

Gameplay comprises all in-game and out-of-game communication and interaction, which means that analysis of gameplay should not be limited to the game actions; however, should be extended to exchanges in the periphery of the actual game and in briefings and debriefings. Each of the three dimensions can be connected to certain research perspectives. Gameplay connects to perspectives of general theories of sociology, psychology, or learning. Game-rules link to theories of the domain for which the game is used, such as social intervention or policy. Game-structure refers to perspectives of aesthetics, art, history and culture. The combination of dimensions offer options to explore theories and practice in game interaction. The match of gameplay and game-world, for instance, opens up theories of role-play and role-performance. Gameplay and game-structure leads to theories of strategy and intervention. Combining the fields of game-rules and game-world could evoke thinking about the legitimation of choices of intervention. The repeatability of a simulation game in several sessions or contexts, makes it possible to re-study the findings of an initial research project in a repeated iteration. In doing so, with or without changing variables, we can apply comparative qualitative and quantitative analyses. A scientific foundation of simulation games is problematic, as results of human behavior in contexts of institutional and interventional change are difficult to integrate in the existing science categories of knowledge. This is seen as the reason that the scientific value of simulation games is under scientific dispute (Klabbers, 2006, 2009).

In academic explorations of gaming and simulation, theories constitute reference points that help to understand what happens in the closed world of play. The world of play and game is an imitation of a social system with some degree of uncertainty and just enough chaos to arouse the self-organizing capacities of the player (Huizinga, 1938; Caillois, 1958). By adding elements of chance and unexpected information, it is possible to influence the players' arousal and performance or to augment the level of reality. Participating in simulation games aims at transforming uncertainty in certainty. Salen & Zimmerman (2004) describe two levels of game uncertainty: on macro level, relating to the overall outcome of the game, and on the micro level of the player's operation. We might add the meso level of chance and uncertainty of group interaction in multi-player sessions. Uncertainty and chance in games refer to factors that players cannot fully control, like unpredicted information or behavior, and cause troubles and doubts around the anticipation of interaction strategies. We may look at insecurity in games as epistemic or systematic uncertainty, which refers to information that is incomplete or new and that confronts the actors with questions, problems and new opportunities at each stage of the game. We may add the incertitude of interaction and of how contributions are perceived. These unbalanced factors are the main drivers for challenge and fun and provide just enough chaos and complexity

for empowerment and self-organization in game processes (Roose, 2002; Klabbers 2009). It is through features of game and play that a simulation game can be understood from the perspective of human behavior in social and cultural systems. Klabbers (2009), building on the work of Huizinga (1938), makes a distinction between game and play, or between formal play and play dynamics. In his theoretical approach, the duality of an abstract model (game as artifact) and a living reality (play as activity) is important. By participating in a game, a person enters an imaginative world, which can be perceived as real. Inside the magic circle of game and play, the player is confronted with a temporary world that is different from the world of daily life. A game is both a living, viable system, and a model of a social system. Klabbers' assertion has consequences for the design and development of games, as well as for the analysis and interpretation of game results. In all stages of construction, implementation and reflection, game developers and game researchers should reckon with the perception of reality and values of the players, within the game and with the perception of reality and values of the reference system (the model) in the real world, outside the game. When a game model is used to study a situation from real life, the similarity of model and reference system must be strong enough to develop and test valid theories about that practice situation. Through interaction and game activities, players transform a game and might even change the rules or alter the game resources. It is even possible that players change the underlying game model or patterns, e.g. in case they skip a certain game activity or add a new activity. Players construct and reconstruct the social system of the game and transform the model. Besides, players can shift between the position of being participant in the game and being observer outside the game, for instance to reflect on interactions and performance in the game and to compare them with out-of-the-game behavior (Klabbers, 2009). This duality, applies to both offline and online simulations and is an interesting point, when considering knowledge development in professional social practices. At the same time, this duality refers to the complexity of research into simulation games. A simulation game is an evolving reality in itself, of which the changing patterns are unpredictable. Provided that the realities of game and reference system match well enough, this opens options to study processes that lead to certain results. In some cases it might be more practical or more ethical to test and study these kind of processes in simulation games, than in real life. An important question is whether and to what extent the results from simulation games have a practical validity for real life. To draw useful and meaningful conclusions, as to the transfer between game world and real world, ongoing dialogues and meta-analyses about processes and results are vital. A game is a complex system, in which players produce and reproduce the game, and in which play is the reference point for reflection and reflexivity on behavior. Klabbers (2006, 2009) has extensively written about systems theory and complexity as the fundamentals of game

theory. The study of organizational complexity in a game origins from the point of view of the observer, for example a researcher, and the organized complexity of a game can only be understood through the perspective of the players, i.e. the practitioners. The mental and epistemological switch between these two modes of perception can be reached through intensive and critical dialogue. The envisaged contribution to the body of knowledge is to apply and investigate this idea in the domain of youth care knowledge exchange. We hope to develop a theory of game design for effective youth care network exchange by describing the iterative and co-constructive approach of configuration, construction and evaluation through changing positions of observer and practitioner.[34]

CYBERDAM. A VIRTUAL CITY FOR LEARNING AND CHANGE

In the last ten years various projects have been carried out in cooperative partnerships of institutions of higher education, in order to develop virtual learning environments that support teaching and learning through simulation gaming. These simulation environments are based on similar open source software and are called SIMPLE, applied in the virtual city of Ardcalloch[35], and Cyberdam, with the virtual city of Cyberdam[36] (Nicol, 2011). Cyberdam[37] supports transactional learning through simulation gaming. The city map and directory of websites, covering information about persons, households, organizations, firms and situations go along with an e-learning suite, called ROCS that facilitates the building and utilization of simulation gaming for training, change and education. Games are created in a web-based application and playing games involves asynchronous, workflow-based interaction between players or groups of players that are engaged in role-play activities. For each role-player in a game session there is an individual homepage, containing a number of applications that are used in the game, and which serves as the center of interaction with other players. The application is based on the idea that any person can make a simulation game for his own purposes and specific use. The process of designing a game can start very simple, following a number of steps in a frame or template, available in the application. Any model that has been developed can be re-used by others and adapted to specific requirements and conditions. The Cyberdam environment has been developed in several different collaborative projects of Dutch universities and in the last years many simulation games have been developed and implemented in a wide variety of curricular programs. The projects yielded systematic evaluation of the design and use of simulation games in contexts of higher education. Research shows that the learning benefits concern the enhancement of personal time management and work organization and strategic negotiation (Brekebrede, 2007; Mayer et al., 2007; Warmelink & Mayer et al., 2009). The outcomes reveal that simulation gaming helps to develop interpersonal net-

working skills. The intermediate results pointed also at some desired needs of improvements in the environment, which have been carried out in the meantime. The newest version of Cyberdam, delivered in 2009[38], allows a wider and much more accessible use and development of serious games for learning and organizational change. And yet, designing games appears to be a complicated affair. In the way that we propose to use simulation gaming, it is not the game that is the ultimate goal. The purpose of simulation gaming is meaningful integration in wider programs of learning and knowledge development, and in programs of change and intervention. Constructing or implementing a game is not enough. It is also important to rethink and re-organize programs and approaches, in view of an effective integration of simulation gaming.

One of the main objectives of Cyberdam is to offer an appropriate tool that facilitates organizations, teachers, professionals and researchers to develop and apply their own simulation games, in an architecture that opens to all kinds of content and objectives. Though it became clear that the Cyberdam application was effective to develop and implement simulation games as integral parts of curricular programs, simulation gaming as a knowledge exchange method is still problematic. It seems obvious to make a clever use of modern media and contemporary methods and tools for learning, and yet, in most practices, it is difficult to adopt new didactic concepts of learning and work processes. Learning through simulation gaming demands specific didactic skills and approaches of supervision and coaching, as we shall see in chapter 4. The dynamics of learning in simulation games require tutor capabilities that anticipate and react to the fast and interactive behavior of participants and that deal with the individualized approaches that are possible with computer mediated communication. These insights may contribute to understanding similar processes of contact, communication and learning in social intervention and social care network practices. What we know is that games fit in with a large number of learning theories, such as experiential learning (Kolb, 1984; Gee, 2003), situated learning (Leemkuil, 2006), transactional learning (Maharg, 2004, Maharg & Nicol, 2009). Using simulation gaming for change and knowledge development is all about learning by experience and by learning through interaction and transaction (De Caluwé et al., 2012). The concept of experiential learning has extensively been theorized by Kolb (1984) and its conceptual basis is the cyclic iteration of experience, reflection and conceptualization. This cyclic iteration resembles the ingredients that are active in game and play. On the other hand, simulation gaming is no panacea for effective learning in every situation and not every person favors gaming simulation and computer mediated communication. In numerous publications, researchers state that gaming simulations can be considered as strong and successful instruments for learning and organizational change. At the same time, these researchers often state that it is difficult to indicate the active substances behind their success (Mayer &

Mastik, eds., 2007; Hofstede et al., 2010). The complicated interdependence of context, method and tool can be different in each situation and for every problem, which makes it hard to posit valid statements about cause-effect correlations. Assessment studies require a joint approach to research, in which knowledge of the scientific domain, for which simulation gaming is applied, is related to specific game design theories. Although this interdisciplinary approach to knowledge may be a regular research practice in fields of learning, management and policy, there are many other areas where this type of research remains to be done.

Various researchers have stated that the learning effects of simulation gaming can be high, when there is a close connection between theory and the training of professional skills and when there is immediate feedback on game performance, in particular through peer-interaction (Bekebrede et al., 2007; Lukosch et al., 2013). From this, we assume that simulation gaming could be effective for the training of expertise and skills of individuals and teams in social work practices. Besides for training and learning, simulation games can be used to study professional behavior and proficiency to develop practice theory. The micro-world of a simulation game can be manipulated, under the rigor of scientific rules, and the premise is that patterns of game interaction can be analyzed and interpreted (Boonstra & De Caluwé, 2006). Simulation games support the reflexive feedback of professional performance, within the context of assignment and action. Simulation games open options to look back on professional functioning from a meta-perspective and to increase the individual awareness, concerning personal implicit knowledge and routines. We could analyze how participants adapt themself to changing situations and to improve their performance, during a game or during a sequence of games. By playing different roles and looking at problems from shifting perspectives, the actors get the opportunity to adjust their professional capabilities to changing circumstances and to different interests. De Caluwé et al. (2008) postulate that the effects of simulation gaming can be assessed with performance criteria of design and facilitation that have to do with instant responses to game actions and game decisions. This implies that the design quality depends partly on the iteration of decisive moments, when action of the players is required and the way the players are guided through the course of game events. Immediate performance feedback is of crucial importance, in order to stimulate reflection-on-action. A constant flow of feedback on actions motivates the players to improve on achievements and stimulates the designer to advance the game model. Slomp, Van Der Zee & Molleman (2008) stress the necessity of balance between systems complexity and performance feedback. In the relatively open design of simulation games, there is room for circular and reciprocal influence between performance and system manipulation. It appears that individual performance, or

the input from the participants, is as important to success of a simulation game as the quality of its design. We could also say that the complexity of a game is inversely related to the performance quality of the players. Van Kessel & Datema (2008) emphasize the role of the facilitator, however, we argue that design is more important for balancing game complexity and performance feedback. One should note that facilitation tasks and strategies result from design choices and the X-factor for success is a proper effectuation, which includes design, preparation, process and progress of implementation and evaluation and the transfer of results.

3.3 THE QUEST FOR BETTER EXCHANGE TOOLS

In a brief example below, a recognizable professional competence problem is related to the need of responsive peer consultation and exchange. The example concerns a policy objective to empower social care workers to react timely and effectively to challenges of complex problem situations. The hope is that cooperative ways of design and implementation of online simulation games for knowledge exchange, and the consecutive dialogues about results, might lead to better abilities to react to difficult dilemmas and to an increased professional self-esteem and confidence. The aim is to develop a new practical tool for online professional exchange and, at the same time, to boost the learning capacities of the professionals involved and of the organization as a whole.

EXAMPLE

A social work organization wants to react more alert and timely in the run-up to problem solving in complex situations. An explorative inventory of the most intractable problems shows that social workers often feel un-confident and unsure about their response to difficult ethical dilemmas and moral judging and that they regularly face difficulties in finding a balanced legitimation of their professional position and opinion. The organization decides to start the development of a methodology of simulation gaming to obtain insight into the most difficult practice problems and at the same time to start online knowledge exchange and peer supervision among social workers. The policy objectives are:

1. Graining insight into professional reasoning;
2. Providing support for online learning and peer supervision;
3. Strengthening professional attitudes and confidence.

The example describes the assumption that online, playful ways of professional exchange may refresh work practices and enhance professional responsiveness to actual challenges in social care practices. To explore this proposition and to find out whether practitioners share the alleged need for better and modern digital methods and tools for professional

exchange, we conducted a series of conversations and interviews with key persons and experts in the field of reference. Firstly, we shall describe practices and challenges of professional network exchange. Secondly, we shall explain our choice for youth care services as research field. After that, we look into content matters that apply to knowledge exchange in professional social care and social work network practices.

During our practice inquiries we presented some interesting results with simulation gaming in vocational training and shared our ideas of the use of multimedia and narratives in developmental approaches to building scenarios and working out strategies. Thus, we hoped to uncover some promising points of reference between online simulation gaming and social work. We estimated that certain sectors in the broader domain of social work would show more interest in new ways of sharing professional know-how than the average. We explored existing practices to find out in which sector there would be enough support to experiment and to collaboratively develop methods and technics that are useful for current practices and future needs. It is conceivable that care workers want to use the strengths of online simulation gaming to share expertise, knowledge, and to cooperatively develop intervention strategies. Would it be possible to use approaches of simulation gaming also to study professional performance and to analyze processes of developing intervention strategies? Apart from these professional uses, it could be possible to deploy simulation gaming as a stage for clients and client networks. We can imagine that clients use this instrument, with the help of social workers, to explore problems and solutions and to exchange experiences and solutions. This research focuses on the first stage of these different levels. We hope to learn how social professionals value the significance of role-playing simulation in networks and organizations, in particular in view of an efficient exchange of experience, knowledge and expertise. It goes without saying that social workers first have to experience simulation gaming by working with the tool and method in a realistic setting, before they can express their reasoned opinions. The professionals' views on constraints, advantages, practical conditions and requirements could support apt choices for game design, implementation and transfer of results to network practices. Organizations need this kind of information in view of policy development and researchers want to know the practical options and professional needs to support choices of further research.

Face-to-face and computer mediated communication

In chapter 2, we have stressed the importance and value of digital media for story and scenario construction and exchange. Although the possibilities of online simulations seem obvious, it does not mean that social work professionals are all in favor of experimenting with online exchange tools and methods, as an addition to their normal repertory. Given

the fact that social practices are dominated by face-to-face communication, it is not very difficult to imagine arguments against the use of digital devices and computer mediated communicated (CMC). We can foresee some of the most evident doubts:

- Technology is not the primary focus of attention, when we think of social problem situations.
- The exploration of complex problem situations should be done in real practice and in face-to-face meetings, not in virtual environments.
- A simulation can give a distorted and biased picture of reality and does not lead to valid knowledge about that reality.
- The seriousness of difficult problem situations does not allow for game and play.
- The actual work load is too high and does not permit experimentation and exploration.
- There is no practice-based evidence in social work that supports the assumption that knowledge exchange through simulation gaming leads to better results in comparison to traditional ways of professional exchange.
- There is no valid theory and method that can be applied to online simulation gaming in professional social practices.

Probably, the most apparent uncertainties are about technical thresholds and about the usefulness of role-play and simulation. One could question the value of a simulated reality, next to other forms of social exchange. Is it at all possible to simulate social reality and to change perspectives in role-play? Does simulation gaming lead to better exchange and what are the advantages and possible yields? As argued above, much research has shown that simulation gaming conveys effective learning, yet, its success depends highly on variables, such as the representational quality and design, the ludic construction and factual interactivity in the game (Uricchio, 2005; De Caluwé et al., 2008). We need to relate processes and results of simulation games to the body of knowledge and practice of the domain involved, and this is what we intent to do in our research. The domain of social care and welfare is broad and diverse, and we need to demarcate the research field. We must narrow down the scope of application. It is essential to collaboratively develop the most important conditions, requirements and prerequisites for design and implementation. We must ascertain the most suitable contexts and the kind of dilemmas or problems for simulation gaming and we have to develop theories as to the appropriate embedding of simulation games in programs of change and learning. This is the purpose of the explorative inquiries, as described in this chapter, of which the results are the foundation of this research.

In accordance with what Putnam (2000) has written, we have to face the fact that information and communication technologies have gained an overwhelming importance for

professions that are in the heart of society. Many scientists have done research on the issue of the production and transformation of identity in virtual environments (Powell et al., 2004; Ren et al., 2007; Yee, 2007; Dede, 2009). Dede (2009) describes immersion as a subjective experience of involvement in activities that combine active, symbolic and sensory factors to provoke the participant's 'suspension of disbelief'[39]. This is the mechanism, which ensures a player's inclination to accept the events in a simulation game as real, within the context of the game. Immersion in a digital, fictional, environment is enhanced by allowing multiple perspectives, situated learning and realistic interaction. Participants in a virtual environment may be subject to a large number of aspects that influence involvement, such as game advancement, competition, socializing and building relationships or teamwork, and the discovery of hidden information in the situation. Role-play and creating or following a storyline might influence the participants' immersion, and even escapism, as a way to break away from real life situations or problems, might lead to immersion (Yee, 2007). A game enables to free the mind from conventions and patterns of perception and thought. In modern digital media, people can make both dramatic and subtle changes to their self-representation and self-esteem with an ease that is second to none. Changes in how people perceive themselves in virtual environments, can greatly affect how they interact with others in real life (Shirky, 2008). In virtual reality, we have the opportunity to experiment with social positions and behavior, thus building confidence and new skills that can become effective in real life. The Internet generates new forms of social bonding and leads to new societal cohesion. People create all kinds of alternative social spaces, by using social media and social software for contact and communication. As a consequence, we see the emergence of new dualities that are caused by differences between experiences in online, virtual life and physical, real life (Cavanagh, 2007). For present and new generations, even this distinction between online and real life is superfluous or 'unreal' (Prenksy, 2006; Veen, 2007). This allegation underpins the motivation to investigate if and how simulation gaming can contribute to innovation of interventional social practices. If we agree that social professionals are knowledge workers, who develop, construct and apply practical knowledge in dynamic situations and networks, and if we admit that the Internet and social media play a crucial part in how people contact and communicate and organize themselves in groups, it would be unwise not to make an intelligent use of modern media, such as virtual environments.

Challenges in social work practices

Social care services in the Netherlands find themselves in a turmoil of change. The necessity for change does not only arise from economic and political reasons, yet, also from a rap-

idly changing society. Change has become the dominant drive in many societal areas such as education, care, leisure, environment. Due to external influences of societal change, organizations of social work find themselves in a continuous stream of transformation. Typical barriers to change are mostly due to the natural human condition to avoid risks. Change is easily associated with risk and uncertainty, resulting in resistance of the people involved. Organizational problems with change often have to do with a lack of commitment or with poor resources and not knowing how to respond to the challenges involved (Dörner, 1996; Morin, 2008). The key factors to organizational change are rooted in the motivation and commitment of workers, who are the actors in the methods and techniques that are applied. Practice experts proclaim the need of new tools and methods to cope with today's professional challenges. They say that in practice, there is little time to develop new approaches for the exploration of complex situations or to inspire activation and participation. There is hardly time to jointly reflect on choices of strategy and intervention. Youth care workers say that they can imagine the use of simulation games as a means to stimulate collaboration and to work out scenarios. Digital simulations could serve as professional arenas for the testing of new approaches and for the exploration of extended networks of participative reflection. Problematic practices could be explored and strategies could be tested in the relatively safe environment of simulation games. Social professionals are unsure whether play and multimodal expression can enhance the motivation and participation of actors in problem situations. In view of the desired increase of self-organizing capacities in social networks and of the support of methods of prevention, it is conceivable that simulation gaming could offer a workplace for the development of strategies and solutions. In the practice inquiries, we pointed at the fact that a simulation game about a specific problem situation can be performed with varying groups of players, which probably results in different outcomes that could serve as interesting input for dialogues with all persons involved. The participants in our inquiries assume that modeling problem situations, the construction of artifacts and game models and the implementation in practices, including follow-up, are rather specialized subjects, and that it may take a considerable time and effort to learn how to make practical use of simulation gaming in professional networks. The theories and methods still have to be developed and organizations assert that they do not to have enough time to properly engage themselves in pioneering with different options of online simulations. There should be a certain balance between the input of time and energy in the development and the immediate and longer-term benefits. It might be possible to cooperate with centers of expertise and research institutes, and with organizations of training and education. Summarizing, we may say that we need convincing arguments of the possible relevance, the probable usability and preferred usefulness at the discretion of the end-users.

In view of contemporary changes and subsequent challenges in fields of social care services, it is interesting to investigate the possibilities of simulation gaming for the exchange of situational cognition and practical know-how. Practice workers asked what the added value of simulation gaming could be compared to the wide variety of available social software, such as email, chat, twitter or online platforms. We responded by listing some of the alleged features of simulation gaming that might appeal to social practices, together with some critical remarks:

- *A safe and secluded environment*. A simulation game is a comprehensive and secure approach that offers access only to authorized persons and organizations. This is very important, as the information in cases of social work is private and the actors in games must be assured of the confidentiality of the interactions, the views that are exchanged and of the outcomes. One could ask whether participants feel really safe in virtual environments and if so, what this feeling constitutes towards sharing opinions and experiences. Besides, it is important to work out arrangements as to who is owner of the results in the simulation game and what can and cannot be done with the data.
- *Perspective change through role-play*. Simulation gaming supports role-play and makes it possible to change perspectives by adopting different positions. An interesting point is whether the actors in a simulation game, when adopting a different role, experience new perspectives and standpoints as to complex parenting issues. What, in behavior and attitude, changes as a the result of role-play and what remains the same?
- *Multiple forms of expression.* In the simulation environment, we can choose a specific cocktail of social software applications to challenge certain behavior of information sharing and knowledge production, by promoting the use of audio, film, images, chat and messaging apps, online editing of texts and audiovisuals, and so forth. It is uncertain what the digital abilities of social professionals are and whether their workplaces support the necessary hardware and software. It could be that additional training is necessary or desirable, in order to deal effectively with multimedia.
- *Flexibility of participation*. The simulation game we have in mind is open for participation, without the usual constraints of place and time, as we know from offline contact and communication. It is interesting to uncover the practicalities of asynchronous communication in games, as an addition to face-to-face meetings. We are interested to learn what the eventual constraints and limitations are regarding online work conferences through gaming simulations. For participants, it may be hard to comply with the discipline and reliability, necessary to log in and to fulfill one's part.
- *Flexibility of scenario development*. A game can be improved, during and after play, and its form and dynamics can be studied in detail. It is quite easy to change certain pa-

rameters in order to test the efficacy of the model or to evoke certain interaction and behavior. The problem might be that it is hard to understand and foresee the consequences of design choices and the effects of influencing game processes.

- *Replication options*. Successful games can be replicated without time and place limits and can serve as a multi-actor platform for learning and improving proficiency in practice. The big question here is, whether one might speak of replication, when the actors change. The actors are the main factors in the varying outcomes of simulation games on issues from social work practice.
- *Research*. All data in simulation games can be stored in the data-base of the application for analysis and further study. We can freeze the social dynamics and variability in a digital simulation, as research object or laboratory experiment, and study the processes and results in detail. We have to find out in what way one could make use of data from simulation sessions for research. The social dynamics have to be taken into account and analyzing simulation data only makes sense, when we compare our findings with real practice situations. There are serious ethical and privacy aspects to using data from simulation games for analysis.

With respect to these claims on online simulation gaming, it is wise to start experimenting to find out their practical advantages to some of the challenges that social work is facing now and in the future. First we shall motivate our choice of youth care services as research field.

THE RESEARCH FIELD

We started off with the idea that experimenting with online exchange in simulation games could be an option in all kinds of social practices. The domain of social work is varied and large and we figured that innovative simulation gaming probably fits better in one sector than in another. We intended to find out how practitioners of social work think about the actual practices, problems and needs of professional network exchange, how they perceive the prospects of technology and computer mediated communication in workplaces. Moreover, we wanted to learn about the existing practices of the use of simulation and playful scenario construction, for instance in trainings and work meetings. To support our talks and interviews with experts of 10 different work settings, we used the above reference points, to inspire subject matters, such as network exchange; the acquaintance with simulations; the prevailing views on exchange methodology; the current or desired endeavors of enhancing knowledge-to-action in workplaces; the perceived benefits and affordances of technology in work practices. We combine these subjects in five categories:

1. *Practical knowledge development*. The assumption is that organizations can benefit from modern and digital devices for organizational and network knowledge development and exchange.
2. *Simulation gaming in work practice and training*. We are interested in current practices and perceived results with offline, online and mixed methods of simulation gaming in team interaction, client support and training.
3. *Preferred exchange methodology*. The respondents' estimation of the value of face-to-face contact and communication, compared to online variants, might influence their expectations of perceived significance of simulation gaming.
4. *Enhancing knowledge-to-action patterns*. We want to find out what the practitioners of social work think about the eventual contribution of simulation gaming to establish a better knowledge-to-action repertoire. This could possibly apply to exchanging and bridging different forms of disciplinary know-how, or help to elicit clients' know-how and knowledge in problem situations.
5. *Affordances of technology in social work practices*. In view of the booming online applications for the support of self-help, peer-to-peer exchange and client information in different sections of social care services, it is interesting to learn more about corporate views and policies as to the use of technology. Apart from that, we want to get a clearer picture of the general organizational conditions that foster the use of technological applications and software in workplaces, in particular as to network exchange.

We consulted 50 persons[40] of different organizations throughout the Netherlands, about their ideas, suggestions and advices concerning the aforementioned reference points. From among them, we selected 25 specialists for subsequent interviews of longer duration. The aim was a clear picture of the eventual chances, constraints and practical suggestions as to online simulation gaming in professional contexts. To give an impression of the spectrum of fields, consultations and interviews, we refer to

Figure 4. The response from youth care practice appeared strong enough to select this sector from the broader scope of social work professions to proceed our research. From the total group of participating institutions, we made a sample selection of three youth care institutions in the spectrum of foster family care, youth care services child protection and family care. The sample comprised practitioners with extensive experience in guidance and counseling of staff in primary processes, educators and trainers, and team managers. Access to the sample group was gained through personal contacts and all respondents showed a broad and genuine interest in the framework of this research.

They also were highly experienced with disciplinary knowledge and know-how in youth care practice, training and consultation and practice research.

Fields of Care and Welfare	Consultations	Interviews
Addiction treatment	6	5
Community work	13	4
Foster family care	2	2
Mental health care	3	3
Sheltered housing	3	3
Youth care	**13**	**8**
Social services	3	0
Residents association	1	0
Elderly care	2	0
Home care and family care	4	0

Figure 4: Fields, consultations and interviews

The 55 participants[41] of the empirical tests with simulation games in the multiple case study were recruited and selected in a different manner, through personal and online professional networks. Our approach is in line with the concept of open sampling and the selection of respondents and participants is indiscriminate in attempts to collect as much relevant data as possible, to guide the different phases of theory development (Bryant & Charmaz, 2007).

In the next paragraphs we substantiate the selection of youth care services as research field. We elaborate our choice of three main themes of exchange in youth care network practices and resume the most appealing features of simulation gaming, according to the expectations of youth care practitioners. We shall list the main topics of discussion and the attributed code categories, to give an impression of the content of the interviews. From the analysis of the interviews and field tests, we have constructed an overview of the most important requirements and prerequisites that the respondents considered as vital for further steps in this research.

KNOWLEDGE EXCHANGE IN SOCIAL WORK PRACTICES

As the concepts of knowledge and network consultation are boundless and ambiguous, they need some further delineation and framing. Knowledge exchange in social work networks and practices has many faces and the list of possible topics of discussion is very large. When different subject experts discuss social problem situations, it might be practical to structure and prioritize the possible discussion points in order to distinguish aim, importance or urgency. From literature about exchange in multi-disciplinary networks of

social professionals, it becomes clear that the exchange content is mainly about three broad and encompassing categories: the exploration of problem situations, the influencing of actor participation and the review of professional performance and effects (Van Yperen et al., 2010; Boendermaker, 2011). This led to a mapping structure in the interviews, highlighting situational cognition, discourse participation and reflection on performance. We wanted to know how the respondents think about the importance of these three concepts in the context of network exchange and how they react to the main assumptions that drive our research:

1. *Co-creation of situational knowledge*. Inter-professional exchange concerns situational knowledge. With situational knowledge we mean contextual data and information from and in situations, which may lead to knowledge, know-how and to understanding problems. We can come to deeper and richer situational cognition, if we induce the actors to work out practical questions, experiences, perspectives and options concerning problem situations of social care in playful, yet serious, explorations in simulation gaming.
2. *Collaborative development of discourses*. Network exchange aims at optimizing the participation and discourses of all parties involved, and at strategies that engage the qualities of situations and persons. Participation of all parties in dialogues about all possible perspectives on problem situations can be enhanced if we introduce attractive and flexible ways of online discourses.
3. *Cooperative construction of professional performance*. In view of the normative character of social intervention, collaborative reflection on choices of intervention is of great significance for the accountability and justification of professional behavior. Difficult dilemmas must be intensively examined from all sides to come to justified and substantiated choices of intervention and strategy. It might be helpful to encourage perspective change to achieve deeper insight in positions, values and interpretations of problems and situations by different stakeholders

These themes constitute a theoretical and hypothetical framework of sensitizing concepts (Blumer, 1953, Bowen, 2006), that has been used for the open, explorative interviews about the practicalities and expectations of online simulation gaming. The concepts were strongly recognized by the respondents and they affirmed that the concepts cover a level of content exchange that includes and transcends a wide variety of topics that are at stake in complex social problem situations.

We paid special attention to the above concepts in semi-open interviews, gathering relevant background information about eventual institutional and professional needs, constraints and development chances. The outcomes have been transcribed and processed in a qualitative data analysis software program[42]. Abstracts of the main preliminary observations were fed back to each participant for review. Soon it became clear that the interviews with youth care respondents offered the most references as to the three hypotheses. The theme of professional performance received the most attention in almost all interviews.

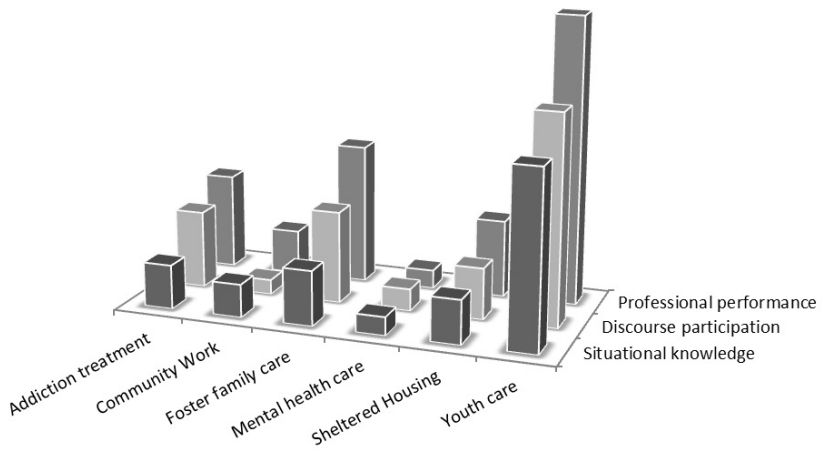

Figure 5: The relative weight of the three themes in the interviews

In Figure 5 we list the interviews with staff of different social care sectors on the x-axis, while the y-axis shows the relative weight of the subjects of situational knowledge, discourse participation and professional performance per sector. It is evident that the number of interviews (see

Figure 4) adds to the relative quantitative outcome, although that does not explain the rather large differences between the sectors. The diagram reflects indications of the quantitative attention that was given to the three concepts and may give rise to tentative thinking about possible reasons for the relative importance of each of the themes in each sector. To give an example: in the 13 conversations and 4 interviews with staff of community work institutions the subject of discourse participation played an only minor part. In contrast to their colleagues in the other sectors, youth care experts paid considerably more attention to each of the three concepts during the conversations and interviews. This finding sustained our decision to choose youth care network exchange as our research subject and area.

THE OUTCOME OF THE INTERVIEWS

All respondents acknowledged that the most appealing features of online gaming simulations are the user-generated forms of exchange, the participatory effects, the reciprocal benefits and empowering aspects. They admitted that online simulation gaming probably enhances network learning and may improve the exchange of practical knowledge. Seeing the actual simulation environment, participants recognized possibilities for exploring present, past and future situations through narrative approaches and role-play. An interesting outcome is that organizations of social work are actually searching for effective ways of computer-mediated communication (CMC) for inter-professional learning and consulting. Organizations stated that for social work practitioners, it is vital to be able to exchange experiences about difficult dilemmas in quick and flexible ways, and to explore complex and multi-problem social situations in cooperation with other experts. Organizations are searching for effective ways to use the Internet, not as an alternative for face to face (F2F) interaction and meetings; however, to use digital devices as an extra tool to support face-to-face communication. Pressure and workload are high and the time spent on professional exchange is limited. Inter-professional consultation and elaborated forms of investigation of difficult situations via PC and Internet could be less time consuming and can be started any time and any place, and probably therefore support a more proficient performance. Managers and professionals indicated that work pressure and limited resources in time, money, and expertise are serious constraints to further steps and participation to explore the validity of these suppositions in further research.

Ten topics from the interviews

The transcripts of the interviews were coded with 10 emerging topics that are shown in Figure 6.

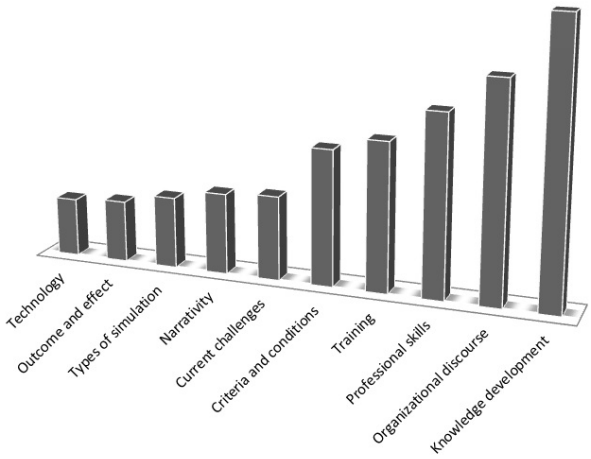

Figure 6: The Initial descriptive codes and their relative weight

The topics are listed according to their relative quantitative appearance. The position and increasing length of the topics signify the amount of quotes in the interviews and stress a possible weight of importance, as a reference point for further steps of research. A remarkable indication is the comparative attention to topics of knowledge development, discourse participation and training of professional skills.

Below follows a brief description of how each topic figures in the transcripts of the explorative interviews.

1. *Technology.* All informants agree that social work could enlarge its potential through the use of technology. They realize that most of their clientele (and colleagues) spend a lot of time socializing, learning and organizing on the Internet, and that therefore work practices should incorporate more social media and social software in palettes of professional repertoire. They also think that Internet activities and services must be designed in close synchronization with offline, face to face services and communications.
2. *Outcome and effect.* The informants hope that online simulations can help to enhance outcomes of exploration, decision-making and evaluation. Some participants state that online simulations might help to restore certain analytical and evaluative functions of social work that are considered as undervalued, such as discussions about normative values and strategies. Managers and professionals think that certain groups that are difficult to contact, could come within reach through simulation gaming.
3. *Types of simulation.* We were interested to know whether or not the organizations were familiar with methods of simulating practical situations to explore forces and options for interaction and action. Most institutes are acquainted with didactic forms of offline simulation for learning, supervision, training and team meetings. Some professionals told that they often feel uncomfortable enacting complex situations, because of a perceived lack of 'stage talent' and because of the often poor and unrealistic character of the 'live' simulation. On the other hand, they admit that role-playing effectively opens different perspectives and makes it easier to be aware of and experience other people's feelings and reactions. Organizations that are experimenting with e-learning said they would like to incorporate lively interaction models for evaluation and feedback and they expect online simulations to offer opportunities to that.
4. *Narrativity.* The respondents acknowledge that narrativity is the cornerstone of communication in social work practices and they state that sharing stories of practice situations can evoke learning. The creative processes of inventing and developing stories can be fruitful journeys for everyone, who is involved. The informants imagine that narrative dimensions of online simulations present chances for co-creative and co-operative work amongst professionals and between workers and clients. They foresee

appealing projects of cooperation in the triangle of practice, education and research. Most professionals and managers are aware of the fact that narrative approaches can improve hermeneutic understanding and can offer better insight in situations and perspectives. Some informants suggest that video, photos and images, symbols, sounds and music, effects and metaphors are empowering tools in situations when language and text are not the most eloquent media for communication and mutual understanding. The respondents are well aware that not everyone is a storyteller or a careful listener and not every professional is a skilled user of narrative instruments and techniques.

5. *Current challenges.* A persisting challenge for managers is the recruitment of skilled personnel and the concern that the right people commit themselves to a longer career within the same organization. It seems possible that online simulations contribute to a more flexible introduction of personnel to new tasks and that they could serve as laboratories for professional proficiency and practice preparation. Some managers ask themselves, whether simulation gaming can add to the pleasure, pride and contentment in one's professional career. Designing scenarios and working out dilemmas and specific professional issues could offer possibilities to demonstrate higher skills and expertise, which might be an attractive task for the more experienced professional.
6. *Criteria and conditions.* As soon as organizations consider the start of a pilot with online simulations, they raise questions as to the investment of time, responsibilities, privacy and confidentiality of data, management and control. Many organizations see cost-effective advantages, because of the independency of time and location for participation, and the availability of data for future processing and analysis. The more practical criteria and conditions for use and implementation concern the usability and convenience of technology. Some respondents expect that professionals will immediately turn their backs on new technology, if certain features do not properly work or if operations are too complicated in use. Everyone agrees that online simulations with little applicability and a poor realistic content will certainly fail.
7. *Training.* This word tags all remarks on training: in-company; outsourced; traineeships; specific job training programs. Some informants think online simulations could offer changes to relate knowledge-to-action in training. Online simulations could serve as a stage to enact and replay difficult practices in attempts to digest bad experiences from professional practice and to look for different response options. According to most interviewees online simulations can be inserted to afford (new) workers the acquisition of (better) understanding of the positions, tasks and responsibilities of different network professionals.

8. *Professional skills*. This item comprises all accounts on expert knowledge, difficult dilemmas, professional attitudes and comments on specific cases of professional talent and qualities. Also reflections on the transfer of theory to practical operations, and vice versa, and what it takes to be an expert. Participants think that scenarios for online simulations can be used to enhance professional proficiency, on individual level as well as on team or network level. Discussing the potential of simulation gaming for professional development, they stress the importance of integration in policies of human resource management within organizations.
9. *Organizational discourse*. This topic covers all that is said in the interviews about corporate identity and internal dialogues on what is considered as important for an institute's public role and assignment, and for the consideration of new challenges that are to be accepted or not, the organization's position in the local field and professional chains of care and welfare. Managers think online simulations could be used as mutual playgrounds for organizational discourses. Generated data could be treated in qualitative and quantitative analysis to support new policy and accountability of past performance. Some informants foresee possibilities of linking these data to information systems of their own institute and to information systems of local networks and institutes within a professional field or region.
10. *Knowledge development.* Knowledge development is by far the most frequently discussed wide-ranging concept. Not surprisingly, as respondents were aware of the fact that knowledge exchange is a central issue in our research, and also because social work depends heavily on situational and expert knowledge. Most of the statements on knowledge development refer to concrete ideas of a possible use of online gaming simulations in situations, such as network and team exchanges, client support and e-care projects.

Arranging topics into categories

In order to analyze the outcomes of the exploratory field interviews, we applied different coding strategies to come to relevant sensitizing concepts (Blumer, 1953; Bowen, 2006). By inductive analysis (Patton, 2002) and through selective coding of the initial descriptive codes, seven categories of most important topics have been defined (Figure 7). The selection of categories relate to the outcome of the literature search about intervention theory, in which learning, professionalization and network efficacy are key issues. The respondents endorsed our choice of categories as relevant and important in exchange practices. The relative position of each category indicates the number of quotes in the interviews. In each phase of research, the main challenge was to critically review the subjects of the interviews and to investigate whether they sufficiently portray the relevance of online simulation gaming in social care and welfare practices. In the theoretical framework of the mul-

tiple case study (chapter 6.2.3 and 6.2.4), we shall return to the relevance of the interview outcomes for the design of simulation games for youth care knowledge exchange. It should be noted that the outcome of the 2nd round of selective coding is comparable to the outcome of the 1st round of initial coding. We may compare the attention to the subjects of knowledge exchange, network cooperation and skills development, with the main topics from the 1st round.

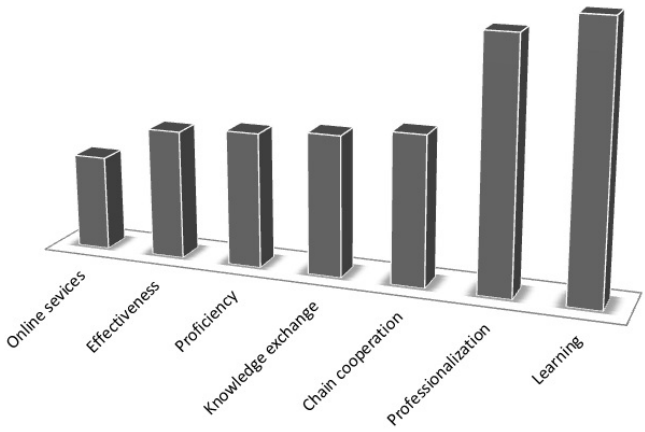

Figure 7: The code categories and their relative weight

As we can see, the items of professionalization and learning surpass the other items by far. In order to illustrate the content of the seven categories, each category is briefly explained below:

1. *Online services*. One function of online simulation gaming could be the contribution to online social services. Role-playing simulations can add a dimension to e-care applications and to activation and participation in programs of social work. Client-to-client exchanges will be possible and the empowerment of networks of certain interest groups can be supported by narrative approaches and the development of scenarios. Role-playing simulations can serve as laboratories for developing situation-based solutions and enhancing a sense of ownership and control.
2. *Effectiveness*. Effectiveness of social services is one of the most important concerns. Institutes are searching for appealing instruments and methods to bring down the caseload of professionals and to increase effectiveness and quality of services. There are two important constraints: budgets are too small and there is a lack of skilled workers. It seems doubtful that online gaming simulations can provide solutions to that. Learning to use the method and tool of online exchange takes time, as we shall see in chapter 4. And yet, we may expect that experimenting with online simulations reduces work-

load in the longer run and contributes to the satisfaction and work pleasure, when achieving the main goal of an increase of effectiveness and performance

3. *Proficiency*. Proficiency is about being competent and being able to develop competencies as a vital part of professional practice. Proficient social workers acquire professionalism and prestige through expert behavior and learning abilities. The respondents think that online simulation gaming could play a part for the training of professional abilities.
4. *Knowledge exchange*. This category covers issues as inter- and multi-professional consultation, instructive cases, evaluative inquiries, and demonstrations of expertise. This category also covers ways of 'multi-linguistic' and holistic knowledge sharing. Online simulation gaming is considered as an additional tool for professional knowledge exchange, with possible advantages of better results in practice.
5. *Chain cooperation*. Successful collaboration of different professional parties in the care and welfare chain is a crucial theme. Online simulations could probably be useful to influence professional awareness to better cooperation and to explore and analyze roles and perspectives of different partners.
6. *Professionalization*. This item concerns the contribution of narrative approaches in online gaming simulations to the general objective of professionalization of social work. The respondents think that online simulation gaming could possibly support objectives of professionalization and profiling. They think that the explorative and experimental functions of online simulation gaming may favor the development of network skills.
7. *Learning*. This category comprises all forms of learning on the job, whenever digital media, Internet and online simulations are involved. The most important characteristic is that learners are co-constructors of the content and/or add interactively to the content.

In next steps of practice inquiry we worked out an elaborative arrangement of the selected categories within the scope of the main themes of situational knowledge, discourse participation and professional performance. It was our intention to apply elements of the grounded theory method (Glaser & Strauss, 1967; Lincoln & Denzin, 2005; Bryant & Charmaz, 2007) to inductively construct a theory that has significance and value for our research objectives. The research strategy will be a collaborative conceptual development of scenarios and simulation games, through steps of data collecting, gaming and courses of subsequent data analyzing. This process is planned to take place in constant reflective dialogues with all actors and stakeholders.

3.4 THE EXCHANGE CONTENT

Practical action knowledge can be defined as the totality of explicit and implicit professional information, insight, experience, know-that, know-what, know-when and know-how and all sorts of knowledge that pertain to a certain professional practice. In the framework of this research, the concept of knowledge exchange refers to all professional interaction in inter-disciplinary networks of social work. We know that problem exploration and needs assessment in youth care depends on many factors. The most important are the transparency and efficacy of information exchange, the use of relevant knowledge about what works and the effectiveness of methods of dialogue with parents and children (Bartelink et al., 2010). Professional deliberation in this research is defined as intermediate consultation, between care workers, outside the actual problem situation, in order to feed the interaction between professionals and clients. We deem the transfer of inter-professional consultation to practices, and vice versa, of vital importance for success in situations of care, help and intervention. We suppose that practitioners in online meetings contribute their practical know-how in much the same way as they do in face-to-face meetings. An important feature of online deliberation is that the participants do not see each other and we wanted to find out what this means for the exchange of embodied, encultured and tacit knowledge and for the individual experience of interaction. Below, we shall first give an account of what literature search on the three themes revealed. After that, we shall proceed with a summary of the expectations that practitioners expressed about the potentials of online simulation gaming. We shall conclude this chapter by listing the main recommendations from practice, as to further research with this tool and method of online knowledge exchange in professional practices.

Knowledge, according to the Penguin English Dictionary is that what is known by perception, awareness, experience, information and learning. Knowledge and knowing are related, however, not quite the same. Clancey 1997) describes 'knowing about' as a disposition. 'Knowing about' means continually figuring out the world in which you act. Knowing about a social situation can be regarded as an ecologic, cognitive system of dialectic and dynamic relations between the knower and the known, or between events and human capabilities as speech, remembrance, representation, reflection and reasoning (Bateson, 1991). Computer-assisted online simulation games are virtual social situations that can display the same functionalities as their real life counterparts; however, the confrontations of virtual experiences with real world situations can deepen the understanding of the knower and that what is known. In order to achieve durable results in complex multi-actor, multi-problem, and multi-reality situations, we must integrate explicit, tacit, embod-

ied and enculturated knowing and expertise, including shared knowing-that & knowing-how (Hofstede et al., 2010). We should combine these modes of knowledge and expertise with local behavior, standards and moralities, thus legitimating local interests, values and future desires of the people involved, and link them with the social systems perspective, responsibility and accountability of youth care. Knowledge in online simulation games is situational, as opposed to scientific knowledge, which is context independent. Situational knowledge is about specific circumstances that are unique to a situation. First, we have to acknowledge that simulation gaming is supposed to lead to empirical information. Only by strict rules we derive knowledge out of this information, for example by dialogical reconstruction and reflective analyzing (Gregory, 1997). Empirical epistemology tells us that knowledge is perception (compared with knowledge is reason). Epistemological rationalism shows that knowledge development might help to understand underlying social, economic, political and cultural circumstances. Knowledge development is an ambiguous endeavor, when we accept Clansey's statement (1997) that knowledge limits, veils and frames reality. Strictly speaking, scientific knowledge provides answers that need no further questioning. With situational knowledge development in social work; however, we are primarily dealing with not-knowing and with never ending processes of research and questioning. Situational knowledge cannot be regarded as encyclopedic knowledge and has evidence only for the situation, in which the wish to know occurs. Answers must repeatedly be restudied from the questions themselves, for better comprehension of reality. Simulation gaming could be a suitable tool for the exploration of situational knowledge, thanks to its easy replicability with the same or with different parameters.

In simulation gaming we are not aiming at definite answers and undeniable truths, instead we seek variations of perspectives and interesting questions. As in Plato's teachings, we want to learn about the other person's 'justified true beliefs', by dialectic explorations of narratives, representations and experiences in processes and results. Perceptional differences can bring us to questions and to examining things that were unknown before. In simulation gaming, the participants are encouraged to explore present knowledge and experiences through dialectic processes of shaping situations, just as their perceptions are shaped by situations. The phenomena that the participants try to understand, are partly of their own making. The participants in simulation games are part of the same situations that they try to understand. Situational knowledge in simulation gaming, therefore, is merely the representation of perspectives and stored models of the participants. We are able to study the physical, emotional and intellectual skills of participants and to compare the results with their behavior in real world situations. Thus, we can assume that knowledge in simulation gaming is articulated belief and reasoned hypothesis in relation to concrete behavior. This is an important assertion, when we think of the potentially

problematic interpretation of session results and statements of the actors. When we want to understand exchange in youth care networks we have to discern the possible discrepancies between how we interpret in-game behavior and the meaning of thoughts and statements. We should try to match the ontology of the tangible perceptions, actions and interaction in sessions and the epistemology of understanding and belief. Because we think that the success of simulation gaming in youth care networks depends strongly on the ability to relate session experiences to practice behavior, we want to elaborate on the complexity of thinking about session processes and performance and their value for intervention in real practice.

UNDERSTANDING SITUATIONAL COGNITION

The exchange of practical know-how and collaborative experiential learning is a dialectic process and a linked mechanism (Clancey, 1997). Interpretation and analysis of data from simulation games can be problematic. We have to take account of the multi-layered perception and interpretation in game design, in game interaction and exchange content, and in retrospective reflections and dialogues. Later, in chapter 5 and 6 we shall discuss some of the methodological implications of interpretation and analysis. When exploring situational knowledge, it seems only sensible to reflect on the distinction between situational facts and the knowledge about such facts. In simulation games the actors study the perception and the reality of events and how people rely on and relate to conditions and circumstances, and how they discuss their beliefs, values and theories about situations. Perception precedes understanding: before you can give words to concepts of experience, you should be aware of what happens. To understand what is happening in simulation games, we can look at the concept of reciprocity of external and internal processes of people in their environment. People attune themselves to new situations and improve their behavioral skills by means of past experience and their focus of attention (Gibson & Carmichael, 1966). If we agree that learning is a reciprocal way of information processing, we might also accept that perceiving is sampling. Sampling operates from *perceiving* words, images, sensory observations to *conceiving*, as a mapping process onto stored descriptions. Learning is the result of reasoning and action on the basis of experience and memory. In experiential learning, we look at knowledge exchange, not as bringing out what is already inside; however, as a way of *changing* what is inside (Clancey, 1997). Knowledge exchange in simulation games is not just restating what has already been posted subconsciously inside the brain. It is an activity of representing, exploring and developing experiences and beliefs. Conceptions, beliefs and meaning develop in the players' thoughts and behavior[43], as participants combine and re-perceive what they say and do, with what they have previ-

ously said and done. Processes of looking, perceiving, understanding and describing are arising together, shape each other, and are different from linear descriptions of perception and conception. In simulation gaming we call this the transactional and experiential dimensions of learning and change. Concepts of perspective, perception, appreciation and understanding play a central role in exchanges about complex social problem situations, although they are difficult to comprehend. This is a challenge in which we analyze processes of in-game behavior and produced insights, visions and practice knowledge. In simulation gaming we discern action and interaction from the interpretation of thoughts, perspectives and perceptions. To analyze the relation between processes and results of knowledge development, we need to bridge the line between behavior and thoughts. Reversely, we need to think about the transfer of simulation results to real practices and to bridge the line between thought and positive action. We need to relate session behavior and role-produced knowledge to the different realities of problem situations. In sections 5.4 and 6.5 we shall return to this task. Thinking about knowledge-to-action patterns might be the most essential activity of learning and transforming through online simulation gaming. As explained in part 2,1, we need to detect different levels of interpretation, referring to game reality and practice reality, or to the interpretation of perspective (content) and voice (person). We have to differentiate between *what is told* and *who tells*. Investigating these layers of interpretation might help to understand and contextualize session outcomes in favor of positive transfer to real practice. We need to properly connect the intelligible outcomes from simulation games to the complexities of the practice world.

ENCOURAGING DISCOURSE PARTICIPATION

Healy (2000), like many poststructuralist theorists, prioritizes the influence of language for constituting social reality and participation in all sorts of public discourses. It is through language in speech and text that we experience the world. In our times, the way people communicate evolves in an unprecedented rapidity. Modern social work professionals and their clients might prefer the use of a broad spectrum of communicative media (images, text, metaphors and symbols, sound, music) through new devices as PC, smartphone and the Internet. Social media represent a growing potential for discourse participation. Self-organization, expression and discourse participation have never been as easy and effective as nowadays through the World Wide Web (Cavanagh, 2007; Shirky, 2008). Parton & Marshall (in Adams, Dominelli, Payne, 2002) define discourses as structures of knowledge and practice, through which we understand and explain our world. In a constituting way, discourses also define obligations and determine responsibilities and authorities for different categories of persons, groups, professions, organizations and networks. Discourses establish standards as to what can be said and done within a particular context, and they frame fields of reference, through which we can experience situations (Healy,

2000). Social work professionals constantly maneuver between institutional and categorical discourses, in order to represent and balance different objectives. Online simulation gaming may help to rethink and reformulate contents and processes of different discourses about social reality and social change. Participating in these discourses is a way to get access to power over the 'regimes of truth' (Healy, 2000). If we agree to the idea of discourse as a form of concerted thinking, which then could be the 'rules of discourse' that apply to collaborative thinking and exchange in youth care network practices? To elaborate some practical notions of discourse, we might make an eclectic use of some of Foucault's theories on the fundamental elements of discourse (Foucault, 1971):

1. Discourses are produced by (explicit and implicit) rules and procedures that determine the acceptance and position of statements at any particular time and location. People should unconditionally have access to these rules and procedures in order to fully participate.
2. Discourse and power are interconnected. Foucault states that all knowledge is defined by power relations. Important is to investigate and understand how processes of truth claims develop.
3. Discourses are discontinuous and contradictory. In every context, different discourses are possible. There is no one and only answer or truth in a discourse. Understanding an appropriate action is served best by combinations of different discourses.
4. The value of discourse resides rather in concrete operations and practical effects, than in deeper meanings and legitimacies, as each discourse bears disputable claims to authoritarian relationships and truths of the subject that is discussed.

In the work of Derrida (1991) we find strategies for the deconstruction of truth claims. They are important to identify dichotomies and polarizations within discourses, like rich-poor, black-white, disabled-abled, control-care and public service-market responsibility. Binary oppositions ignore diversities, as well as commonalities within opposed categories. Deconstruction aims to uncover these binary oppositions in view of a better and more diversified understanding of social reality. Binary oppositions have the effect of marginalizing and excluding identities, definitions and processes. Displacing oppositions intends to enlarge the range of truths. For social work practitioners, deconstruction methods are useful to understand fundamental oppositions in various practice discourses. One of the tasks of social work is to sustain and support the voicing of different perspectives on social situations, care and wellbeing (Healy, 2000). The assumption in our research is that multimodal expression and online simulation gaming may enhance the voicing of perspectives.

Provided there is an appropriate and methodological use, online simulation gaming might be an instrument of empowerment and could raise consciousness as to the actor's position and changing power. The notion that social work practitioners should facilitate processes of consciousness and voicing of perspectives stems from the belief that many actors in social problem situations need a greater awareness of possibilities and options to effect positive and radical improvement, and that it is necessary to stimulate senses of ownership and to enforce capacities of control. Narratives, scenarios and reflective dialogues in online simulation games aim at critical thinking and the will to use personal capacities to fashion situational circumstances and collective arrangements to meet collaborative interests and ideals.

In discourse participation, clients and social practitioners may have fundamental inequities. The most typical inequity is expressed as the portrayal of social workers as being entirely naïve to lived experiences of their clients (Healy, 2000). Many critical social theorists argue that it is hard or even impossible for social work professionals to fully imagine most of the adversities faced by people in multi problem and seriously deprived situations. The assumption is that collaborative work of online simulation games can help to better understand or even defeat these inequities, in order to join expert knowledge and practical experience in the achievement of developmental prospects or transformational change. The collaborative efforts in playful simulations, regardless of background, experience, education and position, might support a more equal participation, aimed at solutions, instead of positional power. In the longer run, we might investigate, if simulation gaming supports self-esteem and awareness of clients, by helping people to move away from notions of personal inadequacy and shortcoming as the cause of problems or disadvantage. For a better understanding of individual and group pathology of social problems, we need shared references as to broader social categorizations of deprivation and deficiency in society (Healy, 2000). The question is if and how simulation processes could generate feelings of connectedness, control and empowerment, and a greater awareness of opinion and esteem. Participating in the exchange of narratives, scenarios and experiences could possibly help to analyze shared appreciations of deeper structures that underlie individual situations. We are interested to see if knowledge development through online simulation gaming helps to redress imbalances of power and accountability between workers and clients, although this is a research goal that lies further ahead. An important condition is that the simulation guarantees a revaluation of the actor's knowledge and experience and of client-expertise, and the assurance of optimal transparency of the roles of professionals and clients in strategies of decision and control. Voicing perspectives in social work situations could demand that we consider some conceptual contributions of critical social science and activist social work (Healy, 2000; Parton & O'Byrne, 2000; Payne, 2005). In order

to be able to even start understanding problem situations of other people, we should be able to interpret social problems against the background of overarching social structures in their social, cultural and historical totality (Healy, 2000; Hofstede et al., 2010). Through analysis of structures of social change and power relations in contemporary and historical studies, we can seek the provision of insights for individual and social transformation. We should not forget that studying conflict situations can help to understand power relations. If, in the views of critical social theorists, we understand the power dimensions of dialectical struggles of opposing social groups or classes, we might conceive of the irreconcilable, conflicting interests between groups that are inside and those that are outside circles of power and domination (Freire, 1972; Mullaly, 1993; Healy, 2000). According to *the conflict perspective* of Mullaly (1993), the power of individuals or groups reinforces and reflects structural inequities of winners and losers. To some critical theorists, alienation and oppression, as well as power and domination, are societal positions that are structurally determined. Positions of dominance, power and wealth are effects, rather than creators of the social system. The notion that people both produce and are produced by societal structures is relevant to understand situated problems and how they have come into existence. This view on power in social situations acknowledges that, although persons are shaped by social structures, they are also capable of altering them. We can imagine that simulation gaming can function as an appropriate tool for the study of social systems.

Further investigation will be necessary to know if simulation gaming could function in a broader scope of participation in e-discourses[44]. Simulation games could offer playful and practical ways of 'inter-thinking', thinking collectively, to engage with the ideas and perspectives of other people and to open up dialogues with different worlds, unknown cultural life worlds, story worlds and dream worlds. If we want e-discourses to serve the improvement of quality and effectiveness of social services, then we need to know how to integrate them in practical ways of working. The risk and the gain could be in unraveling cognitive dissonances and unexpected revelations about problems, situations and solutions. Contemporary social work needs new participation structures that acknowledge the interdependency of problem, actors, situational facts and interventions. The question is whether online simulation games, as e-discourse platforms, could contribute to the practices of social work (Fietkau et al., 2003). In e-discourses, we can exchange ideas, not only as text, but also as speech, as images and other expressive utterances that suit specific cultural and social circumstances. Databases of e-discourse contributions can be used for further research. Analyzing e-discourse elocutions could perhaps lead to situational information that would be hard to uncover by other approaches. The epistemological study and ontological use of representational results in stored e-discourses is subject to agree-

ment of all contributing actors (Fietkau et al., 2003). Practices of simulation gaming and reflective dialogues could be important for inter-subjective agreement on interpretations and findings about complex problem situations.

Reflecting on professional performance

Contemporary social work practice in the Netherlands is challenged for higher performance and a more proficient production of services (Duyvendak, Knijn, Kremer, 2006; Van Ewijk, 2010a, 2010b, 2012). During the last decades social work has been subject to changing policy views, innovative strategies, and new paradigms of management control and funding, mostly orientated towards better provision, equitable access and improved professional quality (Hortulanus 2004; Van Vliet & Boonstra et al., 2004; Van Ewijk, 2006). The over-heated innovation cycle in social work is mostly generating lots of anticipating hope, and leads often to disappointing outcomes. In many cases, innovations seem to evaporate, without durable results. Disappointing outcomes might be caused by the rigidity of formal systems and thwarting efforts to keep things the way they are. And yet, in daily practice, social work professionals are regularly faced with ethical and professional dilemmas that are too comprehensive to be solved on an individual level, and that need unconventional approaches (Van Doorn, 2008; Van Doorn et al., 2013). It is imperative that practitioners communicate and share their proficiency, strategies and choices of intervention in order to contribute to high levels of accountability and evidence-based practice. Autonomous processes of client-led development, worker-client relationships and reflexivity are vital elements. And yet, practical knowledge is difficult to articulate, because of the variety and complexity of contextual and heterogeneous conditions (Polanyi, 1967; Nonaka & Takeuchi, 1995; Lam, 1998). Constructivist evaluation and reflection in and on practice are recurrent professional high quality tasks (Schön, 1983). Constructivist evaluation consists of two main stages: discovery and assimilation (Guba & Lincoln, 1989). Professionals and social work organizations ought to be open to the assimilation of new facts, feelings, perspectives, stories and impressions of their clients and colleagues, and they should welcome the knowledge impact of innovational dynamics of external societal institutions into existing constructs of social intervention (Lam, 1998). For this, it is essential to engage all stakeholders with their different 'claims to truth', their concerns and virtues (Healy, 2000). The elicitation of implicit and tacit knowledge of actors in problem situations is of great importance for the performance of individual social professionals, networks and teams (Schön, 1983; Nonaka and Takeuchi, 1995; Lam, 1998; Baumard, 1999).

In the past decades, ICT showed little potential in enhancing professional exchanges and evaluation. ICT focused mainly on administrative needs. Recently, however, new ICT-initiatives emerged to reach new clients and offer e-health care on an individual and, if de-

sired, anonymous level (Warschauer, 2004; Riper et al., 2007; Cavanagh, 2007; Riper et al., 2010). Notwithstanding the success of e-health, its character is dominated by directional care-giving models of the 'knowing' expert versus the 'not-knowing' client. Social welfare and care institutions are discovering the use of the Internet for outreaching methods to activate experiential knowledge amongst clients and in social networks (Baart & Keineman, 2008). Till today, social work practices in the Netherlands do not make a diversified use of the online possibilities for reciprocal exchanges of information and expertise between professionals and the social networks of clients. The proposition in our research is that we can develop and use role-playing games, as device and model for knowledge elicitation, for knowledge exchange and the enhancement of professional performance, for data mining in certain situations and for specific target groups, for reflection-on-action and as a tool to support social intervention. Simulation gaming can be fun and effective to revitalize social work professions and to enhance professional performance. But first of all, it is important that social practitioners learn to game and game to learn, in order to get a clear picture of the esteemed value and significance of simulation gaming from the users' perspective.

Situated cognition is a philosophical perspective on knowledge construction that values descriptive models in a paradigm shift from a transfer view to a modeling view on situational knowledge, expertise and know-how (Lueg & Pfeifer, 1997; Kirshner & Whitson, 1997; Clancey, 1997; Studer et al., 1998). Every human thought and action is adapted to the environment that is situated, because of what people perceive, how they conceive of their activity, and what they physically do and develop together, under specific circumstances and conditions. Clancey (1997) compares this with riding a bike: a physical activity from the perspective of situated cognition. Thinking is, like riding a bike, a re-coordination of postures, in balance, ways of looking and seeing, and in sequential movements. Cycling is about the immediate and automatic interconnection of perceiving, conceiving and moving. Situated cognition is the result of studying how human knowledge develops as a means of coordinating activity, within activity itself. This means that the feedback, occurring internally and with the environment over time, is of paramount importance. Knowledge therefore has a dynamic aspect in both formation and content. This shift in perspective from knowledge as stored artifact to constructed capability-in-action is inspiring a new generation of researchers of situated and experiential learning. If knowledge is defined as descriptive modeling of how the world appears and of how to behave, we can learn to understand human expertise by analyzing strategic thinking and reasoning in social situations. Descriptive modeling, or symbolic cognitive modeling, reveals how people relate words and meaning to experiences, plans and decisions, and supports contextual studies of sense making (Clancey, 1997). Thinking about the situated nature of learning,

and remembering and exchanging these insights are proficient methods and tools to enlarge and strengthen spheres of professional activity and communication. Studies of cognition, reasoning and learning have shown how a beginner's reasoning differs from an expert's, how people learn from failure, and how experts select models to support change and to defeat wrong behavior or miscommunication (Brown, Collins et al., 1989; Salomon, 1997; Higgs, 2008). The descriptive modeling approach has revealed how people relate words and meaning when they read, how problem solvers opportunistically and strategically narrate goals to plans and limited resources, how decision makers sort through ambiguous, uncertain data, and so on (Clancey, 1997). We want to know, if simulation gaming can incorporate descriptive models to automate routine operations or to train new behavior and action in unknown or hazardous situations. Most knowledge acquisition techniques take place in static domains (Sidani and Gonzalez, 1994, 2000) and have difficulty in handling dynamically changing information and circumstances, such as in social work practices. What we need is an efficient methodology to gather and to represent situational and experiential knowledge, whether conscious or implicit, professional or nonprofessional, and to analyze outcomes in close cooperation with all actors.

3.5 User expectations, requirements and prerequisites

The central aim of the practice inquiry is to get a clear picture of the user-expectations and to obtain a good level of comprehension of how to design and moderate simulation gaming for knowledge exchange in youth care networks. The user-expectations should provide with ideas and pragmatics of game design in the professional context of youth care network. The introductory presentations and trial tests with simulation games[45] in the contexts of existing organizational programs aimed at the identification of the main requirements and prerequisites for implementation on levels of organization, professionals and research. As argued above, the respondents showed a diverse interest in the potentials of simulation gaming for network and workplace learning. Our discussions revealed many crossroads of appealing directions towards a variety of possible uses of simulation gaming for network exchange and eventually, for other purposes, such as intervention and client support. From the several trial versions and test simulations in institutional programs, we learned that experimenting with simulation gaming in organizational contexts might lead to unwanted and unproductive effects and behavior. The participating workers found it difficult to integrate the experiments in their daily work routine. We noticed that experimenting on this level asks for a meticulous preparation and training of the people involved. This appeared too difficult and unfeasible at this stage of research. Among managers we noticed hesitation and reluctance to organize the proper conditions for rigorous research and development within the organizational context. This is understandable in

view of the operational demands of time and energy that goes along with experimentation. As we shall see in chapter 4, operational managers dislike the messy processes and noise that belong to experimentation and innovation. Moreover, at the stage of the practice inquiries, we still lacked basic evidence from end-users in social practices to substantiate the assumed benefits and that could guide the design of our approach. To support the integration in work practices, organizations need experiences, insights and views from the envisaged users (professionals and/or clients), as to relevance, usability and usefulness of simulation gaming. Relevance is the foremost criterion, grounded in operational usability and functional usefulness. We estimated that the relevance of simulation gaming increases evenly to the levels of practicality in teams and networks and of utility for professional proficiency. When the levels of usability and usefulness are high (optimum performance and high utility), the relevance of tool and method is likely to increase. Reversely, when usability and usefulness show low scores (problematic performance and little value), the relevance of tool and method probably decreases. (Figure 8).

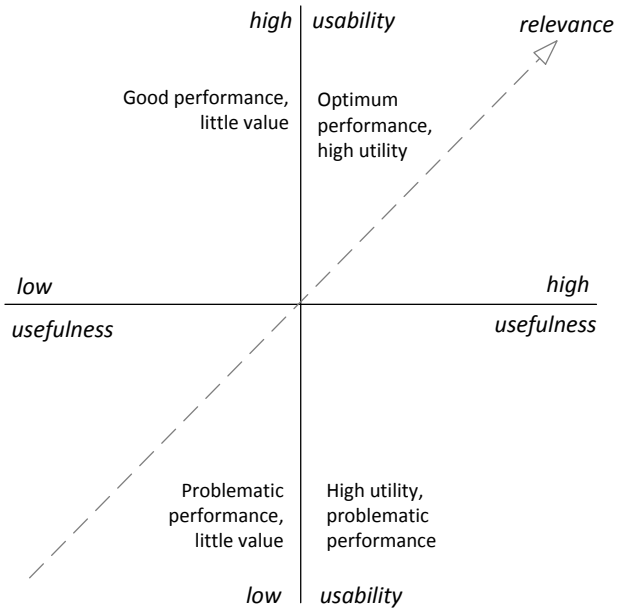

Figure 8: Relevance, usability and usefulness relationship

We refer to the interconnectedness of relevance, usability and usefulness in chapter 6, when we describe the user-experiences in the multiple case study and in chapter 7, when we give the final conclusions of this research.

The respondents expect that online simulation gaming functions as an empirical instrument for the exchange of opinions, experiences and knowledge between experts of all kinds, and for data explorations, in which all stakeholders of social problem situations are

involved. They state that online role-playing simulations might help to reveal things from the experienced past, through the exchange of views, and might support the sharing of perspectives on the perceived present and the dreamed future. The respondents believe that competencies that are specific to face-to-face contacts, cannot be modeled in online variants of communication. In other words: they foresee limitations as to online contact and communication and consider the possible use of online simulation as an extra tool to support regular conferences and practice investigations. Organizations are aware of the significance of studying processes and products of network exchange for the betterment of social services and understand that analyzing the content of the application's database could uncover unknown or hidden patterns, facts, and phenomena. Social professionals attach a high value to the representational quality of simulations and they stress the need of co-creational ways of the design of paraphernalia. Another important aspect refers to the ethical dimension of using session data for the analysis of professional performance. In line with the professional standards that apply to the privacy of client data, we must figure out how to deal with personal details about professional behavior in simulation games. This issue is further explored in section 7.4.

We were interested to learn for which category of problems and situations this tool might be appropriate. It became soon clear that our respondents associated online simulation gaming principally with complex problems and dilemmas. Apparently, a relative small number of really difficult practice problems require the bigger part of care service attention and energy. The practice workers confirmed at different occasions that the advancement in really complex practice situations is often unsatisfactory and lengthy. Quite often, the poor alignment and coordination in networks of different care organizations is part of the problem, and assumedly part of the solution. They asserted that the collaborative study of professional rationality in network exchange could be the key to the enhancement of the performative quality of care services in multi-problem situations. Confronted with the possibilities of extended, online deliberation, the respondents confirmed that simulation gaming could reduce the duration of certain severe cases, and perhaps lead to better, durable development and change in this type of problematic situations. They acknowledge the condition to find the right participants and to make the right choices of design and implementation. The practice workers think that online simulation gaming is more suitable for complex and complicated situations, in which multi-reality perspectives compete for priority and influence. In most interviews, we discussed the suitability of various practice cases as input for online simulation gaming and we can summarize the main criteria of suitability as follows:

1. *Recognition*. The problem, dilemma and situation must rely on the recognition and acknowledgement of various disciplines and many youth care professionals. The contextual particulars are not too detailed and leave enough space for interpretation.
2. *Complexity*. The problem is labeled as complex and complicated and not easy to solve in other, more regular ways. Various problems in the situation are interwoven and difficult to entangle.
3. *Multi-reality*. The problem is influenced by different, eventually conflicting, perspectives of reality, by various direct actors in the situation and network. The case allows a diversity of opinions, experiences and standpoints.
4. *Participation*. The problem remains open to multi-disciplinary approaches and to various levels of know-how, inclusive of context and content expertise from clients and their social network.
5. *Open-ended*. The case is open-ended and does not cover (hidden) solutions. The case description prompts questions about the situation, about what has been done, about what should be done, and about what else could be done.

A recurrent issue in our discussions was how to establish the desired practice validity of game design in the context of the relating program aims. Which choices are crucial to evoke the right discussion, action and interaction, and to stimulate dialoguing and reasoning? It appeared to be difficult to respond to this level of technical questions, though the professionals acknowledged that a rigorous two-way transfer of exchanges between practice and simulation environment is of vital importance to establish credibility of content. A noteworthy advice from practice was to accept flaws and imperfections, shortcomings and inadequacies of information and network constellations, when simulation addresses problematic and complex care situations. Convincing resemblance to existing practices implies the allowance of all sorts of ambiguities and uncertainties. Incomplete pictures of complex situations should be part of the representational quality of simulation games and the challenge lies in excavating situations, supplementing information and in reasoning about filling the missing pieces in the puzzle. At the same time, the respondents state that qualities such as referentiality, transferability and relevance are not depending only on the design choices. They believe that, just as in regular networks, the commitment of the actors, their efforts and personal assets and conduct have much influence on the processes and outcomes.

Managers of social care organizations assume that simulation gaming helps to advance organizational, team and individual proficiency and expertise. At several occasions, re-

spondents pointed at the expected value of simulation gaming for the reinforcement of chain cooperation and stated that they expect that simulation gaming can be employed for unprecedented co-construction of solutions in problematic contexts. Many possible objectives passed in review, when we discussed the potential relevance of this, such as learning and training; the alignment of combined action; cooperative ways of practice research. The practice experts think that the immersion in different roles and practice approaches in simulation games might be a strong and attractive element in training for real practice. They think that the learning effects can be high, provided that the game concepts are defiant and attractive. They advocated a certain level of hazard and competition to enliven game interaction, and suggested the involvement of context experts for feedback on design and results. When asked to indicate practice needs that might benefit from a specific use of simulation gaming, the respondents gave many suggestions. They suggested that simulation gaming might be important for the elicitation of hidden disciplinary and expert know-how. When discussing the agenda of network activities on a general level, the respondents confirm that youth care networks share, develop and clarify situational cognition, strategies, and accountabilities. As explained before, we consider this triad of network operations as the core of model development and model appreciation in this research. The concepts have been developed as sensitizing concepts of 1) investigating situational knowledge, 2) strengthening partnerships and 3) justifying choices of intervention.

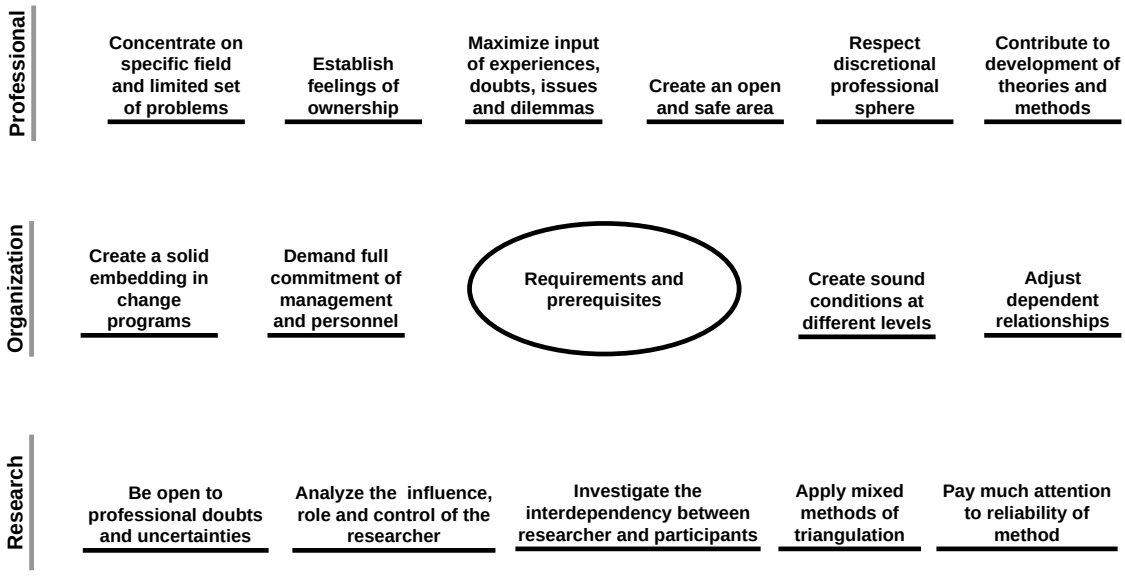

Figure 9: Requirements and prerequisites

Figure 9 shows the recommendations and statements from the interviews, as practical requirements and points of attention for the design and implementation of simulation games in youth care practices. We wondered what the respondents would say about the per-

ceived practical conditions and content requirements for effective implementation. Analyzing the interview statements, we can list the points of attention on the three levels of perception: that of professionals, managers and research. The interviews touched on a broad range of subjects, all related to practice knowledge, proficiency improvement, empowering clients and to organizational and institutional goals. We searched for useful clues to make the right choices and organized them in the above displayed categories of professional, organization and research.

Below we give an explanation of the requirements and prerequisites for design and implementation of simulation games for youth care practice, as derived from the practice inquiries.

1. *From a professional viewpoint*. All respondents agree to the necessity to balance online consultation with offline deliberation and to embed computer mediated communication in face-to-face contacts. Learning is supposed to become effective in extensive debriefings and by well-defined programs of transfer of results to practice situations. This point indicates the significance of a clear definition of the design requirements, including the strategies of recruitment of participants and of moderation, transfer and follow-up.
    a. To achieve a maximum of clarity in complicated and complex problem cases, the care workers advice to concentrate on a demarcated and limited set of problems and to search for the essential elements that determine the situation. At the same time, they state that multi-problem and multi-actor situations often show a strong interconnected mix of problems, all related to the same context, which problematize the selection of these essential elements.
    b. Youth care workers have a strong professional awareness and discretion. They appreciate having control and a feeling of ownership of action and interaction about issues that concern their field of reference. It is important to respect the discretional professional sphere.
    c. Simulation games should be created as safe environments that maximize the input of all sorts of issues, experiences, doubts and that support questioning perspectives and arguments.
    d. Encourage actors to contribute to the development of theories and methods. Online simulation gaming could help to gain better network skills and serves to demonstrate, train or assess professional competences. It might even be possible to test certain aspects of methodology or theories in the experimental environment of online simulation.

2. *From a managerial viewpoint*. Once, it has been decided to devote the organization to the innovation of tools and methods of online exchange, full commitment of management and personnel is conditional. The input from the actual users (the professionals) is paramount to get a valid view on possibilities and their significance for work practices. Organizational experiments can provide a solid foundation for the development of theories and methods. The use of simulation gaming for organizational ambitions is justified, although one should be careful not to combine or interchange different objectives. Incongruences might appear between individual in-game objectives of professionalization and external program objectives of organization. Team managers and supervisors see advantages of the use of simulation gaming to elicit organizational knowledge and to activate commitment to goals that serve the organization as a whole. However, professionals might prefer objectives that serve professional knowledge-to-action repertoire and network proficiency. It is advised to avoid serving two master at the same time and to remain attentive to the protection of a free flow of mind in simulation games. Uncertainty about the objectives and vagueness about the use of the stored data might hinder free, authentic and open-minded exchange and thought experiments in simulation games.
    a. It is important to create sound conditions and stimulate the full commitment at different levels of management, teams and individual workers. Simulation gaming cannot be done in the margin of daily practice. The most important condition for effective implementation is to give this way of working an integral position in normal practice, right from the start.
    b. Avoid that simulation gaming is seen and used as an annex or as a temporary experiment. It is compulsory that a simulation shows a close relation to the program objectives for which it is designed and implemented. Successful implementation of simulation gaming for knowledge exchange requires time to ripen. Everyone involved must receive sufficient chances to adopt to this way of working. Fruitful effects of simulation gaming can only be attained through learning and transfer of outcomes to real practices. This needs time to develop.
    c. Adjust dependent relationships of simulation gaming and the way this relies on other tasks and responsibilities in practice, networks and teams. Make sure that the actors experience immediate rewards from their participation, for instance in work pleasure, learning or time-effectiveness. Relate objectives of expertise enhancement and team or network development to choices of game design. It might be wise to start on a small scale and to learn by doing.
3. *From a research viewpoint*. If user-experience is the focal point, it is sensible to pursue interactive and co-constructive ways of artifact development and game design. This does

not imply a co-constructive research method. We want to investigate online forms of practice research, by looking carefully into collaborative ways of the construction of meaning. From problem definition to system reduction and artifact design. And from the actual knowledge generating processes during the simulation sessions to the discussion of meaning and transfer. The co-construction of value and significance of processes and results from simulation gaming, with all participants involved, is in principle a validating strategy. The content and shape of simulation games must have a close resemblance to practice situations and must show a high relevance for the users, which asks for co-constructive ways of design. The envisaged actors need to be addressed as experts in their professional field and should operate with a maximum of freedom of choice in action and interaction, although it is wise to provide a certain structure of game principles that guides the session members toward the realization of the desired outcome. The interaction should enroll as autonomous as possible, without any interferences or interventions from outside. The game master task (moderation) must be directed only on functional aspects (using the application) and not on processes or content. It might be clear that these conditions relate strongly to the type of game that is applied and vice versa. At this point, we refer to section 3.2, about different forms of play. Technological obstructions as to handling the functions in the application should be avoided at all times. As the actors have no previous experience with simulation gaming and their digital skills might be average, enough time must be devoted to the introduction of actors to the environment. Thorough preparations and instructions in face-to-face briefings with the participants are indispensable. The preparatory meetings must be motivating and clear goal setting with unambiguous agreements about the seriousness and the course and planning of the game. Once the simulation has started, it is important that the players obtain a clear picture of what happens in the course of a session. Therefore it is imperative to provide just-in-time information and feedback on game behavior. We need to spend much time and attention to the processing of impressions and learning effects, in debriefings after the game, and we must provide the participants with ample opportunities to exchange session experiences.

a. Encourage the players to be open to professional doubts and uncertainties during the game and in reflecting on processes and results. The principle aim is to learn and to experiment, and we want to stimulate the players to try out different attitudes and thought paths.
b. Be vigilant as to possible risks of influencing the participants' behavior and interaction. It is vital to exercise some restraint in explaining the research objectives to the participants during the briefing, to avoid that they unconsciously act

accordingly, instead of concentrating on the game objectives and on authentic role behavior.

c. Organize feedback from experts to avoid tunnel vision in design and interpretations and to guarantee objectivity, as much as possible. Discuss the interdependencies between researcher and actors. Pay much attention to the reliability of method, by asking feedback from experts on a regular basis. When simulation gaming is used for research, apply mixed methods of data collection and analysis. As we want to gain insight in the relationship between processes and results of exchange, we might want to use the complementary strengths of quantitative data of action and interaction and qualitative contributions of practice know-how. Although important, it might be hard to achieve validation, as the subject and approach of research are unprecedented and comprehensive. The ambiguities are related to the complexities and abstractions of practice knowledge development, professional proficiency, and network exchange. Moreover, we face the fact that the design and implementation of simulation gaming for knowledge elicitation is new in youth care network services.

The practice inquiries resulted in a set of summarizing and overarching points of reference for the next steps of research and for the design and effectuation of the case study. The considerations, related to these points, are given in the next paragraph.

3.6 Points of reference for the design of the case study

Organizations and workers are thrilled at first sight, when confronted with the possibilities of online simulations as learning environments and as playgrounds for practice research. They believe that modern online devices and methods are needed in care practices to reach (new) clients and to serve contemporary practices of contact, communication and learning. The practice inquiries aimed at getting a reliable picture of the promises and expectations as to simulation gaming in social work practices, and at demarcating the research field and research population. The outcomes are used to work out a multiple case study that must answer the main research question. We gathered contextual data, conditions, requirements and prerequisites, as guidelines for design decisions of simulation games for social practices.

We have seen quite different responses to the prospects of simulation gaming in the broader domain of social work. It seems, however that the actual needs and practicalities of youth care come closest to the alleged potential and opportunities. Some of the most prominent arguments to choose youth care, as research field, are:

- Youth care practices offer prime examples of collaborate design of future possibilities for change and development. In youth care, online simulation gaming is seen as a playful way to co-construct future scenarios and to experiment with the projection of change possibilities.
- Network cooperation, of all kinds and levels, plays a central role in youth care practices. It seems wise to concentrate first on the use by professionals. Once care workers have appreciated and learned to work with simulation gaming, it is conceivable to investigate possibilities of participation by clients or to employ the tool in interventions. The professional view on the potentials and possibilities of online simulations is essential for further development in youth care practices.
- It is imperative for youth care to cope more effectively with multi-problem situations. The assumption is that we might decrease the run time of complex cases, when we apply simulation gaming to find the best options and strategies of help, support and intervention. Simulation gaming might be a 'game-changer', when network partners are willing to take up an active role in sessions of investigating situations, elaborating options of intervention and projecting future development.
- Youth care is in urgent need of new methods, tools and skills to handle the increasing demand for help. The respondents assume that online simulations might contribute to the innovation of practices. It might be interesting to study possibilities to use simulation gaming to empower clients and their social network. It is likely that explorations of future scenarios through online simulation gaming help to redirect responsibilities to the actors in situations. Social care workers could support these processes, provided that they are well trained and skilled in the methodologies that fit this way of intervention.

As knowledge development and network participation are part of the most urgent needs in youth care, we believe that it is justifiable to dedicate the design of the multiple case study to network exchange and professional proficiency. We intend to choose a multi-problem case from several interesting problem situations that we gathered during our practice inquiries. As explained above, we have composed a list of essential criteria for the selection of appropriate problem cases. From the trial versions and test simulations that we used in the practice inquiries, we know that we need to develop the right expediency

of methods of design and implementation. Designing simulations for youth care implies incorporating the specific conditions of implementation and support that emerged from our practice inquiries and requires to develop methods of briefing, accompaniment and debriefing that fit well with average practice reality. We need strategies of analysis, interpretation and of the transfer of results to work practices. Although the respondents saw more options of using simulation games in practices, the first step is to investigate user-experiences as to the alleged value and significance of online simulation gaming for youth care network exchange. From the trial versions, it appeared that experimenting with simulation gaming in organizational contexts might not be the best option. The research questions require a full commitment and free engagement of candidates in the experiments, and ask to engage participants from a wide range of disciplinary expertise. It might be easier to comply with these conditional demands, when we recruit beyond the organizational context. We intend to involve professionals, who want to take part in our research from a personal interest in innovative, online devices in practices of knowledge development and network exchange of youth care.

We are interested in user-experiences, being the indicators to refute or confirm our design choices and method of implementation and to shed light on the appreciation of simulation gaming in youth care practices. It is for this reason that we propose to cluster the rest of the outcomes from the explorative practice inquiry in the earlier described dimensions of relevance, usability and usefulness. Although more options are imaginable, it is wise to choose these focal points, as they can be connected to three levels of analysis,: macro level of problem cases, meso level of network cooperation en coordination, and micro level of task performance. We expect to make an appropriate use of these levels of analysis for the results from the multiple case study (chapter 6). Relevance is related to the macro level of modeling problem cases in simulation games. Usability applies to the meso level of simulation gaming for network exchange and usefulness connects the micro level of simulation gaming for individual professional proficiency. These three dimensions are considered as being crucial to produce justified opinions about the design qualities and effects (case level), the effectiveness for network exchange (session level) and the utility of simulation gaming for the development of professional proficiency (task level).

THE ANTICIPATED RELEVANCE

The expected relevance of simulation gaming is an indication of the possible purposefulness and appositeness for network exchange about complex problems. The possibilities of co-constructing scenarios and exploring future developments seem to fit social practices and the general feeling is that youth care practice is in need of inspiring new methods and tools to reach better and durable results. The downside of the innovative character of sim-

ulation gaming is that we do not dispose over earlier practices and evidence that show that online simulation gaming is a valuable contribution to desired changes of professional work. This means that we have to start evolving design methods and theories. It appears to be too early for comparative effect research. Moreover, we assume that digital practices are still rather alien to social work practices, where face-to-face communication prevails. Another constraint is the estimated difficulty to effect experiments with simulation games in practice organizations. Youth care practice simply lacks the necessary experience and conditions to design and implement simulation games in relative autonomy, at this moment. We have to find methods and strategies in our design that allow authentic and genuine performance of practice experts in every stage of this research. The best way to achieve this, is to seek close cooperation with practice, to work out tailor made requirements of content and effectuation and to analyze and discuss in-game processes of emergent human behavior and their possible meaning for intervention in practice. This approach asks for a multi-layered interpretation, in the stages of design, effectuation and evaluation, as explained in paragraph 0. To gain deep insight in processes and interaction, we study the organizational complexity of simulation games from a researcher's point of view and we try to understand the organized complexity of a game from the perspective of the player. This leads to the assumption that reflective dialogues on processes and effects are vital to get a good comprehension of the value and significance of processes and effects in simulation sessions, provided that these reflections are confronted with the analysis of design and implementation.

THE FORECASTED USABILITY

The concept of usability is employed to indicate the probabilities of simulation gaming for operational efficacy and satisfactory outcomes, when applied in youth care networks. The respondents think that online simulation gaming might support a better understanding of inter-disciplinary reasoning and network strategies. The playful interaction could encourage positive network cooperation and may even stimulate competitive ways of participation and engagement, to add know-how and creative thinking to complex situations. Simulation games are seen as playgrounds to forge partnerships and develop strategies, starting from the unique potential of the problem situation and the network constellation. The most appealing advantages of Cyberdam are the relative transparency and accessibility. The basic and simple look and feel of Cyberdam is an adequate feature for professional knowledge exchange, as it may help to keep the focus on the actor interaction and on the content of exchange. It is, however, essential to develop the digital environment in further directions that optimize its purposes in this particular field of use. The application has the

unique quality that it is fairly easy to develop virtual environments that are uniquely devoted to a particular field of reference, such as youth care, only accessible to authorized persons or networks. Youth care networks are in need of effective and contemporary, flexible instruments for knowledge elicitation and empowerment that may add value to the existing repertory of tools for cooperation and coordination. In view of the major changes in youth care for the coming years, it seems wise to build a substantiated opinion on the utility and practicality of simulation gaming for youth care network exchange from a series of practice-based experiments, in which professionals participate from a wide variety of professional expertise and experience.

THE PURSUED USEFULNESS

Usefulness tells us something about the advantageous and beneficial effects of simulation gaming for the advancement of individual professional proficiency. Impact studies show that simulation gaming can be used as a dynamic and attractive e-learning environment. In social professions, practice learning and the development and exchange of practical know-how are essential and integral elements of work practices. Our respondents affirm that it is worthwhile to find out, whether online simulation gaming is a smart and cost-effective way to enhance professional proficiency and to explore individual capabilities, talents and competences to deal with major dilemmas and complex problems from practice. They expect that the self-organizing and transactional features of digital simulation, combined with the possibilities of role-play and game elements, might provide the right impetus for workplace learning. When professionals test their views on well-defined problems in scenarios that are developed in playful and cooperative laboratory approaches of online simulations, it is likely that uncertainty and apprehension in responding to difficult practice problems can be addressed. The anticipation is that preparatory work in simulation games enhance the professionals' ability to think and act more flexible or creatively in real practice, when it comes to dealing with complex and hard to handle situations and networks. It goes without saying that the ambitions in this respect depend largely on the scaffolding program of professional development and workplace and corporate learning. The interests involved are considerable, taking into account that professional uncertainty easily leads to lack of control and hesitancy and sometimes even to inertia in social problem situations. When situations deteriorate, this may not only lead to an increase of personal and family tragedies, the redirecting to better conditions and positive development will only get more difficult (and expensive). Well-timed and effective help depends heavily on proficiency in networks of social care services, as the interviewed professionals affirmed. The empowerment of workers in simulation gaming might inspire their work with clients, and help them solve social problems in context. Practitioners are searching for new means and methods to explore complex situations and to collaboratively make sense of

difficult to interpret facts and perceptions. The respondents think that online simulation gaming offers chances to improve professional competencies and to monitor and assess progress in this respect. It is, not unthinkable that simulation gaming leads to conflicting levels of commitment to the effects and results from sessions. Sessions may reveal details or insights that are regarded upon as unsafe, uncomfortable or inconvenient. It is important to establish a feeling of ownership by the participants and to create an open and safe area, in which playful experiments are possible and mistakes are seen as chances to learn. Social work is a professional arena that is subject to many criticism and discussion on effectiveness. The anxiety is that doubts and uncertainties, as a result of criticism, lead to negative effects on professional confidence and proficiency. Simulation gaming might be useful to create professional awareness and to restore self-esteem.

3.7 THE POSITION OF THE RESEARCHER

As discussed on various occasions in this chapter, there is some concern about the position of the researcher, who is at the same time designer/developer, moderator/facilitator and observer/theorist. We need to analyze the influence, role and control of the researcher continuously, in view of scientific standards, and we must discuss all choices and interpretations with practice experts. In this research & development project it is virtually impossible to position the researcher purely as an observer, studying the world of the practitioners. At this stage of development, it is not yet feasible to grant full responsibility to youth care professionals and their organizations to make use of the application and to design and implement simulation games at their own choice, pace and discretion. In the figure below (Figure 10), we give a preview of the three-stages approach of our research in order to illustrate the alternating positions of designer, facilitator and observer. The three-stages approach itself is explained in section 6.4.

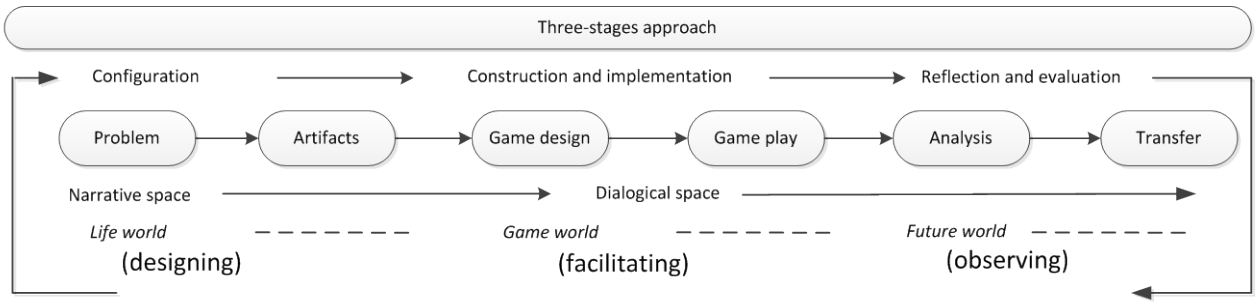

Figure 10: Designing, facilitating and observing

In this research & development project, we are creating and investigating phenomena that do not yet exist, although we have an idea about the nature and value of what we want to achieve. We have an imprecise outcome value in mind, and we have to discern the patterns of relationship in our approach to achieve this. The transformation of simulation gaming tools and methods must be figured out in strategic design proposals for the 'what' and for the 'how', while testing and improving at the same time. Dorst (2013) refers to this problem solving challenge as to 'design abduction'. The researcher has a strong influence on the elaboration of concepts and contents, and therefore he must use as much feedback as possible from practice and other specialists. During our practice inquiries we have made preparations to install a committee of experts[46] from practices of youth care, centers of expertise and supervision, research and vocational education. We discussed with them all choices of design and implementation and the intermediate results, at various stages of data gathering, analysis and interpretation. We intended a maximum of transparency as to data from sessions of simulation games and the outcomes of the explorative inquiries, the questionnaires and reflective dialogues. It must be possible to effect meta-analyses of results from case studies and evidence-based practices to develop theories and methodology, concerning the use of simulation games in youth care practices. With the outcomes from these analyses, we can define in which contexts and under which conditions the tool of simulation gaming can be effective and how we may advance methods and theories. At the same time and with the help of the data-base connected to the application, we can work on the development of a benchmark of quality criteria, standards and protocols. It could be useful to generate a classification of characteristics of simulation games, to serve as a reference for game design in different practices of intervention.

The practice inquiries helped the researcher to formulate 'an organized set of hypotheses, formulated as reasonable assumptions, to establish the relations between the design and the functional properties of the simulation game' (Kalman & Rehnman, 1961). This approach produced starting points for the design and effectuation of simulation games in view of the collection of empirical evidence. Our 'reasonable assumptions' apply to online simulation gaming in networks of youth care and are based on the above described outcomes from the practice inquiries. They are formulated as follows:

1. The quality of knowledge exchange in youth care networks is of crucial importance to successful intervention and can be improved.
2. Online simulations encourage authentic and relevant professional knowledge exchange and offer chances to study network processes and results of collaborative explorations of problem cases.

3. Insight and better understanding of knowledge exchange support propositions for the enhancement of the coordination and collaboration in networks of youth care services.
4. For the reflection on results from simulation sessions, we need overviews of in-game behavior and produced session know-how. We have to develop tools and methods to structure the big data from simulation games.
5. Reflective dialogues about the processes and results in simulation sessions with all actors involved may provide understanding and enrichment of network cooperation and professional proficiency.
6. To analyze the unpredictable and capricious courses of interaction and exchange in simulation games, we need theories and methods that sprout from the domain, in which the simulations are effected.
7. The impact of simulation gaming increases proportionately to the degree of success in the transfer of outcomes and effects to real practices and to the efficacy of networks and individual professionals.

3.8 Final remark

At the end of this explorative search, we may say that the subject covers a broad scope of learning, change and views on simulation gaming. The field of game design theories and practices is spread across many disciplines. This makes it hard to formulate statements as to the feasibility and possible effects of simulation gaming for knowledge development and network exchange. For that reason, it is advisable to gradually build experience and knowledge, by starting case studies of simulation gaming in a well-defined area of social intervention, such as youth care. The inventory of design choices and practical options, as proposed by practice experts in the explorations in this chapter, are a first step towards the design of simulation games for learning and change. However, before we can proceed with the design and effectuation of a multiple case study, we have to build the necessary expediency of design and implementation. Chapter 4 reports about the development and effectuation of simulation games in curricular programs for future social professionals. These newly developed simulation games helped to create the appropriate design fundamentals and implementation strategies. In the next chapter, we describe how we related the micro cycles of designing artifacts to the macro cycles of programming learning activities for professional competence training (Klabbers, 2009).

FOUR

4 Pioneering

MATCHING CURRICULAR PROGRAM REQUIREMENTS WITH THE FUNCTIONAL QUALITIES OF ONLINE SIMULATION GAMING

Abstract

By associating narrative approaches in youth care practices with choices of game design and game methodology, we may find out how users perceive the benefits of online role-playing simulation gaming to enhance youth care network exchange. To achieve a full comprehension of simulation gaming in youth care practices, it is imperative to link simulation design to program objectives for which the game is intended (Klabbers, 2009). As experimenting with simulation gaming within organizations appeared beyond reach, we seized the chance to develop seven new simulation games for different curricular programs of higher vocational education. The design of these games had to follow program requirements such as subject matter, objectives, target audience and professional context of action. Despite their mutual differences, all seven games had to afford the training and demonstration of competent behavior and performance in settings of social professions. The verification of theories about designed artifacts depends on their performance in programs. The design of the artifact should therefore be consistent with the program objectives and scaffolding curriculum activities. Conversely, programs may be affected likewise by the learning experiences in simulation games. This may cause tensions between steadiness and innovation. Aspects of reliability, productivity and refinement are as important for the stability of programs, as exploration, creativity and innovation in experiential processes (Holmqvist, 2004). The simulation games caused instability and dynamic variety in learning programs through their features of experimentation and didactic novelty. When programs are defined and conducted by a variety of teachers and methods, this instability and dynamic variety can be handled through strong commitment and well-coordinated participation of all actors involved. The project of the seven new games helped to advance the necessary practicalities of linking artifact design (design-in-the-small) with program design (design-in-the-large) and to test a range of implementation strategies (Klabbers, 2009). The aim of the present chapter is to describe the gradually evolved method of game structure, design and implementation. First, we present the context of the new simulation games. After that, we highlight the design fundamentals, which we consider appropriate for knowledge elicitation in dynamic, normative practices.

Keywords: design fundamentals; learning and change; simulation gaming; implementation strategies; design-in-the-small and design-in-the-large; balancing learner's abilities; role-play simulation games; game infrastructure.

[This chapter is based on Haaster, K. J. M. van (2009). The Seven Pioneers. In: *Learning in a virtual world. Reflections on the Cyberdam research and development project.* H.Warmelink & I.Mayer (eds.). Nijmegen: Wolf Legal Publishers: pp. 43 - 66.*]*

4.1 Developing design fundamentals and implementation strategies

This chapter describes the evolution of design fundamentals and implementation strategies of simulation games to support professional learning in people professions. Seven e-learning simulations, referred to as *The Seven Pioneers*[47], were produced for seven curriculum programs, divided over four institutes of the faculty of Society and Law of the Utrecht University of Applied Sciences. The general purpose of the games was to train and demonstrate professional skills that relate to genuine practice performance in social contexts. The project offered the chance to advance the expertise, methods and instruments for the design, implementation and moderation of simulation games for knowledge elicitation and network exchange in professional practices. Though the educational context of the games differ from youth care practice, the particularities of professional exchange and network skills show much similarity. The variety of contextual requirements in the different programs provided us with a broad scope of design choices and challenges in professional practices. The new simulations were expected to offer chances for experiential learning, to bring knowledge into action, to support the training of professional skills, and to prepare for performance in practice. The idea was to use simulation and role-play in practice based scenarios about confronting situations or complex dilemmas. The role-playing participants played individually or in teams, and tutors and other program staff acted as game master and as assessor or non-playing character in the game. The challenge to players was to develop a good comprehension of roles, positions, interests, perspectives and interactions, and to establish an adequate team cooperation and session competition. In our approach the co-construction of simulation games, with all program staff involved, is an all-inclusive program that extends from scrutinizing the actual state of a practice problem, through the analysis of session performance and careful reflection on outcomes, up to and including the follow-up and alignment in curricular programs. We were aware of the fact that this ambition could conflict with ingrained educational practices and that the introduction of simulation gaming could ask for a review and adjustment of certain program elements. The project served also to design, test and elaborate the interface and to develop artifacts that are useful for online simulation games in social contexts. We wanted to evolve the necessary narrative and interactive tools to enhance the 'look, feel and touch' to professional standards and to optimize the communication variety of the interface. The application is designed to support interaction through a built-in mail server; however, we wanted to expand the possibilities to other forms, such as chat, instant messaging, headers, and phone messages and face-to-face encounters of players in the space between virtuality and reality. Essential to principle-based[48] simulation gaming is a balanced combination of play and game, control and freedom of choice, and an environment that reflects

real practice with task challenges in the 'zone of proximate development' of the participants.

In this chapter we introduce the various simulation games that has been developed. We shall highlight the design fundamentals for online simulation gaming in social professional contexts. We present a model, based on the design fundamentals, which was applied to guide the development and implementation of the seven games. Finally, we reflect on the results and learning effects, and we end with implications, which are relevant to the multiple case study in this research. On several occasions we shall describe interesting remarks that were made during a round of reflective interviews with the co-developers (curriculum developers; n=14). These remarks illustrate the search process of simulation design and occasionally we shall give examples from the *Vision* game, which is one of the seven new simulations. The *Vision* simulation game has been extensively tested and evaluated and provides for occasional exemplification of the consistency between artifact and program. It should be noted that in *The Seven Pioneers* the focus is on design and implementation, and not so much on user satisfaction or effect[49]. As explained in the 2nd chapter, we believe that narrative, constructivist methods can be combined in simulation games to comply with the demands in social professions. A second interest is to establish ways of online exchange about dilemmas from practice. A third matter is the focus on creativity and experiential learning for professional performance. Simulation gaming offers opportunities to integrate play and game methodology in learning processes and we believe that experiments with new technologies and devices could stimulate theory development and method innovation in education as well as in professional practice. As the development of the application was a new and incremental process, we had to overcome many technological constraints and we needed to use creative and pragmatic solutions to problems that were completely novel. The educational programs required that we arranged for backups and alternatives in case of malfunctioning of the new virtual environment. Apart from technological obstacles, we felt that in social professions, where face-to-face communication (F2F) prevails, the taste of computer-mediated communication (CMC) needs some persuasion. We stressed the advantages of a-synchronous and time-delayed participation of online learning. The combination of viable practice situations, role-play and the opportunity to take time to search for answers or reactions offer favorable conditions for the preparation of task performance. Following many theorists on the subject, we pointed at the benefits of contextualized information search, social and constructive learning, collaborative performance in workplaces and teams, and of bridging formal, non-formal and informal learning (Kayes et al., 2005; Prensky, 2006; Shaffer & Gee, 2007; Kolb & Kolb, 2008). We noted that the integration of online simulation games in training programs demanded

new or adapted trainer skills and the review of trainer-student interaction. New in all curricular programs was that the seven simulation games afforded individual coaching that could be effected time-and-place independent. It appeared difficult for tutors to find a suitable strategy of instruction and assessment within the capacities available. This was mainly due to the fact that simulation gaming was still an unusual didactic instrument. In the long-term evolution of the *Vision* game, we noted an increase of skills and adroitness to deal with the didactics of simulation gaming in e-learning environments.

For curriculum development, it is an interesting question, whether simulation gaming can be an effective didactic tool to offer new chances for learning and curriculum enhancement. Simulation gaming in educational contexts enables reality experiments with the integration of knowledge to practice. We suppose that this favors the future professionals' understanding of work practices, methods and skills, while gaining awareness of dilemmas and work complexities. Processes of learning (reflection) and doing (action) in simulation games can be mutually supportive (Crookall & Thorngate, 2009) and therefore the focus of the design is on the action-knowledge symbiosis. Session experience is used for reflective observation and abstract conceptualization, in cyclic orders of action-to-knowledge and knowledge-to-action. This demands feedback loops about learning in scaffolding face-to-face activities. The interchange of play (action) and dialogue (reflection) is one of the most convincing arguments towards building support for online knowledge exchange, as we learned from the practice inquiries in chapter 3. Another argument was to enable low-risk experimentation. One of the most important challenges for all seven game developers was to find out to what extent the simulation had to reflect real-life situations and how the transfer between the professional world and the game world could be made. In order to gain insight and hands-on experience, we had to start experimenting and studying the effects.

4.2 SIMULATIONS IN CONTEXTS OF CHANGE

The simulation aims at 'an operating model of a real-life system' (Duke & Geurts, 2004) and serves change or learning objectives of the system that is represented. This means that the goals in a program should define the features of the design framework (Klabbers, 2009). Conversely, it is well possible that the possibilities and options of simulation gaming influence the choices or objectives in a program. It is of eminent importance that developers take time to think about this reciprocity and study theories and practices of simulation gaming and their possible impact on learning and change programs. When developing simulation games, the focus should be on the relationship between the program goals (design-in-the-large) and the model goals (design-in-the-small). Klabbers (2009) uses this distinction to denote the differences between social change in larger pro-

grams of learning or enhancing practice situations, and the choices and construction of artifacts that help to make the transformation possible. Figure 11 illustrates the relation between the change program and the simulation model through the most important stages in the design and implementation process.

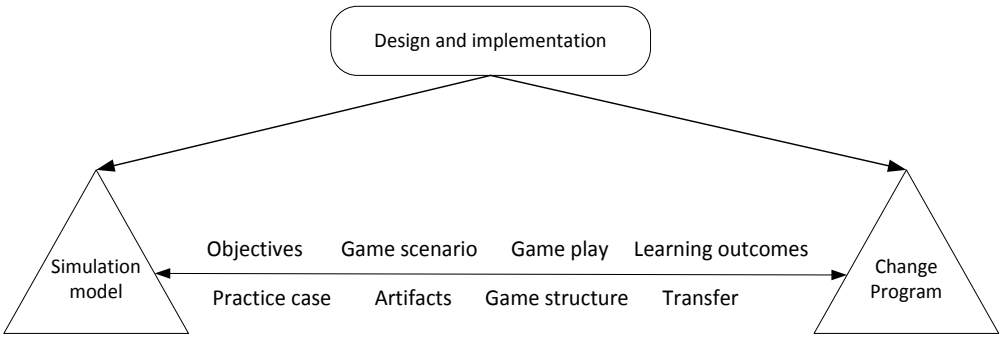

Figure 11: Aspects of design and implementation

We started studying and discussing the curricular programs, in order to get a clear picture of the objectives and learning activities in each simulation game, and to consider if the idea of employing simulation gaming would arouse new program options. We had to decide why a simulation game would be the right instrument to reach the objectives, the desired performance and envisaged product in a certain program. We paid special attention to the coherency and consistency of the overarching curriculum and the design choices for the simulation game. All further steps and stages of development depend on the balance of the decisions of design 'in the large' (program) and the resulting design options 'in the small' (artifacts). For 'people professions', like social work, narratives, storytelling, voicing, interpreting and dialoguing, are evident, as we have seen in the 2nd chapter. With the computer's central position in this project, it was obvious to construct and use narratives for the creation of explicative models that would show the dynamics of complex professional situations and that would support operations in social systemic conceptions. We think that, in professional arenas with deep and fast changing dynamics, it is imperative that (future) workers learn to be 'flexible purposive' (Eisner, 2002). This implies that professionals are competent in adapting their objectives and operations to new situations and emergent change. Multimodal representation of narratives help to visualize the interrelationships in system disciplines from a holistic perspective and when used in simulation scenarios, narrative interpretation may support flexibility and adaptation to external changing conditions. Multimodal approaches induce analytic and creative thinking and support multilingual expression and understanding. The use of digital media enables the merging of text, video, audio and effect to build stories that can be used as resources in simulation gaming. Narratives in stories, inquiries, interviews, through audio, film and

photography can bring forward vivid representations of problems and contexts in discourses. For each of the seven simulation games, we correlated the curricular requirements (competences, learning objectives, and envisaged outcomes) with the design aspects of narrative artifacts, such as websites, attributes and game documents. In all cases we started with an event from a practice situation as a replica of a professional dilemma or problem that offered enough room for the elaboration of the program requirements. We think it is important to use appealing events from practice, conceived in holistic representations, as substantive material for simulation interaction. We intended to apply creative design concepts that would follow realistic professional standards and challenge dynamic discourses of static content (plots, scenarios, stories) and constructed narratives (dialogues, interpretations, interactions). We stayed close to the curricular objectives for the design of the simulation games, and emphasized that adaptation in the relevant programs could be necessary, as a result of the use of this new tool. The best option is to start from scratch and to evolve the program and the simulation game at the same time, although this was not possible in all of *The Seven Pioneers*. The integration of simulation gaming as a didactic tool in an existing program could pose serious threats to success, as the risk of adopting a new tool in and old program easily results in a weak relationship with the program philosophy and with the scaffolding educational activities. This particular issue, the integration of innovative techniques in current practices of education, appeared a bottleneck in some of the programs, as we shall see later on in this chapter. The impact of the simulation games varied considerably in the seven curricula. The *Vision* game, for instance, received lots of chances to grow and to improve over quite a long period. The *Vision* game demonstrated a good coherence between all parts of the curriculum program, however difficult it appeared to maintain and develop the consistency. Figure 12 presents a schematic outline of the *Vision* game[50].

THE SEVEN PIONEERS

As we really felt that we entered a new world, in which we had to find new paths, new skills and methods, we refer to these seven new games as to '*The Seven Pioneers*'. Each game was constructed by curriculum developers, who had no previous experience with the application, nor with simulation gaming. As said, the impact of simulation games on learning and on program development is substantial. E-learning games alter the didactic style and workflow and have a specific effect on interaction and on learning processes. Although not comparable to internships and real practice learning, in simulation games learners come close to situations of connecting knowledge-to-action and vice versa (Shaffer, 2006; Moreno-Ger, 2009). The game developers and their teams showed varied levels of awareness of the program requirements and of the demanded within-program cooperation.

The *Vision* game

Type of game	The Vision simulation game. Vision is a role-play game that encourages problem-solving, effective communication, responsibility, creativity and entrepreneurial skills in small teams. The constructivist and collaborative way of working is indispensable in this type of simulation and does not allow for much intervention by tutors during the game.
Program	Social policy in social work. Social policy participation by professionals from different social work organizations.
Playing field	Situated in the virtual city of Cyberdam, five social work professionals from different sector organizations participate in social policy development.
Objective	To train systems thinking and systems operations through policy preparation in social work chain cooperation. The aim of the game is the collaborative development of a vision paper on an actual social work theme, resulting in a policy advice, presented to local authorities, and a narrative dialogue with clients that are involved in this policy advice (face-to-face, but acting in as-if situations).
Didactics	Seven weeks of lectures, tutorials, and workshops. Teachers cooperate and adjust content and approaches in order to reach consistency and high quality. Contents of the program are collaboratively developed, evaluated and improved. The alignment between lectures, tutorials and the simulation game is a continuing concern.
Game concept	The game concept is based on elements of cooperation and competition. Game activities are stimulated and frustrated by the interdependency of players in the cooperation chain and are based on the joint development of a collaborative vision on an actual social work policy theme. The main characteristics are project management of inter-professional collaboration and content management of a co-constructed vision.

Figure 12: The framework of the Vision game

At the start we asked program leaders and curriculum developers to reassess the requirements and most eloquent didactics of the program involved. We encouraged the strength-

ening of coherence and consistence between the simulation content and scaffolding program parts. This was essential for the alignment between tasks and coaching strategies. Besides, simulation games require a specific task-technology fit that matches the envisaged learning behavior of students and the didactic practices of trainers and tutors (Goodhue, 1995, 2006). The performance impact and the way the simulation is utilized define the way, in which the task-technology fits the program requirements and simulation tasks. Reversely, the introduction of simulation gaming leads to new didactic and instructional options, in particular as to learner responsibilities. The discussion about the task-technology fit and program requirements, such as the assessment of session performance, was one of the most prominent issues of consideration in each of the seven simulations. Our experiences show that it is necessary to effect several tests and subsequent improvements, before a game model reaches a good level of instruction, implementation and evaluation. It takes time to get adroit in design and implementation and to optimize the embedment in the program. Online simulations change the thinking about programming, learning and instructing. There is a serious risk that tutors and trainers stay close to well-known paths of education. They need time to train themselves in the particularities of tutoring e-learning and to acquire new didactics of simulation gaming. We organized meetings for knowledge exchange among developers and the sharing of good practices. At the start, much effort is needed; however, input and time investment decreases as soon as a game fits well. A model evolves through consecutive actions of evaluation and improvement. The goal is to make the simulation model simpler, easier to handle and more effective. To guarantee a certain pay-back on investment and a steady continuation of curriculum development, it is crucial that teams take care of knowledge transfer and of the advancement of results with online simulation gaming. Figure 13 gives an overview of the seven pioneers[51].

THE SEVEN PIONEERS

Curriculum	Game	Brief description of the game
Social Work	*VISION*	Social professionals collaboratively develop vision statements for policy development in the context of local chain cooperation
Social Welfare	*DILEMMAS IN OUTREACH CARE*	Individual assessment of procedures about dilemmas around a hard to reach client in a multi-problem situation
Social Management	*ASSESSMENT ON PARTICIPATION*	Assessment game on methods and instruments of participation and activation in the context of community work and social management
Security Studies	*SAFE AREAS*	Participants build public-private cooperation to support safe entrepreneurial activities whilst forming and encouraging sustainable partnerships
Pedagogy	*YOUTH POLICY*	Playing realistic roles in professional practices of education and child-rearing. Participants contribute to institutional discourses on youth policy
Professional Law Studies	*HEALTHY STUFF*	Starting from a case with disastrous consequences in the context of private law, the actors bring together various sources of information and gradually build a dossier and litigation report
Social Legal Services	*MATERNITY LEAVE*	Acknowledging the historical, cultural and political differences of international and comparative law

Figure 13: Overview of the Seven Pioneers

4.3 DESIGN FUNDAMENTALS

In this paragraph we describe how the design elements of simulation games in programs of vocational training gradually evolved. The design fundamentals emerged from development and testing and from coaching the teams and game designers. First, we discuss the distinction between play and game. After that, we explain the design choices for game principles, strategies, resources and for the reinforcement of immersion in game interaction. We discuss some design aspects that may arouse learner behavior, teamwork and task performance in the simulation sessions. Subsequently, we present a general infrastructure of game models and explain how we applied a seven steps overall method of guidance through the design and development process. Finally, we look back on the learning effects, with regard to the design and implementation method and strategy of online simulation games for professional proficiency.

BETWEEN PAIDIA AND LUDUS

For many game developers and methodologists Johan Huizinga (1872-1945) is an important reference with regard to the meaning of play in culture. Huizinga states that play is *"a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules, freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy, and the consciousness that it is different from ordinary life"* (Huizinga, 1938). It is widely acknowledged that play is important for learning. Play and game have spiritual dimensions that resonate well with our learning abilities. Huizinga states that 'one can deny seriousness, however, not play'. In play we recognize spirit, because play is essentially not physical. Play breaks through the physically existing world and stimulates our imagination. In play and game we imagine change and progress and we may envision objectives and strategies to attain certain results. For the development of *The Seven Pioneers* it was important to acknowledge the differences, relations and complementarities between the words game (form of play with rules or principles) and play (free-form). Both diverse and broad concepts served as basic theories for the game developers to understand possible functions for learning. Makedon (1984) gives a clear distinction of play, as subjectively grounded in the player, and game, as objectively grounded in rules or principles. Both terms are interlinked in the concept of playful gaming. There are countless forms of play and game, as Roger Caillois states: *"La multitude et la variété infinies des jeux font d'abord désespérer de découvrir un principe de classement qui permette de les répartir tous entre un petit nombre de catégories bien définies. En outre, ils présentent tant d'aspects différents que de multiples points de vue sont possibles"* (Caillois, 1958, p. 45). In view of this immeasurable variety, a basic game classification can help game developers to decide what general game strategy would be appropriate for the learning objectives in a particular game concept.

Game strategies for e-learning must serve the curricular objectives in the first place. Besides that, a well-chosen game concept contributes considerably to the engagement of the actors and the quality of the learning experience. The distinction Caillois made between *Paidia* for free-forms of play and *Ludus* for rules and principle-based games offered a guiding principle for *The Seven Pioneers*. Paidia and Ludus must be understood as extremities of a gradually shifting variety of flexible possibilities. Free-forms of play for simulations can be used to explore situations without a leading purpose, or to engage different stakeholders in exchanging know-how, experiences or knowledge about an openly defined subject. Principle-based games (Ludus) are used in contexts that need some predefined structure and outcome. Rule-based games are not at issue here. They are used when in-game behavior needs a close prescription, as opposed to a more or less free involvement of the players (Salen & Zimmerman, 2004). Each of *The Seven Pioneers* responded to a limited set of principles and objectives from the program, for which the game was intended. The relative freedom of in-game behavior is conditional to demonstrate professional competences and a certain dose of principles and directions are directed to achieve predefined program objectives and outputs.

FOUR CATEGORIES OF GAME STRATEGY

Caillois placed the Paidia-Ludus continuum in the perspective of four different, yet interlinked types of game activities, as *"un petit nombre de catégories bien définies."* Caillois describes the four categories: mimicry, agôn, alea and ilinx. We used his categorization to determine the structuring game strategy of each of *The Seven Pioneers*. 'Game strategy' is used to indicate the package of rules and principles that is applied to serve the simulation design objectives of each game. The choice of game strategy is based on considerations about program objectives, study culture, student behavior, and professional practices. Besides, game strategies help developers, tutors and participants to test and evaluate the outcome of sessions. At evaluations, we returned regularly to this categorization and to the applied game strategy.

1. *Imitation or simulation (mimicry)*, as in role-play and in simulated practices. Although this strategy is important in each simulation game, it is more dominant in *Vision*, *Youth Policy* and *Maternity Leave*. Role-play can have various forms and effects. Playing one's own role or taking the role of another person makes a difference. Roles can have explicit descriptions and instructions, depending on the purposes of the program and the simulation. Role descriptions can also be created by the actors themselves. Role imitation allows perspective change, transformational learning

and experimenting with future development scenarios. Roles can be assigned to single players or to teams.

2. *Competition or assessment (agôn)*. Competing for optimum results with the game system or with other players. Competition is the main strategy in the games *Assessment on Participation* and *Safe Areas.* Teams, roles or sessions may compete on an array of different professional tasks, such as the best results or the quickest or most effective strategy. When roles are attributed to teams, different groups can compete with each other, for example, to find the answers or solutions that are most appreciated by the people involved in the real practice situation. Even organizations could compete with each other, either in different sessions, or in different roles within one session. It is possible to invite content experts, specialists or clients, to judge role, team or session performance, as non-playing actors.
3. *Dealing with chance or unpredicted, unforeseen events (alea)*. In this strategy the actors have limited control over game results, and must show their ability to cope with unanticipated or sudden changes and interferences during a session. In *Outreach Care* and *Healthy Stuff* the developers incorporated some unexpected and dynamic elements to challenge adequate behavior. Such elements may concern fresh information or the introduction of a new participant. Other examples are an unexpected phone call or an invitation to meet face-to-face with role-playing persons outside the game environment, who might reveal certain, hitherto unknown data that can be brought back into the game session.
4. *Handling risk or disruption and disorder (ilinx)*. In Caillois' theory ilinx or vertigo refers to activities that change or disrupt regular perception, balance and movement, such as in fairground amusements and mountain climbing. If we interpret ilinx as 'playing on the verge of balance and control', we might use this game strategy in simulation games that engage players in risk management in order to challenge competences to survive difficult and hazardous circumstances. In social professions, it is sometimes necessary to disrupt regular perception patterns from real life (turning situations upside down) and to break through patterns of expectation and behavior. Theorists on creativity (Ritter et al., 2012; Yang et al., 2012) argue that new ideas are triggered by unconscious processes that might be provoked by sudden change or unexpected experiences. When we try to interrupt conventional paths of reasoning and handling, new ideas might erupt that can be calibrated as to suitability and viability.

The four categories of game strategy can be combined to allow players more or less control. To give an example, if a game is developed from the concepts of agôn (competition) or mimicry (simulation), players experience more control over process and outcome. With

alea and ilinx, sudden events and unforeseen circumstances minimize or even obstruct the actors' control. Game strategy is an important consideration with respect to the envisaged in-game behavior and desired role performance. By applying smart combinations of the four categories, richer game scenarios might evolve. Blending alea (chance) and mimicry (simulation) may create a realistic behavioral problem situation. In e-learning simulation, competition makes sense, when we want the actors to compete for best results. In certain professional practices, people need to learn how to deal with hazardous situations. In that case, game elements of alea or ilinx can be used, to learn to deal with sudden changes, risks and stress. If the participants must learn to explore the perspectives and interests of opposing parties, elements of alea could be mixed with agôn.

All of *The Seven Pioneers* were guided by the didactic principle of 'experience and knowledge-in-action', to make the game action and interaction challenging and appealing to the participants. After the first experiments we came to the conclusion that the 'fun factor' in most of the new games was too low and the task challenge was too high. Successful learning in simulation gaming rests on a good balance between game-pleasure and game-challenge. In simulation games, participants enter the 'magic circle of playful gaming' (Klabbers, 2003, 2009). Immersion may lead to excitement and to discovering challenges and strategies of better task performance. Immersion depends on design choices and on the quality of the contextualized artifacts. It is important that these choices resemble professional life, to guarantee the players' recognition. The production of artifacts can be done in collaboration of the designer and the players in a session. Through interaction and performance in a session, value is added to the artifact descriptions and in debriefings, the participants may reflect on qualities of the produced game artifacts. Qualitative criteria for session artifacts are derived from professional practice and are adapted to anticipated session behavior. The artifacts used in *The Seven Pioneers* are role and object descriptions, websites, texts, chat, game documentation, video, digital storytelling, and live actors. We think an appealing story line and good narratives are important resources for immersion and for the learning processes and results. Session interaction and performance should be analyzed and evaluated in connection to design choices on the one side, and standards of professional proficiency on the other side.

PRINCIPLE-BASED GAME DESIGN

Despite differences of content and program, all seven games can be classified as principle-based games, as opposed to free-form and rule-based games. In rule-based games the actors obey to strict rules and the outcome is predefined. The actors must follow the pre-developed course of the game. In rule-based games, the objectives and actions are elabo-

rated in advance, as accurately as possible. Rule-based games are suitable for the training of attitudes or competences that are clearly defined. Free-form games have hardly rules or no rules at all, like free improvisations on the piano or like kiting and hiking. Principle-based games have guiding principles and resources that structure the performance of participants, without precise prescriptions of action and interaction. Principle-based game design combines the robustness of responsible judgment and skilled behavior with the flexibility of professional discretion and the freedom of choice in action and interaction. This type of game design contains a certain risk of misinterpretation of assignments and of expectations and may lead to unpredictable, even disappointing outcomes. The actors must show their capacity to interpret and understand the simulation through guidelines and principles. Principle-based games are used to elicit tacit knowledge or to activate hidden potential of the participants or to demonstrate expertise and proficiency. In other words: the simulation should function to produce data that are unknown beforehand, like expert knowledge or individual capabilities as creative thinking or problem solving.

LEARNERS' ABILITIES AND MOTIVATION

In e-learning simulation games, an effective intersection and a fine-tuning of the the pedagogical content and the game model are essential for the learning outcomes (Mishra & Koehler, 2006). We developed the online simulations by evolving the relationship between input (content requirements), throughput (simulation game and learning processes) and output (performance and results), against the background of the learner's abilities and motivation. This model appeared effective and is likewise used in the multiple case study, described in chapter 6. One of the first design challenges was to find out, in each distinctive program, how to stimulate the student's motivation and learning pleasure. We noted that there are several ways: through the game concept, the rules of the game, the creative design of game artifacts, and the shaping of interactions, relationships and assignments. In fact, all of these aspects contribute to the immersion qualities of a simulation game. We valued the importance of each design model to convey meaningful actions and interactions, and to support dialoguing and reflective argumentation on problem case, learning processes and outcomes. We were aware of the fact that this requires a good estimation of the learner's motivation, abilities and competences. In each of the game concepts, we supported the intrinsic motivation for learning, by encouraging self-reliance, self-responsibility, autonomy and flexibility of the players. Another important feature that we wanted to use, was peer-interaction and peer-feedback. In the games *Vision*, *Safe Areas*, *Youth Policy* this received much attention. Strategic management and strategic thinking are specific accents in *Safe Areas*, *Assessment on Participation*, *Maternity Leave* and *Outreach Care*. The introduction of critical events to influence processes and actions, plays an important part in the game concept of *Healthy Stuff*. The construction and development of practical

knowledge is a general objective in all seven games, as well as the increase of expertise, the exploration of perspectives on professional practice and the progress of competences in each field of reference. However, all seven games revealed different meta-cognitive skills. To give some examples, critical and analytical thinking is a quality in the games *Maternity Leave* and *Healthy Stuff*, whereas challenges to creative professional performance can be found in both *Vision* and *Outreach Care*. Teamwork conditions are important in *Safe Areas*, and the training of individual professional competences appear particularly in the games *Youth Policy* and in *Assessment on Participation*.

The drive to fully engage oneself in playful gaming comes from two kinds of motivation that are both present in the new games: achievement motivation and competence motivation (Elliot & Dweck, 2005; Klabbers, 2009). Achievement motivation is generated by tasks that are not too complicated, nor too easy. Game tasks must appear in the zone of proximal development (Otha, 1995; Klabbers, 2009) and must stimulate players to improve their accomplishments. Competence motivation refers to the encouragement to solve problems. Achievement motivation can be stimulated by assigning different levels of performance to roles and tasks. Competence motivation can be augmented by affording a variety of approaches, technics and methods to come to solutions. In each game, achievement motivation and competence motivation play parts in different types of tasks: collaborative, cooperative, individual and competitive assignments. For example, in the *Vision* game, there are five roles in a session, each representing a different sector/organization of Social Work, and every role is assigned to a team of three students. The teamwork enables to differentiate task levels of achievement and expertise (e.g. as manager, expert or client), whereas role-play may inspire team cooperation. The quality of both game design and tutoring is rooted in the correct linking of tasks to the learner's abilities and motivation, which might be the most difficult aspect of designing and implementing successful simulation games for education. Designing online simulations asks for highly skilled curriculum development competences and an excellent view on the abilities and motivational factors of the learners. For the new games, we focused on achievement and competence motivation, although there are more sources of motivation in simulation games, such as social engagement (socializing and building relations) and immersion in play itself (Yee, 2007) and strictly individual motivational variances as age, skills, education, experience, self-image. We assume that socializing, building and maintaining professional relationships are vital motives for youth care professionals to engage themselves in online exchange. Students might be interested to enlarge their insight in professional practices and to experiment with self-images in role-play. We have to be careful with generalizations and suppositions about motivation of participants, as the potential variance of reasons to get involved in

online knowledge exchange and the different backgrounds to learning and change is infinite. The development of *The Seven Pioneers* stimulated us to think about motivation and to consider motivational factors of participants as an important source for design and evaluation.

Participant feedback during the *Vision* simulation gave us a good impression of the quality of the challenges in the game and their correspondence with the players' learning abilities and motivation. During the first year we endured many technological problems with the application and hosting. Despite these critical circumstances, we observed that students remained uncomplaining and understanding. In general, students appreciated the new didactic experiments and the efforts to introduce modern media in curricular programs, and they accepted the unpredictable, technological inadequacies of the 'system-under-development', in the early tests. Even under difficult and often non-game-like circumstances, students were considerate and supportive. There are all sorts of possibilities to engage external advisors, either as co-designers or as game masters. It is probable that the participation of external experts enhances the motivational features, yet, more importantly, this might increase the learning benefits. Interaction of actors and practice experts is fairly easy to accomplish, in design, effectuation and evaluation or assessment of session performance. In the many sessions of the *Vision* game, we noted that most of the actors were over-challenged by the work-structuring requirements of the game. Generally speaking, project planning in *Vision* was under-performed. The simulation game offers sufficient chances for good results and as the actors worked in small teams, the blend of session actions made it possible to assign different types of tasks, such as cognitive, creative, or social oriented assignments to individual preferences of interest and competences. And yet, the participants had many problems in their teamwork and needed better process tutoring (outside the game). Teamwork and the coordination of tasks, acting responsibly and reliably, and being engaged as real professionals, are strenuous tasks that need to be trained. From this, we learned how important careful game instruction is, in briefings and in game documents. The more the players are engaged in the defining or interpretation of session tasks, the more efficacious there in-game behavior will be. Besides that, we noted that smart offline tuition is fundamental. A game master, as a non-playing character in the simulation, is indispensable for just-in-time help and to monitor the interaction. The importance of offline tuition and training can hardly be underestimated.

TUNING ARTIFACT DESIGN AND PROGRAM DESIGN

Game design, within the limits of this research, is a way to structure human organization and interaction in view of knowledge exchange. If we can see a game as a temporal reality environment, with particular rules and behavior, we might accept the idea of a game as a

social system. A system in which the actors establish, respect and evolve a mental and physical infrastructure in view of the creation of social and intellectual capital. Many theorists (Giddens, 1993; Klabbers, 2009) have defined games as social structures that mark the boundaries of social organization. Actors, who are engaged in the social structure of a game, maintain, test, even stretch or change the framework and rules of action. By recognizing, respecting and evolving the social structure, the players demarcate the inner world of the game, with respect to the outer world. Social structures differentiate between 'in' and 'out', 'us' and 'them, 'now' and 'then', and between 'here' and 'there'. The game structure initiates action and interaction and a session produces a social organization with values, norms, believes, perspectives and ideas (Klabbers, 2009). In simulation design, we prepare and optimize the conditions for the growth of social organization in a simulation session. In guiding the actors through a game, we try to influence these conditions on individual and team level. As we are interested in processes of sharing knowledge, we may energize interaction that aims at the use of session resources. Sessions are infrastructures that organize intellectual and social capital in teams. Nahapiet et al. (1998) elaborate the relationship between social and intellectual capital. They describe different combinations of access, anticipation, motivation and abilities of people to share and create intellectual capital, through cognitive, structural and relational dimensions of social capital. These dimensions might help to analyze the influence of social assets, such as trust, values and norms, identity, responsibility, on intellectual assets, such as shared codes and languages, meaning and significance, perspectives and strategies. The structural dimension is conditional and reveals the appropriateness of the organization and configuration of actor relationships and network ties. The cognitive, relational and structural dimensions are important considerations for the design and evaluation of online simulation gaming for knowledge exchange.

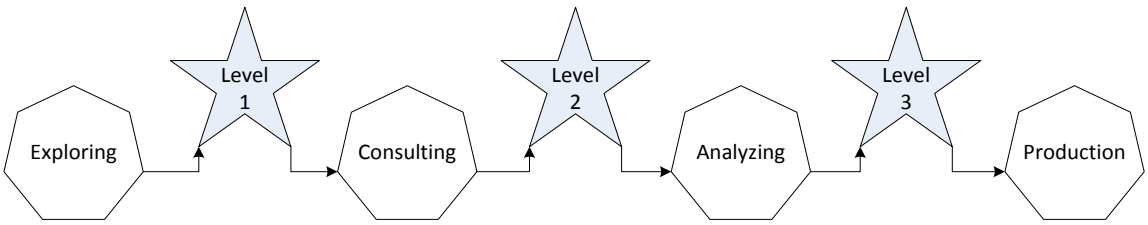

Figure 14: Model of a game overview

Figure 14 reveals in a simple way how we can deal with some pragmatic concerns of the development of a game infrastructure for new games. An important step, when working out a game structure, is drawing up sketches to get a general overview of the envisaged game. Such an overview visualizes the headlines of phases, levels and tasks. In fact, the

game overview is the first drawing for the activity schedule in the game model[52]. We noticed that an overview helps to conceive a first level of understanding of the design tasks. In a game overview, the developer displays a first impression of how phases and game levels are interwoven in the design concept (Figure 14).

Designing simulation games appears to be a recursive and circular, creative process, in which developers make loops between program requirements and different design tasks. Program requirements may change as a result of design possibilities and design options are prompted by demands from the program. It might well be possible, for example that the elaboration of artifacts leads to new ideas about game strategies, or that certain game strategies bring forward new ideas of how to deal with levels of performance. It is exciting and inspiring to see how the outline of a simulation game emerges quite naturally from the consistency of program requirements, desired outcomes, and situational references. We decided to limit the number of phases in each game to seven or less, as we anticipated that having many different phases would complicate the simulation. Each phase can contain several activities. A developer might introduce four phases, in line with the program requirements, such as information search, exchanges or consultations, analyses of findings and production of results. In addition to that, the developer has to think about the interplay between game phases and game strategy. The game strategy should be derived from the concept and gives access to game levels. If, for example, competition is the leading game strategy, the developer has to work this out in various competitive challenges and rewards within the activities of the various phases. After fulfilling a challenge, requirement or assessment, the actor can pass to a next level. It is, for example, possible to change roles, or to acquire new information, to gain benefits or study credits at the threshold of a new game level. The game overview symbolizes an encouraging milestone in the development process of a simulation game. Yet, to the game developers, this initial preparation produced confusion and everyone found it rather hard to oversee the options and steps in the developmental process. Therefore, we drew a framework (Table 1) to give insight in the game development tasks, as a backbone to foresee and plan successive steps in the further process.

The classification of syntax, semantics and pragmatics (Klabbers, 2009) helped to describe the game overview, phases and elaboration of all parts. The syntax defines the outline and general draft of a game (macro). The semantics describe the game resources on a meso level of characteristics, roles, objects and game information. The pragmatics (micro) are specified in the final state, in what is called the game manifest, and describe the details in order to actually play the game. In the grid of Table 1, the workflow of syntax, semantics and pragmatics is shown in the dominant and subordinate sequence of steps 1, 2 and 3.

In *The Seven Pioneers*, we worked from a rough sketch in the game overview (1), through defining resources (2), to the more complex and detailed work of the game manifest (3).

	Syntax	Semantics	Pragmatics
Game overview (1)	Curriculum context Position of the game Participants and logistic Envisaged outcome Game concept Game phases General game rules Learning activities Game monitoring, tutoring		
Game resources (2)		Game characteristics Performance and interaction Role and object descriptions Rules and instructions Task information	
Game manifest (3)			Planning and communication Learning strategies Didactics and scaffolding Tutorials Instructional design Task descriptions Assessment and evaluation

Table 1: Syntax, semantics and pragmatics (Klabbers, 2009)

SEVEN DEVELOPMENT STEPS

In this paragraph we explain how we proceeded with the elaboration of the simulation games. We followed a plan of seven steps that appeared to be effective as a general structure for all new games (Figure 15). After positioning the game in a curricular program (step 1), effective project management (step 2) is considered as a vital condition for the subsequent other steps. Step 3 concerns the game overview and step 4 (elaboration) is the most time-consuming part, in which all game resources are developed. In step 5, the game is edited in the application. This is a rather simple administrative operation, provided that all work in the preceding steps has been done carefully and without mistakes. After editing, prototype testing (step 6) serves to discover irregularities and to improve the content or the course of the game. Although it is easy to change, repair or remove all kinds of activities, resources or assignments in the application, testing provides comprehension of how the game runs. Tests must be repeated several times, before the actual effectuation (step 7).

DEVELOPMENT STEPS OF ONLINE SIMULATION GAMING DESIGN

Steps	Tasks

1. Program selection	• *Positioning*
	  o *Within program*
	  o *Within curriculum*
	• *Practical implications*
	  o *Didactic*
	  o *Pragmatic*
	  o *Strategic*

2. Project management	• *Managerial commitment* • *Project planning* • *Building support*
3. Overview	• *Game result* • *Game concept* • *Game phases*
4. Elaboration	• *Narratives* • *Roles* • *Objects and characters* • *Rules of the game* • *Task descriptions* • *Scenario attributes*
5. Editing	• *Activity schedule (grid)* • *Game activities* • *Game resources*
6. Prototype testing	• *Didactic* • *Pragmatic* • *Strategic*
7. Implementation	• *Introduction (briefing)* • *Evaluation (debriefing)* • *Enhancement* • *Dissemination*

Figure 15: Development steps online simulations

Step 1: Program selection

For each game, the first issue was where and how to position the simulation in the curriculum. It is evident to discuss the position and impact of a new game in the program, from which the game content will be derived, and to analyze possible, reciprocal influences between game and program. It makes a difference to develop a game as a 'one-time event', or to develop cyclic practices of online simulation gaming. It is very hard to realize satisfying effects, when simulation gaming is a single event. People need time to integrate online

simulation gaming in their skills and should have the opportunity to experiment and improve their transactional learning skills. Building on previous experiences and trying out various strategies in different roles is very effective for learning in simulation games. The impact and benefits of simulation gaming in a curriculum grow in cyclic learning. It may be evident that the return on investment increases proportionally to the recurrent use of simulations in education programs. Continuity and knowledge transfer are key elements for durable results with simulation games. The program selection prioritizes a careful description of didactics, such as learning objectives, teaching method, and of pragmatics, such as planning and embedding in the broader educational context, and of strategies to determine the achievement or demonstration of competences and results. Depicting the didactics, pragmatics and strategies in step 1 and 2 helps to analyze relations between outcomes, processes and design choices in steps 6 and 7.

Step 2: Project management

Although our times are often referred to as the 'information technology age' and society is frequently recognized as a 'knowledge society', the general acknowledged value of e-learning and serious gaming holds an only marginal position in higher education. Computer-assisted environments for collaborative learning ask for pedagogical technics that are not always familiar among teachers. Many scholars advocate careful attention to the instructional conditions and to the learners' needs in experiential and transactional learning (Kolb, 1984; Baker et al., 2002; Feinstein, 2002; Kayes et al., 2005; Maharg, 2006). We have seen that it takes more effort to train tutors and teachers, than to train students to use the application. Students adapt themselves adroitly to digital media for contact and exchange. Asynchronous, distributed learning tools, like online simulation games, face uncertainty as to effectiveness. There is no doubt about the enrichment of learning processes; though the outcomes of research and field experiments show ambiguous results (Kreijns et al., 2003; Van Rooij et al., 2010). As to the use of simulation games, it appears very hard to pinpoint correlations between method and tool, perceived effects and scientifically proven results (De Caluwé et al., 2008). There is a wide variety of interdepending variables, when measuring the effects of online simulation. To strengthen the educational opportunities, there must be a proportional and appropriate attention to curriculum policy, managerial commitment, infrastructure, didactic implications and skills development. We think that effective project management is a vital condition to acquire commitment and the right embedding in teams. Simulation game development requires inclusive ways of thinking: every step must be thoroughly analyzed against the background of all other scaffolding program elements (lectures, tutorials, etc.). An imperative condition is that all teachers involved know the simulation game from experience. Playing the game is the best way to

comprehend the game concept and effects. Teachers, who are engaged in complementary parts of the program, may participate as non-playing characters, just to monitor the progression in sessions and observe the actors' behavior and performance.

Step 3: Overview

The next step is to decide what the envisaged results of the game are in terms of product, process and effect. A general overview of the game feeds the design decisions that relate to the objectives of the change program. Please refer to Figure 11, in which we related the simulation model to the change program through the main aspects of design and implementation. In this project we tried to find natural linkages between the anticipated in-game behavior and the most adequate game elements to arouse that behavior. In games, in which each role is played by a small team, it is possible, for example, to encourage cooperation within teams and competition between roles/teams. In games where the actors have to demonstrate their abilities to deal with swift changing circumstances, the choice can be made to introduce unexpected events and instructions during the course of the game. As explained above, the games contained various game strategies: imitation, competition and chance, in an overall setting of cooperation. In a game overview, we outlined the game phases, paying particular attention to a logical sequence, and to the consideration of levels, type of activities and to the contribution of each phase to the desired total outcome. The overview helped to manage the relation between tasks, assessments and the admittance to next levels.

Step 4: Elaboration

Game scenarios for *The Seven Pioneers* were all built on realistic situations, taken from professional reference systems. Imaginative power and narrative techniques proved to be indispensable for scenario constructing and understanding. In this project, the scenarios and narratives evolved from literature search and evidence-based practices. We think that valuable scenarios can also be constructed through qualitative, narrative inquiry and co-creative collaboration of education and professional practice. The most obvious roles, characters and objects for the game emerged from the case situation that was selected. Deeper exploration of the case led most of the times to unexpected, and sometimes sidelined, alternative characters that were of equal or even greater relevance. Analysis of a case description during the design process may lead to different interpretations or to framing and reframing narratives. This can provoke shifts of significance and meaning of interpretations of the case, which might give a twist to the role and object descriptions that are used in the simulation. These examples point at multi-layered interpretations that take place at various moments. An important secondary effect of game construction is that it evokes deep search into practice. This is a quite essential part of good teaching; however,

it often gets little time in daily practice. Simulation design opens new possibilities in this respect. Artifact creation depends on thorough practice investigation. Although most of the designers created new artifacts for their games, it is possible to reuse or adapt objects and role descriptions that are already available in the application. An option is to ask role-players to design and elaborate their own role and object descriptions, which can be a quality learning activity. In each game, roles are linked to objects, such as a family therapist to an organization of social work, a solicitor to a law firm. It should be mentioned here that a game concept influences the selection and description of roles and objects. The information in role and object descriptions are complementary game resources that are relevant for players to achieve a good understanding of the problem case and of the game concept. Evidently, there must be a logical alignment of game concept, narratives and both role and object descriptions. Our game developers found it difficult to keep track of the interrelated elements of scenario development. They felt that scenario development required quite some creative imagination, and most game developers needed coaching and technical help. It is obvious that a well-informed view on current practices and professional dilemmas helps to create convincing narratives. Some of the pioneers asserted that the options and tools of the game-play environment can be improved, to allow for more game interaction. Apart from this, the quality of a game relies also on the intelligence level of the game-rules system and on how successful the game rules are translated in a package of realistic and yet evocative performance tasks. All sorts of special attributes, such as documents, protocols, checklists or practical examples contribute to a feeling of logical unity and realism. In the player's perception, there must be coherence between narratives, scenario and task descriptions.

Step 5: Editing

In the application, developers can use readymade templates to introduce their elaborated game resources. These templates serve as models to work out game resources, such as phases, assignments, role and object descriptions, scaffolding game instruction and case related information. Designers can, however, also create new templates. There are guidelines and formats, in logical steps, to enable a game developer to construct his/her own reusable template. A game template, or game manifest, consists of metadata, an activity schedule, the game activities, game resources, and optional variables (please refer to the appendix). We shall briefly describe these different elements of game editing.

1. *Metadata*. Metadata contain the name of the simulation game, a subtitle, an explanation and extra specifications, such as the number of roles. A status display can be used to inform players of the status and progress during the game. It might include dynamic

and interactive phase-related or task-related information. A heads-up display on the computer screen might show process information, such as a time table, to give the actors an overview of game phases and planning. This is also the place where interactive embeddable apps can be inserted, as well as photo and video material, a chat room, e-reading materials, a virtual dice roller, an online stopwatch or timer, et cetera.

2. *Activity schedule*. The activity schedule is a grid that shows the game phases and roles and helps to plan the different tasks over the course of a simulation game. This is a very convenient tool for game developers to get a quick impression of a game structure and to make easy changes in the progression of game activities. It is clear that the earlier explained function of a game overview, as one of the development steps, serves as a preparation to the activity schedule.
3. *Game activities*. This is a list of all game activity descriptions. Game activities can exert different functions. A step-activity marks the start or a new phase and the end of the game. The other types are message, upload, input and output activities. All together, these five functions represent a concise number of practical functions that support all types of game interaction. It is fairly simple to change contents or sequences of activities in the model, even during play. Each change made in the model is directly effective in sessions that make use of that model. There is a close connection between game activities and the schedule of activities. The activities reappear in the schedule and can be changed, replaced, repeated, or deleted, whenever necessary.
4. *Resources*. Game resources may cover extra information about the case, the game, the role, phases or activities. The multimedia character makes that resources may have different forms: text, image, sound, video, animation. Game resources are used as annexes to activities or messages, and can be edited, added or replaced at any time.
5. *Variables*. Game variables are advanced options to provide dynamic content to the game. A variable in the template can be used for scores, or for information that changes in the course of the simulation, like budgets or credits. Variables can also be used for special announcements and 'stock information' that changes from moment to moment. Variables can be applied at game level or role level, offering much flexibility in enhancing the game strategy.

Step 6: Prototype testing

Prototype testing is an essential design step, because test results often demand a partial reconsideration of game concept, scenario, task descriptions and artifacts. Prototype testing may reveal weaknesses or failures in game design or didactical approach. Tests of *The Seven Pioneers* demonstrated that failure often has to do with insufficient understanding of the possible effects that simulation gaming has on learning. Each game was reviewed in the context of the broader program framework of lectures, tutorials and trainings. The games

that were repeatedly tested and improved, were adapted carefully to the content and learning activities of the program and vice versa. We noticed that one of the most difficult aspects is establishing a good coherency of the simulation game with the rest of the program activities. This should be the first concern of evaluation and improvement of the content. It is of equal importance to test the embedment of the game in context. Testing should aim in the first place at the effectiveness of objectives, through the study of processes and outcomes, though it is also required to analyze the general expediency of the emerging didactic approaches and to disclose deficiencies in the full spectrum of operation. Prototype testing leads to a better understanding of the diversity of features and the way they are interwoven. However, it may be difficult to diagnose performances of simulation gaming and to relate effects and outcomes to choices of design and implementation. To handle the array of evaluative focus points, it might be useful to differentiate between didactic, pragmatic and strategic aspects.

1. *Didactic*. Intelligent briefing and effective introduction to the concept of the game and its rules are vital conditions. Briefings and instructions have to be carefully assembled and tested beforehand. The same applies to smart tutoring of learning activities by teachers and trainers. The quality of tuition has a crucial influence on learning results. Specific training and the exchange of experiences are indispensable. It is very effective to begin with the exclusion of possible defaults of briefing, instruction and tuition, when trying to understand flaws in the effectuation of games.
2. *Pragmatic*. A smooth logistic operation is essential for success, although any shortcomings are less discernable. Imperfections of support may cause hitches in the frontline of the effectuation. Preparation of testing and implementation includes all logistic provisions. Apart from the technical condition of a well-functioning server and application, each session needs careful handling of registration and log-in features, and of the allocation of roles to participants. In particular when larger numbers of participants are involved, these preparations call for a close cooperation with administration desks and helpdesks. This becomes more obvious in case of various, simultaneous sessions. In higher education institutes this may be the regular practice. It might be wise to prepare for alternatives that are immediately available in case of technical obstructions of the application or server. We used backings of all simulation assignments on the intranet of the participating institutes, so that these could be used in case of malfunctions of the application or server. Testing applies to correct operation of all technological features and serves to detect problems, before the effectuation in study programs.
3. *Strategic*. This aspect concerns the method and approach of the study program and the alignment of different teaching, instructing and learning activities. We noticed that im-

plementing a game, as a coherent part of a curricular program, asks for strategic content management and agreements by all involved staff. A simulation game should not be just a nice touch to a program, it deserves an integral and meaningful position in a curriculum. Simulation games must receive the right attention and care to get enough chances to mature and establish their place. We noted considerable differences in the success and quality of the new simulation games, due to strategic frailties in the embedment and commitment.

We paid special attention to the congruency between input-throughput-output (Garris et al., 2002). The simplicity of an input-throughput-output model helps to discern and relate program content and game properties (input) to cycles of in-game behavior, system feedback and user response (throughput) and to the revenues of the simulation (output). Each of the games was evaluated by analyzing the input-throughput-output cycle against the background of the game design (design-in-the-small) and the curriculum content (design-in-the-large). Systems feedback and user information were compared with the views and observations of lecturers and tutors. Process results and outcomes were analyzed against the background of the learning objectives and the game concept of each simulation. When a game concept worked well, it generally showed rich user comment and a clear insight in user behavior. If process results and outcomes were not in accordance with our expectations, we considered all didactic, pragmatic and strategic aspects. Shortfalls in the test results showed inadequacies of game design and of tuition, which led to improvements. The game masters of each of the new games considered several options to assess game processes and performance. The most successful strategies employed various ways of peer feedback and peer assessment, such as the study of the track record of each simulation game, debriefings, evaluations of session products. Simulation gaming offers good facilities to respond to the performance of all actors. Intelligent peer feedback and peer assessment make use of first hand experiences about the effectiveness of the game and have didactic advantages as to transactional learning in the game.

The implementation results of the seven games are mutually incomparable. Not all games showed a good consistency of repeated effectuation and improvement. Some simulations were executed only once. In other cases the game was massively repeated and regularly evaluated and refined. Just playing the game is by no means enough. Success with online simulation gaming in educational programs depends strongly on a resolute adaptation of teaching methods and evaluation technics, which requires repeated effectuation and meticulous analysis. Most of the effective learning happens outside the game, in the transfer of session experiences to the knowledge-to-action repertoire, and in structured and planned competence development. Regular evaluations and analyses of processes and

outcomes are indispensable for the improvement of the design model, the game resources and the tuition strategies. For the analysis of student responses to each game, we refer to the external validation research of Warmelink & Mayer, (2009).

Step 7: Implementation

For the evaluation of the online simulations we employed the above referred input-throughput-output model, by which the linearity was analyzed in context. For the validation of performance, we followed the prescribed criteria of the relevant curricular program and we looked at selective criteria from professional practices that were described in the case information and task assignments. To paraphrase Raser (1969), the outcome of simulation games may be considered as valid, when learning from and in a game provides effects that are comparable to professional results in the reference system, under similar conditions. This implies the condition that the design model is a valid representation of the reference system. Following Peters et al. (1998), we looked at four aspects of validity:

1. *Congruency* of displayed situations. Although the simulation is a simplified representation of structural features of the reference system, it demonstrates congruency with realistic professional situations.
2. *Convincing* and realistic scenarios. The game contains a convincing and realistic scenario. We compared the players' performances with perception statements about the reality level of professional tasks and challenges in the simulation.
3. *Coherence* between all parts of the game. There must be a convincing coherence between model and reference system, as to processes, interactions, tasks and workflows. No concessions should be made to a natural coherence and logic unity of all elements in a game.
4. *Consistency* of learning activities and outcomes. We gain confidence in the learning effects of simulation games by producing enough predictions of outcomes and effects. This means that a simulation game should be extensively tested and analyzed in order to provide sufficient, consistent, accurate data.

These four aspects of validity (Peters et al., 1998) may be used as starting points of design, although their operational functionalities might be more apparent, when considered for evaluation and analysis of processes and results. Applying the four aspects to the outcome of a simulation game helps to confirm or refute the effects of certain choices of design and to decide what to do for the betterment and further development of model and effectuation.

	Guide lines for the design and evaluation of simulation games
1	The end-state results (product and process) are formulated.
2	The learning objectives are clearly defined.
3	The learning activities are well articulated and divided over different game phases.
4	The pre-knowledge of participants and tutors has been properly assessed.
5	There is an appropriate game instruction to guide and motivate the participants.
6	The rules or principles of the simulation game are unambiguously formulated.
7	Roles, objects and artifacts are of excellent quality and fit in with the reference field.
8	Game materials are defined, prepared and available and are easily accessible.
9	The assignments are proven and tested, to avoid under-challenge or over-challenge.
10	The game offers room for varied ways of exchange, reflection and decision-making.
11	Manuals, checklists and supportive materials are available to guide players.
12	Equivalent tasks are available, in case players fail the simulation requirements.
13	Adequate theoretical materials have been prepared to support game action.
14	The tutoring prerequisites have been developed, shared and discussed.
15	Tutors support players effectively for high performance at briefings and debriefings.
16	The organizational schedule and logistic structure are defined and agreed upon.
17	There is adequate technical support to provide easy and intuitive access.
18	The game is adequately embedded in the context of the curricular program.
19	There is a plan for transfer between curriculum team and session tuition team.
20	There is a strategy for continuous evaluation, feedback and discussion on results.

Table 2: Guidelines for design and evaluation (Kriz and Hense, 2006)

The implications of choices of design and implementation for online simulation gaming are rather varied and developers needed a practical checklist, delineating the most important input variables, for prototype testing. In Table 2 we list the input variables that serve as guidelines for the evaluation of design and results. We have compared and adapted the items on the checklist to the elaborated 'list of criteria for the quality of simulation games', termed by Kriz and Hense (2006).

4.4 What we learned from The Pioneers

We found that the actual learning results of some of our simulation games did not substantially enough reflect the knowledge and theories or skills and competences of the curricular program involved. The assessment character of some games did not fit in well enough with the didactic approach of the rest of the program. Both the program and the game should be adapted for better coherence to achieve higher quality of outcome. The underlying problem was that the learning activities in the game were not well enough prepared and followed by other parts of the program. To us, this was a reaffirmation of the relevancy of Klabbers argumentation to assure congruency between design-in-the-

large and design-in-the-small, or between the program requirements and the game design characteristics. It is very well possible that poor alignment between program components in education is a perverse effect of the well-known compartmentalization in many curricula. Congruency of all parts is a constant challenge of curriculum development. Online simulations might offer chances to analyze and counter the atomization in education programs, when all parties involved work together to fight this problem. It is quite possible to see an analogy with social care services, where compartmentalization is likewise a serious problem. Positive effects of cooperation, alignment and coordination in virtual networks of professionals are no guarantee for similar results in real practice. As to the effects and learning results, more tests are necessary to gather enough data for the analysis of performance and design relationships. Validation of learning results was not the objective of *The Seven Pioneers*. And yet, some remarks about strengthening the learning effects are made. The first is to (re)validate the artifacts of all scenarios, as to content and degree of correspondence between the reference field and the simulated model. According to our developers, the quality and credibility of the paraphernalia must be extremely high in simulation games and this takes more preparation time than actually invested. We recommend cooperation with practice workers to co-construct reliable and attractive artifacts. Another trajectory could be to improve the representative value of each game strategy. During the reflective interviews, some developers, tutors and participants maintained that the degree of correspondence between the professional reference system and the simulated model, including the game strategy, could be improved. Further tests, evaluations and subsequent improvements will afford more validating knowledge of the active substances of the newly developed games.

Lessons learned (1):

1. Success with simulation gaming depends strongly on the coherence between the requirements of the program, for which the simulation game is applied, and the design.
2. The practical value increases when the game activities are carefully prepared and followed by the scaffolding activities in the program of change and learning.
3. The representative value of the game concept and strategy increases, through a careful study of the feedback on decisions of design and elaboration of the artifact.

Some of the simulation games were extensively evaluated in several editions and with the involvement of a large number of participants and tutors. The practice of evaluating resulted in considerable enhancements of quality and effectiveness. One of the most critical conditions for successful implementation appeared to be a strict adherence to agreed ar-

rangements of effectuation. This applies to participants in the game, and to tutors, teachers and lecturers in the program. Effective tutor cooperation in programs is best achieved by allotting them (non-active) roles in the game. This way, it is possible to continuously retrieve significant feedback for lecturing, teaching and tutoring. Evaluations and analyses help to discover the most effective ways of instructing and coaching of participants and to understand the underlying cognitive and interactive processes and effects of computerization upon the actors. A good understanding of the game concept and one's role and responsibility is vital for the effectiveness of the learning process and for the appreciation and immersion. Different sources of motivation have an influence on sessions performance and should be taken into account, not only for the design; also for the analysis of results. For a balanced comprehension of processes and outcomes, it is essential to relate social relationship building in sessions (social capital) to aspects of exchange and knowledge creation (intellectual capital), against the background of design choices that depict the structural features of the game. The specific dynamics of the players' interaction and strategies frequently show unpredictable (positive and negative) learning outcomes. It is sensible to pay close attention to unexpected and unintended, although eventually, valuable side effects on learning and on the preparation for job performances. We noticed that it takes several sessions in practice before developers and tutors find the right approach and understanding of in-game behavior in relation to the choices of design. Frequent exchanges of ideas about content, didactics, concept and results, are crucial for the betterment of both the game and the total program. It is important to strive for inspirational and motivational exchange in communities of practice.

Lessons learned (2):

4. Quality and effectiveness thrive on critical and constructive evaluations and subsequent analyses for improvement of design and implementation.
5. The appreciation grows proportionally to the degree of seriousness of its effectuation. This implies well-prepared briefings and debriefings, close involvement and commitment, and tailor-made tuition of the actors.
6. The learning effects of simulation gaming may differ from the envisaged objectives. Side effects can be of great significance to the value of simulation games and for their advancement.

The design fundamentals and the game development infrastructure proved to be adequate starting points and guidelines for the design and implementation in educational contexts. Nevertheless, it takes an effort to specify the requirements for design from current strategies, standards and practices in the field of reference. As simulation games are reductions and abstractions of practice reality, it is obvious that a method of collaborative design is

fundamental to achieve valuable game constructs and resources, as well as outcomes. To come to a grounded conclusion about the learning effects and to underpin statements on the value for curriculum innovation, sequential testing of new games is indispensable. This conclusion corresponds with the findings on game validity by Peters et al. (1998): the more we play the game, the better gets our understanding of the dynamics of the concept and of the effectiveness of the game resources. Repeated experiments give us a better understanding of the players' attitudes and behavior and of the most effective ways of tutoring and are important for evaluation and re-design of the game. Finally, we argue that the learning effects depend on the quality of the action-to-knowledge cycles (Crookall & Thorngate, 2009). New games need time and sturdy efforts to link various sorts of knowledge to learning experiences and vice versa. This puts a claim on student tutoring and on the transfer to practice, for example through internships. Development cycles of goal setting and assessment are possible by repeated implementation and a personalized approach of learning and tutoring.

Lessons learned (3):

7. The design fundamentals of *The Seven Pioneers* have a general, practical relevance and may be transferred to professional practices as youth care.
8. The importance of co-design is evident to achieve strong involvement and commitment of all parties and to reach satisfying outcomes.
9. The value of repeated implementation for the improvement of simulation games for professional proficiency can hardly be underestimated.

In evaluative interviews, it became apparent that game developers and tutors need more time to study theory, methodology and good practices. Designing and implementing online simulation games instigate specific thinking about learning and tutoring, and claim an increased awareness of the relevancy of training programs for professional practice. The respondents stated that games could facilitate (cost-effective) ways of joint actions for professional innovation, workplace learning and workplace research. However, a comprehensive body of skills, knowledge and good practices is necessary to conduct a theory-based evaluation (Hense et al., 2009).

FIVE

5 A design science approach

A DESIGN SCIENCE APPROACH TO YOUTH CARE NETWORK EXCHANGE THROUGH ONLINE SIMULATION GAMING

Abstract

Design thinking, design methodology and design science gain much attention in domains of gaming and simulation and their theories offer parallels to knowledge exchange in youth care services. Design science research covers context independent engineering and constructionist creativity in pursuit of general values and is built on the synthesis of what already exits and of what might be. Design thinking and design methodology address questions that show similarities to youth care problem solving and future scenario development. The core business of youth care workers is to support positive change and to develop beneficial opportunities for child-rearing. Effective knowledge exchange in networks is the key to successful intervention and simulation gaming might help to study processes and outcomes; however, we need appropriate validation tools and methods. The author argues that the design and analytical sciences complement each other in innovation of youth care network exchange. Design approaches aim at enhancing the exchange of situational, interactional and interventional expertise. Analytical approaches develop and test theories about knowledge acquisition and transfer. This proposition is explored in a multiple case study in which an analysis tool has been used to structure and study knowledge exchange in youth care networks through simulation gaming.

Keywords: design science research, position of practitioner, position of observer, design thinking, design abilities, designerly ways of thinking, analyzing game results

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5.1 POSITIONING SOCIAL WORK AND YOUTH CARE

There are those who look at things the way they are, and ask why.
I dream of things that never were, and ask why not.
(Robert Kennedy)

With 'youth care' we mean professional support and intervention as to parenting in families and other child-rearing practices. Youth care is imbued with normative decisions about existing and future situations and behavior. In complex problem situations, value-driven decisions about intervention are mostly taken in multi-disciplinary networks of professionals and the quality of exchanges is vital to successful help. Youth care services in the Netherlands are in need of better ways of knowledge exchange (Heijnen, 2010; Van Yperen & Woudenberg, 2011). In research, policy and practices, there is a general consensus about the importance of harmonization, cooperation and coordination in chains and circles of youth care. And yet, we know little about exchange practices. To improve network exchange and professional proficiencies, we must study actions, interactions and performance in networks. The supposition is that online simulations can provide the means and methods for this. Online simulations are role-playing serious games on the internet, in which actors explore problems to co-create solutions or options for intervention. The results can be used to support positive change in the actual situations. They can also be studied to analyze how practitioners share knowledge, explore the unknown and co-construct meaning and strategies. There are some evident, practical advantages to online exchange, such as time- and cost effectiveness; however, online simulations place high demands on design and analysis, as well as on their use and methods. We should find appropriate ways to analyze and validate the interactions and outcomes of game sessions and develop methods of transfer between game world and real world. We should bridge collaborative design-like approaches and analytical validation. Social intervention research can be linked to design science and to analytical science, and yet is difficult to formalize, as problems and situations are highly dynamic and variable. It's academic background is pluriform and cannot be fully described with the scientific language of analytical research. Practices are characterized by uncertainty, ambiguity and values with a plurality of legitimating principles. Often, extended participation of all stakeholders is necessary to attain durable results. Researchers make use of a multitude of theories, and we could range social work and care in the territory of post-normal science. Klabbers (2003, 2009) uses the term 'post-normal science', as opposed to the puzzle-solving strategies of analytical science, which is seen as not always appropriate to resolve societal and environmental issues. Klabbers connects the concept of post-normal science with the broader scope of the design sciences and in particular with objectives and processes of social change. Following the ideas of Herbert Simon (1969), he explains that design science deals with creating things, which do not yet exist, and with enhancing problem situations. Changing problem situa-

tions into preferred future states is essentially what social interventionists do. With references to Simon (1969), Klabbers (2009, p. 186 *ff.*) delineates the difference between design science and natural science as bearing, respectively, prescriptive and descriptive objectives. In his theory of gaming simulation, '*design-in-the-small*' refers to prescriptive ways of the construction of games and '*design-in-the-large*' is used for prescriptive, normative objectives of game evaluation in larger frameworks of change programs. Both levels require normative prescriptions of purposes and functions of the artifacts. Normativity is central to youth care and to simulation design for knowledge exchange in networks. Choosing the position of an observer to describe practices of youth care or to measure results in change programs, requires a framework of analytical science. Descriptive approaches serve to find, in retrospect, causal links between decisions of systems intervention and the differences between the initial state and the intermediate or final state of a problem situation (Klabbers, 2009, p. 140/2). Klabbers elaborates the views of March and Smith (1995) on design science to clarify some of the basic questions that game science is addressing since the 1950s. The analytical sciences, often considered as the golden standard of scientific research, encompass both the natural sciences and parts of the behavioral and social sciences that favor a positivist approach to their fields of study. For game science and for social intervention research that scope is too restrictive. March and Smith (1995, p. 254) state that the distinction between design and natural science must be based on the research purpose: "*natural science aims at understanding and explaining phenomena; design science aims at developing ways to achieve human goals*." Klabbers (2009) adds that design science creates and assesses artifacts to serve human purposes to change situations, against criteria of value and usefulness or purpose. This research paradigm suits many intricate contemporary societal and global problems, of which values are in dispute and unclear. Societal issues often reveal multiple realities of various stakeholders, causing conflicting reality definitions. These conflicts can easily provoke complex and intertwined problems. Many of the most difficult youth care problems share these features and ask for understanding, experimentation and the adaptation of methods to local conditions. The fundamental uncertainty, which stems from the intrinsic indeterminism of complex parenting problem situations, demands new strategies of interthinking (Mercer, 2002), connectedness, situatedness, relationships and contextuality. In systems approaches, the essential properties of a situation arise from the interaction and relationships and they can only be understood in an holistic way. This contextual thinking differs from analytical thinking, though both ways of reasoning are complementary.

In this chapter we take a closer look at design thinking and design abilities in youth care network exchange. Designerly ways of practice research are elaborated in a framework

that has been applied to a multiple case study of youth care knowledge exchange through online simulation gaming.

5.2 DESIGN THINKING AND DESIGN ABILITIES

Characteristics of both simulation gaming and youth care knowledge exchange resemble 'designerly ways of knowing' (Cross, 2007). This is a concept in the realm of design science research and refers to the articulation and understanding of design cognition and the idea that designers of all sorts use particular ways of knowing, thinking and action-interaction patterns for the construction of knowledge, actions, and products. In domains of design science, game theory and youth care intervention, actors and researchers are involved in design-like actions of scenario development and projections of future plans. Studying processes and outcomes of online knowledge exchange in networks can reveal aspects that shape collaborative reflection-in/on-action. With the results, we might develop generic knowledge, understanding and validation of interventions in youth care practices. In the last decade, many studies have been published about the idea of developing a 'design methodology of the social sciences' (Dorst, 2004, 2010; Van Aken, 2004, Van Aken et al 2011). These studies show that there is not one comprehensive, rational design method, but rather a shared diversity of methodologies and techniques. It might be interesting to borrow some of the ideas of design thinking in the pursuit for better, well-timed and more effective ways of youth care help. Design thinking has to do with design abilities (Cross, 1990; Dorst, 2004) and their levels could be equally valid for youth care. By applying the merits and scopes of design thinking, we might identify and relate patterns of interaction and performance to the development of contextual know-how. By way of example, we compare some design aspects of simulation gaming with professional abilities and competences in youth care services:

1. Building models of practice problems is developing contextual know-how and preparing for action, change and development;
2. Modeling situational problems demands a trans-disciplinary attitude and multimodal thinking and acting;
3. Modeling complex problem situations can lead to a better understanding of values and interests.

Related professional abilities of youth care knowledge exchange:

- *Having interest in complicated problems;*
- *Appreciating systems thinking;*
- *Esteeming the co-evolution of problems and solutions;*
- *Displaying eagerness to draw learning from any discipline or expertise;*

- *Possessing a sense for imaginative and constructive solutions*
- *Valuing multimodal communication and multimedia expression;*

4. Multi-actor role-play allows perspective change and imagination;
5. Change of perspective might lead to appreciation of plurality of interests;
6. Simulation is practicing knowledge-in-action in a realistic way;
7. Simulations facilitate risk assessment and experimentation;
8. Simulations offer experiential and transactional learning.

Related professional competences in networks of youth care:

- *Having professional ambition and being flexible;*
- *Using capabilities of reframing problems into challenges;*
- *Showing awareness of backgrounds and the bigger picture;*
- *Paying respect to social and cultural contexts ;*
- *Taking account of differences in morals, ethics, standards and habits;*
- *Dealing with incomplete information and with uncertainty;*
- *Practicing good cooperation, active participation and taking initiative;*
- *Producing unexpected, novel solutions.*

Drost (2003) states that design problems have a threefold nature: problems and solutions are partly determined, underdetermined and undetermined. This can be compared with youth care knowledge exchange, as the contextual dynamics in complex situations can be extremely messy, fuzzy and unpredictable, with open-ended information, uncertainties and unknown aspects of present and future situations. Thinking like a designer might help to avoid preconceived hypotheses and might stimulate curiosity and learning in iterations of collaborative thinking, in order to find unique solutions to unique problems. Problems and interventions are partly *determined*. Each situation of youth care contains lots of details to investigate. Part of the information (facts and figures) is beyond doubt and certain circumstances (safety measures) are beyond dispute. The major part of the information, however, is *underdetermined*. A great deal of the situational information has to be 'excavated' and asks for further investigation. Another part of difficult youth care issues contains *undetermined* information. Some sides of the problem and of the intervention will remain doubtful, undecided, unknown or obscure. The interpretation is left to professional discretion, in dialogue with clients. In youth care much is left undetermined and cannot be turned into solid accounts. It often is impossible to see straight lines between professional intervention and the actual situational changes. Reflection-in/on-action is of major significance to dialectical processes of youth care intervention and contains many of the same cognitive elements as described in design theories (Dorst, 2010; Van Aken et al., 2011). As-

pects of learning and construction, like imaginative reasoning, conceptualizing, modeling and interpreting, are at the core of youth care. Design thinking requires the ability to see different sides of problems and brings out prediction, intuition, creativity and visualization. A fruitful mode to activate these capacities is through interaction with clients, network actors and fellow-professionals. It is not exceptional in multi-problem and multi-actor situations that social workers have to adapt themselves to shifting, multi-level objectives or to changing rules of engagement. Co-creation might help to overcome personal limits of knowledge, know-how and experience and to adapt to new facts and information. The *modus operandi* in most youth care practices is doubt. Design abilities help to respond to uncertainty. Knowledge exchange, inspired by design thinking, requires a learning intention and a willingness to explore 'what-if' and 'why-not' questions that can lead to new horizons.

5.3 DESIGNERLY WAYS OF PRACTICE RESEARCH

Despite the fact that youth care practice is more concerned with how things might evolve and change, much social research is dominated by the paradigm of analytical science, thus aiming to describe and explain situations, facts and phenomena and causal relationships. The aim of design-oriented research is the development of theories that help to find solutions for practical problems that add value to situations. Design science is purposeful, prescriptive, value-driven and aims at change in unique contexts and from the perspective of usability. Analysis is a retrospective activity in which the researcher, from the observer's position, comments on process and outcome, aiming at knowledge accumulation and truth finding (Kriz & Hense, 2006; Klabbers, 2009). Design science is concerned with pragmatic values (does it work?), in contrast to the explanatory values (is it true?) of analytical science. We can look at the world, as consisting of physical objects that are in causal relationship, and we can consider the world as a context of intentional actors. (Dorst, 2010). This ambiguity can be projected on the artifacts of gaming simulation. It is pointless to define artifacts only in their physical state, because as such, there would be no place for their normative functions. Reversely, artifacts cannot be fully described in intentional conceptualizations, because their functionalities can only be realized in physical structures that serve them best (Kroes and Meijers, 2002). This is an interesting point of view, as youth care service depends on the prescription of functional characteristics that bear normative judgments for practical action. Artifacts of simulation gaming are contingent on normative judgments (they perform their functions well or badly) and are designed structures that aim at normative choices of intentionality. The determination of pragmatic and explanatory value of tools and methods in social practices can be problematic. Logical reasoning and frameworks of practice-based evidence are not always the most adequate tools

to fix complex and unpredictable problems. Besides, it should be acknowledged that there is not enough proof that the application of scientific methods always leads to success in practices of youth care intervention. The focus of analytical science is often on 'tame' problems, whereas 'wicked', untamed problems are more compliant to 'designerly ways' of practical research. Simon (1969) says: '*The natural sciences are concerned with how things are..., design on the other hand is concerned with how things ought to be.*'. Both paradigms are concerned with future development; however, design science is constructive (shaping new structures), whereas analytical science is explanatory (identifying existing phenomena). Analytical science is generated through replicable results, whereas design science is not primarily directed towards repeatable outcomes. Designerly approaches to practice research evoke open-minded explorations of situations, problems, strategies, and challenge to invent, to think the unthinkable, to question, to stimulate curiosity and active participation. Youth care is about constructing positive change, and yet, this cannot be done without scrutinizing the past and without examining facts, conditions and perspectives. The future is constructed partly on experiences and knowledge from the past and partly on developing prospects of how situations could be.

Hevner (2007) positions design science between the relevance of context and the rigor of knowledge, thus drawing three design cycles (figure 1)

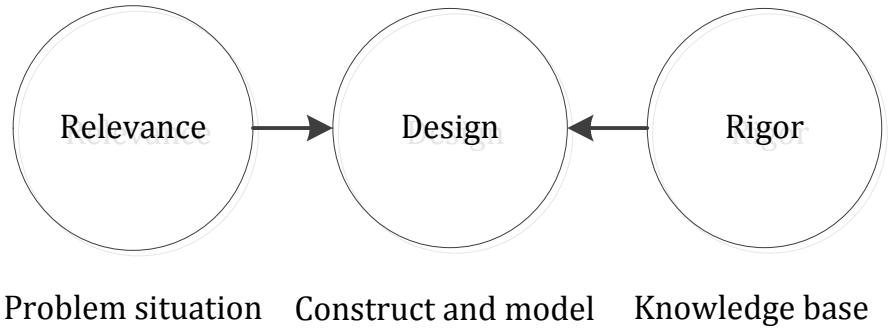

Figure 16: Hevner's three design cycles, 2007

The central design cycle signifies the loop of research activities for the construction and evaluation of artifacts, processes and results. Design gets input from the relevance cycle of contextual facts, interpretations and perspectives, and must be based on the rigor cycle of knowledge, evidence and experience for scientific foundation. The design research cycle iterates between building and evaluating on the basis of pragmatic relevance from any practice situation, and theorizing and justifying of constructs, models, methods and instantiations, based on scientific consistency. Hevner's view on design corresponds with the design research framework of March & Smith (1995). They relate design activities to

output. Design research activities imply building, evaluating, theorizing and justifying, and outputs are derived from constructs, models, methods and instantiations. In *constructs* we define problems and solutions (Schön, 1983). *Models* represent constructs of problem situations or desired future states (Simon, 1996). *Methods* depict processes and help to explore problems and solution spaces. *Instantiations* demonstrate how constructs, models and methods work together to achieve change (Hevner et al., 2004). To link the design activities in our research to the practice relevance of online simulation gaming and to the rigor of its knowledge base, we added four categories of analysis to the model of March & Smith (1995). The categories are knowledge, behavior, performance and intervention. Each design research activity stands in line with one of the four categories, as most prominent field of attention. The design research categories of analysis apply to *knowledge*, which is accumulated in simulation games, to *behavior* in actions and interactions, to individual and group *performance* and to *intervention*, including the transfer to the actual problem situation. The framework concerns design science and analytical science, however, you might say that *build* and *evaluate* relate easily to design, whereas *theorize* and *justify* are primarily associated with analysis (Table 3). The model corresponds with findings in earlier studies that show that it is possible to interrelate design science and analytical science (Van Aken, 2004; Mallon & Webb, 2006; Kriz & Hense, 2006; Klabbers, 2006, 2009).

<table>
<tr><td rowspan="6">Design research outputs</td><td rowspan="2"></td><td colspan="4">Design research activities</td></tr>
<tr><td>Build</td><td>Evaluate</td><td>Theorize</td><td>Justify</td></tr>
<tr><td>Construct</td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td></tr>
<tr><td>Model</td></tr>
<tr><td>Method</td></tr>
<tr><td>Instantiation</td></tr>
<tr><td></td><td>Knowledge</td><td>Behavior</td><td>Performance</td><td>Intervention</td></tr>
<tr><td></td><td colspan="4">Design research categories of analysis</td></tr>
</table>

Table 3: A design research framework (March & Smith, 1995)

Design approaches may help to develop artifact construction in simulation gaming, though we need empirical evidence and theoretical validation. Analyzing game session results helps to achieve theoretical and justifying consistency. This can be a pragmatic way to understand the behavior of components in complex systems and to experience how changes in one part reverberate into other parts, and to learn how to handle dynamics within systems. Such components in youth care knowledge exchange can be situational cognition, actor participation and reflection on intervention. Collaborative ways of identifying and analyzing problems can generate systems response and active support for future behavior of the actors. These qualitative effects might be achieved by designerly ways of

practice research. Funtowicz and Ravetz (1993) state that not 'truth', as pursued in analytical sciences, but 'quality', as contextual property of scientific information, is a relevant guiding principle in design science research. Quality is connected to contextual values, which are essential input to open dialogues in extended peer communities of everyone affected by the problem situation and with a common concern to reach solutions. As Hortulanus states (2011), in social work practice, different perspectives and ambivalences often lead to conflicting argumentations. We need instruments to address these pluralities of perception. If we design simulation games as shared knowledge workplaces of extended peer communities, the actors would not only be producers of their own enlarged situational cognition, they could also gain responsibility for the co-construction and sustainable co-evolution of future scenarios. In order to achieve durable results in complex multi-actor and multi-problem situations, we must mix scientific knowledge with contextual expertise and combine this with local behavior, standards and moralities, thus legitimating local interests, values and future desires of the people involved. Reflective dialoguing, as a debriefing and learning activity, can serve as what Munda (2004) calls: *social multi-criteria decision making*, in which transparency is the main ingredient, in order to be as clear as possible about the structuring of the problem, the definitions used, the values and interests considered and the ethical positions taken. Social multi-criteria decision making can suit the interdisciplinary character of complex problem situations and can support scientific ways of seeking consistency between assumptions used and results obtained. Social multi-criteria evaluation implies adherence to co-acceptance of responsibility in extended communities and involves ethical judgments and moral positioning (see also Hoijtink & Van Doorn, 2011).

5.4 ANALYZING KNOWLEDGE EXCHANGE IN ONLINE SIMULATION GAMES

March & Smith (1995) argue that design science must not only determine what works, however also why artificial phenomena are successful. Scientists can contribute to both activities of creation and of analytical study by linking multidisciplinary design to a demarcated and specified domain of theory, thus developing an appropriate vocabulary from a cross-over of theories. This is what is envisaged in the case study of chapter 6, in which we compared game theory with youth care theory, in order to design simulation games for professional knowledge exchange[53]. One of the challenges is, how to structure the outcome for analysis in order to improve our understanding of the exchange process and to make recommendations for effectiveness. The overall interest of the study is *to investigate how youth care professionals value online simulation gaming for network exchange about complex prob-*

lem situations, in view of better and durable help. Applying Mark & Smith's framework Table 3), the project covered four stages of design research activities:

1. *Build*. The representation of the problem to be studied, the game design and artifact creation;
2. *Evaluate*. The assessment of situational knowledge production, exchange processes and role performance in sessions, and the quality-check with the actors about the transfer of outcomes and effects to work practice;
3. *Theorize*. The comparison of findings with existing practices and concepts and the contribution of new theories about youth care knowledge exchange and network proficiency.
4. *Justify*. Analyzing and validating outcomes of the research project and the drawing up of hypotheses for further research and validation.

As to building the game, we followed a path of co-construction, involving practice experts in design choices and the elaboration of artifacts. Several youth care organizations were engaged in preparatory, trial tests to develop concepts and to determine content criteria (please see chapter 3). The participants were committed to each of the 4 design research outputs, though their involvement was more significant in the first and fourth stage:

1. The *construct* of the problem situation;
2. The *model* of the game;
3. The *method* that guides the task accomplishment;
4. The *instantiation* of the game and the evaluation.

We hope the game sessions will lead to future scenarios, strategy agreements and normative frameworks for intervention, which is in line with our assumption that online simulation gaming helps to explore situations, to construct interventions and strategies and to support professional proficiency. In more general terms, it is expected that online simulation gaming helps to improve chain-cooperation in youth care networks and enhances network skills. The pursuit of model appreciation and authenticated insight in user-experience with online simulation gaming asks for a careful investigation of impressions, experiences and statements of the participating youth care professionals. These personal accounts from the participants' view can be related to the observations of the researcher; however, it might be worthwhile to compare user-experiences with the more factual data in the simulation environment by analyzing the track record of each session. Theorizing and justifying ask for a meticulous assessment of possible rival explanations of findings, including validity threats of the observer's bias and possible systematic errors (Yin, 2009).

Therefore, we should be able to equate the anecdotal user-experiences with inventories of what actually happened in sessions.

The full track-record of sessions provided a huge amount of data, and analyzing appeared to be difficult without a structuring logic. Inquiries about youth care network exchange practices made clear that professionals interact in free sequences of informing, reflecting and decision making. As practice experts considered these three main activities as highly relevant for youth care knowledge exchange, we adopted informing, reflecting and decision making as functions of game interaction. We wanted to uncover patterns of interdependency between interactional behavior and the production of practical knowledge. It is for that reason that we built an analysis tool, that combines fields of knowledge (content) with fields of activities (interaction). The constitutive elements of the tool are explained in part 3.4 and are based on the practice inquiries.

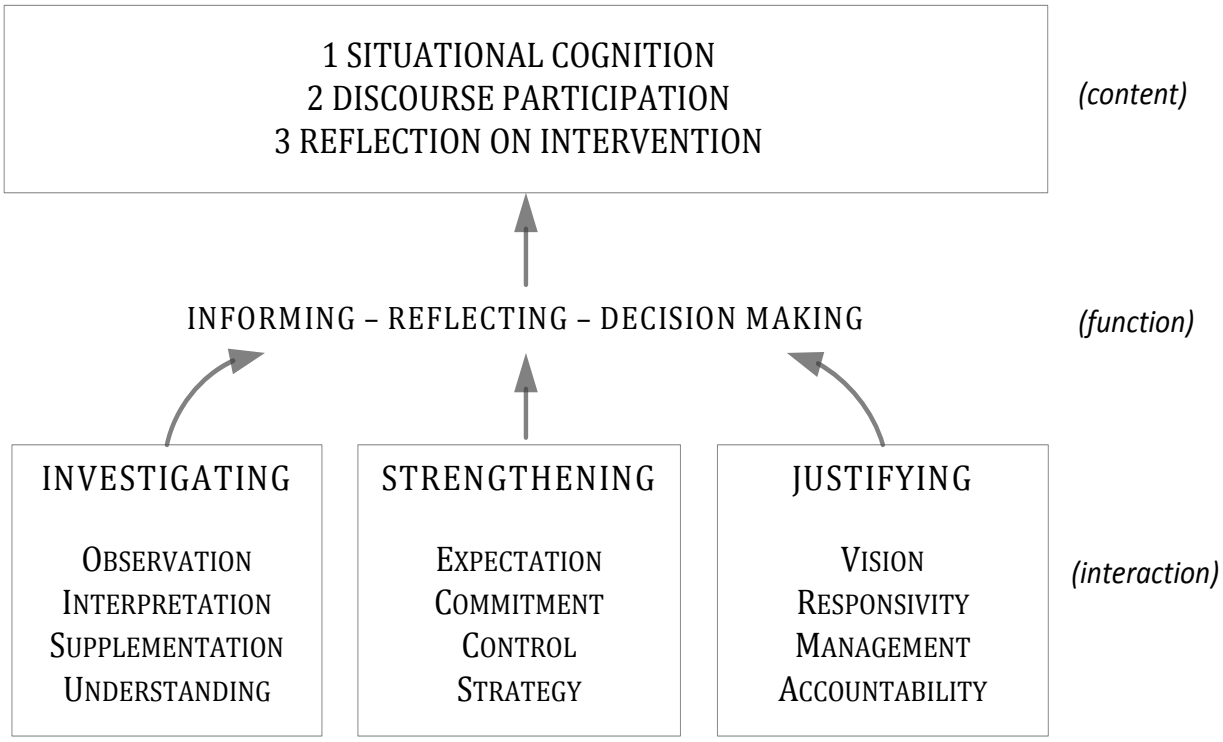

Figure 17: Analysis tool to structure session data

The analysis tool (Figure 17) provides a system to define code categories for structuring mass data from simulation sessions and may serve to apply methods of inter-rater reliability. The aim of the model is to support dialogues and discussions about session processes and results. Therefore, the model must be easy and simple to use, and open for application in as many situations as possible. One might discuss the choices, however, it should be clear that the tags in the tool represent a consensus on the issue of network exchange. The

1st knowledge field is about the situation (situational cognition), the 2nd concerns the actors (discourse participation), and the 3rd covers the accountability (reflection on interventions). The three action fields are: investigating the problem situation, strengthening the network relationships, and justifying choices of interventions. Each of these three fields of action has been articulated in sub-categories. The sub-categories, representing the core activities within each action field, emerged from the initial analysis of session performance. The comparative, proportional ratio of outcomes from the tool may deliver clues and reference points for the understanding of the players' session experiences and views on performance. The confrontation of user-experience with factual session data can have significance for a better comprehension of processes and performance. The tool supports theorizing and justifying of replication and verification research in change programs, and of assessing the model or artifacts (Klabbers, 2009). With the tool, we make an effort to operationalize the design research framework of March & Smith (1995), as displayed in
Table 3, and we intend to use the analysis tool to study the findings from the multiple case study (please refer to section 6.5).

5.5 SUMMARY

Design-like approaches of online simulation gaming for knowledge exchange in youth care networks contribute to game design theory and youth care theory and applying design abilities to youth care knowledge exchange in online simulation gaming supports deep reflection-in/on-action. To study network exchange, we have to analyze in-game behavior and case-related knowledge production, under the rigor of explanatory ways of theorizing and justifying. This calls for well-defined and grounded rules of replication and verification research, in which design approaches alternate with hypothesis testing. In the cross-over of design thinking and simulation gaming in value-driven domains like youth care, we can improve evaluation tools and methods in order to develop and test tentative propositions in consecutive design research activities. To support theorizing and justifying the relevance, usability and usefulness of online simulation gaming, we propose the use of a design research framework, in which design outputs are related to design research activities and categories of design research analysis. This resulted in an analysis tool that will be used to compare the track records of session interaction and production with the user-experiences in reflective dialogues. We think that this analysis tool will help to investigate the practicality of the model and will reinforce our understanding of network exchange in view of durable and well-timed interventions.

SIX

6 A case study: When nothing else works …

A MULTIPLE CASE STUDY OF YOUTH CARE NETWORK EXCHANGE THROUGH ONLINE SIMULATION GAMING

Abstract

Chapter 6 describes a multiple-case study of professional knowledge exchange through online simulation gaming in youth care networks about a precarious problem situation from practice. The case study aims at finding out what youth care professionals think about the relevance, usability and usefulness of simulation gaming for network exchange and includes ten sessions of various game-model variants in which 55 youth care experts participated. The case-related session results comprise scenarios for situational development, network strategies and frameworks for normative intervention. Reflective dialogues on processes and outcomes, and questionnaires about prospects of simulation gaming in professional practices, reveal the substantiated opinions of the users as to the intrinsic qualities of this type of online knowledge exchange. The respondents considered online simulation gaming as a suitable and practical way to investigate complex problem situations, and to get quick access to ideas, experiences and options for intervention. The game design model incited lively interaction patterns at the exploration of the situation and network potentials in the case. The players described an enhanced awareness of talents and skills, and asserted progress of their network abilities. The actors found various options and strategies for intervention for the problem case in the course of only three weeks, whereas in real practice, it took one-and-a-half year to come to the conclusion that 'nothing worked' and that there seemed to be no further possibilities for intervention. This leads to the assumption that the exercise of online gaming could have made a difference, if employed at an early stage in the real problem situation. There are also some contraindications. The participants are not sure whether youth care practice is ready for digital exchange about complex work problems. They think that the interface needs further advancement and stated that participation takes a considerable effort that might be difficult to realize in work practices.

Keywords: youth care, complex parenting problems, knowledge exchange in youth care networks, professional proficiency, addressing the client's needs, analyzing track records, reflective dialoguing, relevance of simulation gaming, usability of simulation games, usefulness of simulation gaming.

6.1 Introduction

Chapter 6 can be read as a separate study, including the complete theoretical and empirical groundwork and describing the outcomes of the actual case study. The preceding chapters of the dissertation are the foundation of the choices and effects in the multiple case study. The first part of the chapter displays the impact of the theory of chapters 2, 3 and 5, and builds further on experiences and results of the design and implementation exercises in part 4. In order to build up a good understanding of the results, it is sensible to read the theoretical and empirical background in sections 6.2, 6.3 and 6.4. As from section 6.5, the outcomes of the case study reveal how youth care professionals perceive the utility of simulation gaming for network exchange. The effects reflect the empirical impact of the design and implementation choices, relating to model development and model appreciation of online simulation gaming, as introduced in section 1.3 of chapter 1. The empirical data in this chapter reveal how the participating youth care professionals produced situational cognition, stimulated discourse participation and justified choices of intervention and give insight in the interactional patterns of investigating, strengthening and justifying functions of informing, reflecting and decision making.

6.2 Understanding online knowledge exchange

Evolution (change) is neither a fact nor a theory,
but simply a way to organize knowledge.
(Lewontin, 1968)

In this chapter, a case study is introduced on knowledge exchange in online simulation games, in which youth care experts take up roles to share opinions and to co-create practical knowledge about a multi-problem, multi-actor and multi-reality situation from practice. The case study is based on the preparatory practice inquiries and on the results from tests, as described in chapters 3 and 4, and on the theoretical notions of chapters 2 and 5. The focal objective is to understand, from a users' perspective, the potential of online simulation gaming for inter-professional consultation, the exploration of complex situations, and the collaborative reflection on intervention strategies. The main research question that follows from this objective, is: *how do youth care professionals value online simulation gaming for network deliberations about complex problem situations?* To find answers, the following empirical questions are formulated:

1. *How do youth care professionals value the relevance of online simulation gaming for the exploration of multi-problem situations? (case level)*
2. *How do youth care professionals judge the accessibility, practicality and usability of simulation gaming to strengthen network exchange? (session level)*

3. *What are the experiences of youth care professionals as to the usefulness of online simulation gaming for the enhancement of professional proficiency? (task level)*

Face-to-face contacts are most common in knowledge exchange practices of youth care and fulfill an crucial role in establishing contact, getting to know each other and to build confidence, Social intervention practices rely for a big part on trust and commitment and the general opinion is that in complex problem situations, confidence is hard to establish, and easy to lose. Confidence needs time to ripen and to establish itself in the hearts and minds. In our times, contacts and exchanges occur more and more in virtual environments, and change the way we learn and how we share experiences. The rapidly growing central place of modern media in human-to-human interaction has influence on social care services and it seems wise to take an eclectic advantage of its particularities (Veerman, 2000; Huysmans et al., SCP, 2005, 2010; Bitter-Rijpkema, 2005). It appears that computer-mediated communication demands competences, which are different from those of face-to-face contact. We can learn from computer-mediated communication and use the insights to enhance professional skills (Georgakopoulou, 2011). In this case study, we focus on perspective change and on the effects of choices of design for simulation games, in which the participants elaborate on a problem case from practice that appears hard to study with 'standard' methods and that asks for a multidisciplinary and unconventional approach of network exchange. Online simulation enables people to learn and work with others, in changing groups of participants, in flexible ways that meet individual choices of place, tempo and timing (Naidu, 2007). The problem of agenda planning and time consuming travels can be brought back. According to Kays, Kays and Kolb (2005) online role-play, in which the actors participate anonymously, can have positive learning impacts on communicative behavior and network skills. Another assumption is that the perception-action repertoire of clients and professionals of youth care can be enhanced by well-organized, tailor-made, preparatory work in online simulations. The participation in simulation games requires quite some personal discipline and reliability in fulfilling the practical agreements. Appropriate moderation and just-in-time help during game processes are essential to success.

The case study has been designed to explore the potential of simulation gaming for positive professional communication and knowledge exchange in youth care networks. Although we want to understand the influence of simulation gaming on the quality of professional exchange, the objective is not validation in comparison to other practices. Empirical validation research could be problematic, when it suggests a primacy of face-to-face exchange, as a benchmark that has to be met, in order to measure the potential of simulation

gaming. Face-to-face and computer-mediated-communication in youth care networks should be considered as complementary. The reference point should rather be effective, timely, durable help. Also the reference to the influence of simulation gaming on practice results is indecisive by the lack of univocal indicators that ascertain and assess effects on professional proficiency and network skills. It is possible that text-based and time-delayed exchange in online simulations about complex problem situations of youth care leads to what De Bono (1970) calls *bridging 'vertical reasoning'* (deep thinking) *and 'lateral problem solving'* (creative thinking). This case study is the first step to build theory and evidence based results. One of the main findings in the preparatory practices inquiries that preceded the case study, is that the experiential insights and opinions of the participating professionals are crucial for the further development of simulation gaming for exchange and intervention in youth care. If we want to develop new tools to study knowledge exchange, it is obvious that the appreciation of the relevance, usability and usefulness by youth care professionals is of vital importance. Youth care network consultation is a self-regulating, interactive thinking and reasoning process, and studying the exchange may lead to greater understanding of the professional rationality of reflection-in-action and reflection-on-action.

The multiple-case study was designed as an explorative field experiment, in which a complex youth care situation is the impetus for a series of simulation sessions, in which youth care experts play the stakeholders. The case concerns a family situation with serious threats and problems, and focuses on the behavioral development of the 16-year old son, Mouad. There are undoubtedly many aspects to the complex problem situation; however, the case history is only treated in a sketchy way. In the real situation, many interventions were carried out; though 'nothing worked' well. The family guardian reveals some of the professional efforts that have been carried out to get in contact with the family and pictures in short the background conditions and the care-avoiding and hostile attitude of the family and in particular of the father. The case description provides a simple and clear starting point and the assumption is that the case is open enough for questioning in the simulation. The role-players were invited to collaboratively develop possibilities and strategies to enhance the existing problem situation. The design of the game-model is based on a cross-over of youth care theories and game theories and covers general tasks as developing situational cognition, stimulating the participation of all stakeholders and reflecting on intervention. Based on theories of cyclical improvement of thinking and acting in youth care, the in-game objectives are investigating options for situational development, strengthening network strategies and justifying choices of intervention. The game-model developed gradually in different variants, which were implied in 10 separate sessions. The products of the sessions are future scenarios, strategy agreements and normative frame-

works for intervention. From the processes and outcomes of the simulations, many clues and reference points emerged, as input for reflective dialogues with the session players about the problem situation, the exchange process and the transfer to professional practices. We were interested to know how the participating professionals would perceive the effects of the game model, as to relevance, usability and usefulness and as to the enrichment of network expertise, competences and talents. At the end of the simulation sessions and before the reflective dialogues, every participant replied to an online questionnaire about the estimated possibilities of simulation gaming in practices and of the chances for effective transfer between practice and simulation. The sessions were concluded with face-to-face meetings, in which mixed groups of participants from various sessions exchanged views on the perceived value and significance of simulation gaming for knowledge exchange in youth care network practices and in which they shared their experiences.

WHEN NOTHING ELSE WORKS…

The problem situation, which has been chosen is titled *'When nothing else works…'* and represents a recognizable situation from the daily practice of a family guardian. This case has been selected from a dozen multi-problem situations that has been collected in interviews with professionals of youth care organizations. The selection criteria have been developed in consultation with these professionals (please refer to section 0). The problem situation meets the established 5 criteria for practice cases for knowledge exchange in online simulation gaming:

1. The problems are acknowledged as dilemmas or as difficulties that occur in various ways, in all sorts of youth care practice situations, and the contextual particulars are not too detailed, leaving enough space for interpretation.
2. The problems are labeled as complex and complicated and not easy to solve in other, more regular ways.
3. The problems are influenced by different, eventually conflicting, perspectives of reality, by various direct actors in the situations and the network. The case allows varied opinions, experiences and standpoints.
4. The case is open to multi-disciplinary approaches and various levels of know-how, including context and content expertise from clients, their representatives and their social network.
5. The case is open-ended and does not cover (hidden) solutions. Instead, the case description prompts questions about the situation, about what has been done, what should be done and what else could be done.

A full description of the problem situation can be found in the appendix. To give a concise impression, the case is summarized in the following plot-line:

Mouad

According to the child and family supervisor of a regional youth care office, the parenting situation of Mouad (16) is critical; notwithstanding the fact that his father says, there is nothing wrong. The supervision order is actually unworkable and unenforceable, because the family lacks problem insight and has no understanding of the critical conditions for a healthy pedagogical development of Mouad. The relationship of family and care workers is thoroughly disrupted and even hostile. The family rejects all help and avoids every contact with care workers. The family guardian is much concerned; however, she does not see any options for further help. She does not know what to do and asks herself, whether giving up and renouncing further intervention and support is a justified option. What, if the situation deteriorates? What about liability and responsibility, if youth care retreats from the situation? What are the ethical implications of 'doing nothing' and of 'wait and see'? Are there really no other options?

The main attention is paid to the developmental chances, safety and wellbeing of the children, Mouad and his younger brother. For both, a supervision order has been made by the magistrate at the Children's Court. Mouad just finished a juvenile probation program, because he had beaten a police officer. The juvenile officer was not dissatisfied, although Mouad took only a minimal part. The family guardian fears recidivism and the recurrence of problematic behavior. As to his school, his tutor does his utmost to persuade Mouad to try to finish school with a qualification. And yet, Mouad persists in absenteeism. The only subjects that seem to interest him are carpentry and woodworking. After one-and-a-half year of fruitless efforts to ameliorate the family situation and to reach better educational conditions and chances, the family guardian remains deeply concerned about the future of Mouad and yet, she does not see any further options for help and intervention. She asks herself what her advice should be at the forthcoming periodical review of the supervision order.

There are five parties involved in this problem situation, and each represents a different field of expertise (Figure 18). The case description lacks signs of cooperation and alignment of strategies and interventions of the workers and their organizations. It should be noted that in this particular situation, the relationship between care workers and family members is seriously disturbed. There have been threats and aggressive intimidation, from the father's side towards the care workers. Therefore, in the simulation, we chose to have the family represented by a context expert of Al Amal, Fatouch Belhaj. Al Amal is run by volunteers, specialized in practical, non-formal help and in mediation between

troubled families and care and welfare organizations. The focus in this work is on understanding and appreciating intercultural values, perspectives and interests. It should be noted that the names used in the case and games do not refer to real people

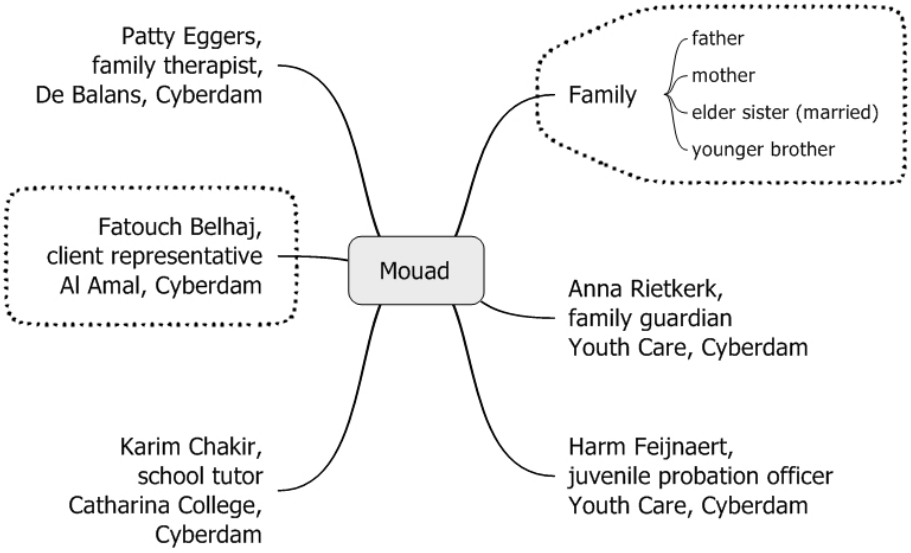

Figure 18: Sociogram of Mouad and the other actors in the situation

MOBILIZING POSITIVE CHANGE

As explained in the introduction, this case study addresses a problem that is familiar to professional child protection workers and educators, who are engaged in complex family problems. Normally, care workers get support and advice in teams and they consult other experts on the case. They could come to a point, where they realize that the situational professional know-how falls short. If help fails and the situation may get worse, something has to be done to diminish risk and to improve the developmental chances for the child involved. The question is how to mobilize innovative brainpower to find options and strategies in such complex problem situations of youth care practice? You need unconventional ways of inter-thinking and collaborative support for positive change. How to organize timely, effective and efficient, contextual know-how and commitment? One of the possible answers is to use modern technologies to get quick access to the right sources. Technology can be considered as '*a resource liberating force*' (Diamandis, 2012). We might accept the idea that the many might know more than the few, and that principles of collaborative problem solution are preferable over giving up. When we think of the idea of crowd creation through social media, we can imagine that online simulation gaming could bring new ideas, practical experience and solutions to a tough problem. In simulations we can develop social and transactional learning. The possibilities of perspective change in simulation gaming could be beneficial to enrich situational and network information and

to find new options for intervention or behavior. Wenger (1999, 2009) has done extensive research on situational learning, based on collaborative peer-group learning in communities of practice, and has shown that social learning flourishes in active and lively, in-formal groups of people that share practices, identities, knowledge and know-how. The mix of simulation, role-play and the involvement of different types of expertise in an online community of practice research, might lead to a variety of perspectives, and can inspire the actors to view problems from different sides. The hope is that this leads to the emersion of new ideas and options for situational improvement. The simulation game serves as a dynamic model of reality, which could be instrumental to deep learning and durable change. The 'game world' is used as an atelier, in which the workers collaboratively construct scenarios for the 'future world'. New found options and solutions can be subject to tests in practice (the 'real world'). The actors in a simulation use local, contextual knowledge and individual perspectives and experiences to find tailor made solutions or strategic interventions. Klabbers (2003, 2006, 2009) explanation of the dependency of the micro cycle of design-in-the-small (DIS) to the macro cycle of design-in-the-large (DIL), as described in part 4, may help to model reality processes in simulation games and use the effects to change existing dysfunctional patterns of behavior into preferential ones. In order to assess the practitioners' views on value and usability, the product and process of a simulation game must both be taken into account (Kriz and Hense, 2006). We have to consider the interplay of design-in-the-small and design-in-the-large as of primary interest for the evaluation of results and effects of knowledge exchange in simulation games. Although the aim of this research is not the validation of outcomes of simulation games, this assertion of interplay and interdependency between the choices of instrumental design and the final objective of changing existing situations into preferred ones, is crucial to understand the session experiences of the players.

With the present project we hope to find new ways to mobilize change, through online simulations. The explorative inquiries made clear that professional views on the utility and on advantages of simulation gaming are indispensable for the implementation of comparative effect research. Without convincing arguments from youth care professionals, as to the sense and value of online exchange, organizations in the field will remain reluctant to innovate with this new tool. This assumption is the focus in the multiple case study and asks to investigate the sense-making processes and the resulting references of meaning of session actors. The above implies a mission, in which assessment statements of youth care professionals are compared with data of performance and interaction, and with outcomes of questionnaires and interviews about the chances of online network exchange in practice. The postulation was that the involvement of a good number of professionals in a series of simulation sessions would provide enough material for reflective dialogues on

the value and significance of this type of collaborative problem exploration. In order to challenge this assumption in a case study strategy, 55 experts from a variety of youth care disciplines were engaged in 10 simulation sessions, concerning the above described problem situation from practice.

The multiple case study forms part of a qualitative, explorative research and development project, based on practical needs of youth care professionals as to network exchange. The research design leaves space for adaptation and alteration during the project, as we anticipated gradually emerging insight and understanding of the study subject. We chose the strategy of a multiple case study, by reason of the close relationship between the development of a grounded theory of knowledge exchange through simulation gaming and the analysis of empirical data (Glaser & strauss, 1967; Yin, 1994, 2009). Suddaby (2006) describes grounded theory building as a strategy to understand processes of co-constructed meaning out of subjective experience. Strauss and Corbin (1994) state that grounded theory is used to develop new theories from the hierarchical structures of data. Central to the idea of constructing theory from case studies, is replication logic (Eisenhardt, 1989; Eisenhart & Graebner, 2007). When we would apply different sessions, as distinct experiments to enrich the context and content, we could study each session as an analytic unit on its own. Sessions in the case study are discrete workplace experiments, which may serve as replications, to enrich, extend or contrast the theory (Yin, 1994; Eisenhart & Graebner, 2007). A game can infinitely be replicated, if required with changing parameters, such as content, participants, game elements, structure and assignments. Thus, we would dispose of an instrument to defy and further develop the theory, grounded in a growing quantity and diversity of empirical data. In this research, we envisage a form of theoretic sampling, as data collection would be made step by step, during the various research phases. The preparatory steps to the multiple case study show mixed research methods, such as literature study, interviews and the development and implementation of various experiments of simulation games in training programs and in practice organizations. This enabled us to frame the objectives of the case study and to investigate the best empirical options. Introductory sessions with youth care professionals helped to choose the best options of model design. As we wanted to know more about the participants' views on the possibilities of transfer between the real and virtual world, we decided to present an online questionnaire to the actors at the end of each session. In order to share session experiences, all players would be invited to take part in reflective dialogues, after the simulation. The empirical approach is further described in paragraph 6.4.

6.3 THEORETICAL FRAMEWORK OF THE CASE STUDY

As argued in chapter 3, youth care is subject to major changes and to the mandatory requirement of increased responsiveness and effectiveness to client needs and societal changes. The transition of youth care services to local funding and control demands that youth care organizations develop new strategies of cooperation and of the coordination of functions, tasks and responsibilities. The relevance of this research is that online simulation gaming can be useful to enhance youth care knowledge exchange and that this may help to cope with the changes of the coming years. Below, we discuss some of the theoretical aspects of innovative youth care network practices to deal effectively with complex issues of intervention and we discuss workplace and network learning. The fundamental principles that support the theoretical framework have been elaborated in the preceding chapters and are translated in this chapter to the context of the case study. An important theoretical element has to do with the design approach of practice assessment and the integration of expert feedback in the development process, which has been applied in a three-stages approach of configuration, construction and evaluation (Figure 19). It may be obvious that the three-stages approach is consistent with the theory of connecting worlds of practice, simulation and future development, which is a second element. The notion of three stages and three worlds mirrors the sampling theory (Zeigler, 2000) of collecting, generating and structuring systems knowledge (Figure 21). The three-stages approach is elaborated in detail in the development steps of design and implementation of the games in the case study (Figure 22). In chapter 7, we shall look back on the grounding process of theory construction. Another guiding principle of theory building in the case study is the distinction of three levels of design and analysis: case, session and task. How these levels are interconnected and how they refer to the theory of design and analysis is extensively explained in section 6.4.

The case represents a typical problem situation, in which all efforts of care workers are geared toward the reinforcement of family systems, through behavioral and social learning, in order to reduce risks in child-rearing and to change undesired circumstances and behavior into desired ones. The basic assumption of youth care is that problematic and threatening educational circumstances can and should be controlled and changed for the better, into directions that are favored as appropriate for a healthy and socially acceptable life. In principle, families and social networks have their own responsibility and autonomy as to the upbringing and education of children. Youth care offers support, help, advice and treatment, when the abilities or resources of families and their networks are inadequate or insufficient. Youth care can take over responsibilities in extreme problem situations (Van Yperen & Woudenberg, 2011). One could say that educational problems are rooted in bar-

riers to change. Human development can be considered as a natural process that needs favorable conditions. When these conditions are restricted, resources are limited, and circumstances are negative for growing up and personal expansion, children face serious threats in their development. It can be hard to change educational contexts. Change can be scary, because it questions life certainties and beliefs. Often, we are inclined to stick to our habits, even when those habits are negative of harmful, because they seem fundamental to what we think we are and how we perceive ourselves and the world. Moore, Moretti and Holland (2008) argue that, despite the usefulness of many traditional, contextual treatment strategies for help and strengthening social skills, interventions often show limited effects, when adolescents have already developed internal models, often reflecting those of their parents. Often, they are beforehand directed to rejecting help or advice and to mistrusting care workers and their institutions. Actions, which apparently focus on restraining undesired behavior, are often perceived as threatening family relations and undermining fragile attachments and can even, conversely to what is intended, instigate domestic violence and power struggles amongst family members and between family and care workers. The course of such adverse effects can easily and unwillingly induce failure to develop a sense of personal responsibility, autonomy and independency of young people and their family members. In practice situations, such as the case of Mouad, it might be wise to start, at an early stage, investigating and valuing the internal mindsets of all actors involved, and to begin co-constructing ideas of future development that are shared and that respect the perspectives and interests of each person in the problem situation. It can be hard to recognize, release and eventually revise control-focused transformational models in favor of the sharing of responsibilities and views on future developments. It is not always evident that care service can be beneficial to clients in problem situations. Despite the good will and dedication of care workers, it happens sometimes that problems worsen during intervention. Selig (2010) suggests that the concept 'multi-problem family' is a myth, when viewed in the context of our current service delivery system. We should be attentive to the risk that our fragmented care services system may foster, rather than relieve, family disintegration, conflicting relations and personal anxiety. Professional blind spots, tunnel vision and tendencies that lead to viewing problems, presented by individuals, only as individual problems, may result in overlooking opportunities for total family approaches to treatment and prevention. Barriers to change may be deeply connected to family relations and fixed habits, behavior and circumstances, as well as to societal, economic and cultural patterns, and even to professional reasoning and institutional logic.

MULTI-PROBLEM, MULTI-ACTOR, MULTI-REALITY SITUATIONS

For this research, we concentrate on complex youth and child-care problems. The requests for help in this type of situations call on the bigger part of social care service resources, as the problems are often intertwined, interrelated, rooted in habits and in difficult to change patterns of behavior. Serious concurrent problems in families have an high impact on the ecological and social chances of children and impair the parents' abilities to focus on the needs of their children. Families, in these situations, are often confronted with various care disciplines, which aim mostly at different problems, while professional capacities of coordination and cooperation are limited. Attempts to improve the conditions for children and their families, in multi-problem and multi-actor situations aim at empowering individual family members, the family as a whole, and social networks, in order to establish or restore autonomous participation in society.

A multi-problem family situation bears high risks of dysfunctional development of children and adolescents, of child neglect, child abuse and domestic violence, due to multiple stressors. Ghesquière (1993) cites many sources to define the concept of 'multi-problem family situations' and refers to Shalit & Davidson (1986), who state that multi-problem family situations are characterized by several concurrent problems, such as low social-economic status, poverty and debts, violence and addiction, learning deficits, physical illness and behavioral, social and legal problems. These problems can be rooted in, and can exert effects on, mental and psychological levels, school and education, financial and material life conditions, marriage and family relationships and might even lead to socio-legal problems, such as debts, criminal behavior or conflicts with neighbors (Mazer, 1972). Van Doorn (in: Van Eijken, 2011) explains how social work, during recent decennia, has turned away from complex problems, as a result of conflicting professional assignments and changing political, economic and institutional arrangements. She calls for the strengthening of practice research and subsequent competences of workers, to re-address multi-problem situations in view of effective help in early stages. Van Doorn describes the various faces of complex social problem situations. Firstly, it is not at all evident that complex problem situations are easily identified, well enough in time to prevent worsening. People, who experience problems in various areas of life, often tend to hide these problems. They can be hard to find and to reach, because of an understandable attitude to withdraw from social networks and public life. Asking for help is often not the first reaction to social problems, and in extreme cases people tend to avoid social care, contact and help. Once help and care are accepted, multi-problem situations often depend on long-term, or even infinite, assistance and therefore call upon a disproportionate part of the capacity of professional support. Van Doorn argues that social work needs a new orientation and focus on

clients, who are confronted with complex and complicated problems and she refers to the necessity to reconsider and re-invent professional tasks, functions and skills.

During the last decade, in our country, we have seen an enormous expansion of requests for help in youth care. And yet, it is very difficult to produce crystal clear figures, due to different strategies of calculating and the variety of statistic material, which is complicated by the compartmentalization of youth care services (Van Ewijk, 2010a; Van Yperen & Woudenberg, 2011). The total number of applications for specialized youth care services in 2009, for example, amounts to 3%. Roughly 3 out of 100 children (under the age of 17) is the subject of an application for specialized help. From these 3 children, only one child receives actual help. An average of between 2 and 5% of all children in The Netherlands receive a certain kind of professional care, according to different statistics of the Association of Dutch Municipalities (Paas, 2009; Key figures Youth Care, 2011, VNG). Many scientists point at the highly complicated post-modern society and the demanding features for young persons to develop identity and to find shelter in stable family situations (Giddens, 1991; Beck, 1992; Bauman, 2000; Van Ewijk, 2010c). Van Ewijk (2010a) argues that the troublesome increase of applications for help *"is a rather autonomous development, not due to economic recession, increasing poverty and suppression, but to the ever growing societal and social complexity of our welfare societies."* Social care services are subject to the pressures that stem from the dilemma of client-oriented and market-oriented strategies, and care workers can easily feel the discrepancies between professional, institutional and client logics. Bourdieu (1993) has called this phenomenon '*emprisonné dans la function*', the double bind of conflicting interests and assignments of the different logics of bureaucracy, institutions and clients.

When people get caught in webs of interrelated problems and ask for help, problems can get even worse, when they find themselves confronted with many different care workers and institutions, who seem more concerned with compartmentalization and bureaucratic procedures than with practical help. De Boer and Van der Lans (2011) emphasize the need of system change and hope that today's radical transition of social services offers chances in this respect. They state that the problem solving abilities of citizens are weakened as a result of institutional logic and of system failures. The perversity of institutional help is the tendency to minimize or neglect the capacities and responsibilities of clients, in favor of institutional goals. Care givers are inclined to take over responsibilities, thus framing persons as clients, who depend on care services. Institutional help is built on financial structures that are focused on service delivery and client satisfaction, whereas people, groups and communities might be better off, when they learn to solve their own situational, eco-

nomic or societal problems, as much as possible and with occasional support. We are confronted however with the limits of thinking in terms of supply and demand and of care service delivery and clients, on the basis of public funding. There is a growing sense of urgency to change, and many theorists embrace ideas of local self-direction and self-reliance, induced by 'high potential citizen initiatives' (Meerhof, 2011), in order to take over control and improve the qualities of local life and to assure all kinds of light forms of social assistance (Hurenkamp & Tonkens, 2011). The shift is the turn to prevention and empowerment: helping people to help themselves and to strengthen their social networks and safety nets, so that they rely more on their own capacities and on help from neighbors and family, whenever this is possible, feasible and desirable (Hoijting & Van Doorn, 2011). This implies a different approach to social care services, in favor of supporting and facilitating resilience in communities through integrated methods of prevention, help and intervention. In this new situation, social workers assist people in defining what they need and in helping them to organize ways of enhancing personal life circumstances, chances and opportunities (De Boer & Van der Lans, 2011; Sprinkhuizen et al., 2011). In the Netherlands, some promising experiments of recent years, started with integrated help and practical embracement of contextual expertise. *Wraparound Methodology*, *Restorative Practices* and *Kitchen Table Conversations* are some examples. Their common ground is the acknowledgment that effective change should start from the distinctiveness and potential of the problem situation. The impetus is to carefully inspect the possibilities that are already there, instead of offering help or expertise, alien to the actors involved, and to look for strategic alliances between all parties that surround the person who needs help. These approaches to problem solving focus on mobilizing and using ideas from people, who are affected by the situation or the problems, and offer practical steps of participation and mutual reliance on one's own and each other's capacities and expertise. Sprinkhuizen et al. (2011) state that it is possible to reach remarkable results, once one succeeds in augmenting the participation level of people or when people are supported with practical advices and the necessary resources to help themselves. The increase of self-confidence and its value for the empowerment and independency in the perception of people, who experience complex problems, can hardly be underestimated.

From what has been said about multi-problem situations, it is obvious that the coordination of intervention and the exchange of information are essential factors for effective help and the improvement of situations. Apart from practical help and the cleanup of obstacles that hinder a normal family life, there are more factors that influence durable results. If, for example, we can establish feelings of connectedness of children and families to caregivers, school tutors and social communities, we create a sense of being cared for and accepted, valued and supported by others. The possible impact of this can be reciprocity. People that

ask for help, can often be regarded as content and context experts. Not only to find feasible solutions that work in a situation; also in view of finding opportunities to change positions. People, who have overcome serious problems, could be of great significance to help other persons with more of less similar problems (Dawe et al., 2008). We should not underestimate the powerful effects of sincere and respectful exchanges between professionals and families for social learning and for establishing or recovering connectedness. The incentive to participation is progress, and the quality of exchange and shared responsibility for actions and support is inversely related to successful enhancement of problem situations. The pitfall in complicated situations might be to undervalue the input and change capacity of people, who obviously are in great problems, in particular when they display undesired, negative or harmful behavior. This risk can be controlled by deliberate strategies of engaging the family's strengths and through positive, family-focused and transparent exchanges, in which the family members participate as much as possible. If active and positive participation is not feasible, it is often possible to find a family-representative. The aim is to directly or indirectly involve the most important actors in the exploration of options to change and to stimulate (playful) ways of collaborative thinking.

KNOWLEDGE, LEARNING AND PRACTICAL KNOW-HOW

The outcomes of the practice interviews (chapter 3) indicate that the most important prospects of online simulation gaming are the construction of situational knowledge and the promotion of network learning. The premise that online simulation gaming can support network learning is the rationale behind our choice to concentrate on themes of knowledge, learning and practical know-how in the theoretical framework of the multiple case study.

Knowledge has a number of closely related epistemological distinctions that refer to explicit, implicit and tacit knowing. Knowledge can be embrained and embodied (related to a person), as well as encoded, enculturated and embedded (related to a situation). The ontological distinctions point at the locus of knowledge: individual, collective, situational, practical. Explicit knowledge can easily be codified and aggregated at a single location; separated of the knowing subject. Tacit knowledge is contextual and subjective, is not easy to collect and store, and depends heavily on a knowing subject. Notwithstanding the scientific debate on the subject, we may acknowledge several modes of knowledge (Kunneman, 2005). The first mode is about scientific, evidence-based, accumulated knowledge and organized by general principles of universal truth. This type belongs to the traditional paradigm of scientific discovery, characterized by the hegemony of theoretical and experimental science and by the internally-driven nomenclature of disciplines (Nowotny et al.,

2003). The second mode of knowledge has a trans-disciplinary character and is about knowing how to act. This mode has co-constructive and experiential features. The third mode describes normative knowledge and has ethical and moral implications. These three modes of knowledge resemble the triadic relation of factual information, co-constructed situational cognition and normative reflection in youth care exchange networks.

Tacit knowing, which is intuitive and roots in deeper layers of consciousness, suggests that 'we know more, than we can tell' (Polanyi, 1967), and is an almost infinite resource. In research studies from a wide variety of disciplines, tacit knowing has been labeled, as personal, conscious and unconscious, in mind and heart, sometimes difficult to express and often hard to transfer. Tacit knowledge is experience-based, contextualized, related to professions and specific jobs, transferred through conversation and narrative, and capable of becoming explicit (McAdam, 2007). It is important to realize that the opposite is also true: explicit knowledge can be turned into implicit or tacit knowing, by reasoning, practicing and contextualizing. Networks of professionals are highly valuable for the construction of practical knowledge and the transformation of explicit knowledge to particular situations. Exchange might help to foster susceptibility for doubt and questioning and to link information to experience, intuition and rationalism. Knowledge exchange is an important way to inter-subjective understanding and to the analysis and verification of contextual information. Inter-subjective understanding is the result of multiple ways of information processing, under the influence of personal and socio-cultural perspective exchange of people involved. Bober & Dennen (2001) describe inter-subjectivity as shared understanding that helps to relate different situations and experiences. They state that new technologies can foster inter-subjectivity, allowing multileveled communication, which is important to serve a broader range of needs and learning styles, and to meet different levels of commitment and involvement. If we agree that youth care networks benefit from shared understandings of situation, participation and intervention, we have to look for attractive ways to raise the critical value of inter-subjectivity, in interface design, mediation methodology and in the use of asynchronous and synchronous, or offline and online, exchange tools.

Knowledge manifests itself through thinking and acting and is the key to changing attitudes, behavior, ethics and morality. There are many definitions of the concept of knowledge, as the state of knowing; however, Webster's dictionary says *"knowledge is the acquaintance with information, facts, understanding, truths, or principles; and familiarity by study or experience."* Knowledge helps to build awareness and mental apprehension. Knowledge is inextricably linked to persons, language and contexts and is information in meaningful patterns that leads to assumptions, conclusions and believes about what is true and relia-

ble, and to understanding of phenomena and relations. Steve Denning (1998) says that the distinction between knowledge and information and between truth and reliability can be quite blurry and confusing. These concepts are often interchanged, which makes it unsure, whether the prestige of true knowledge is attached to mere information. He stresses the difference by reporting that it can be extremely easy and quick to transfer information from one place to another, or between persons; however, it can be very difficult and slow to transmit knowledge from one person to another, or from one context to the next. This is an interesting assertion for the exchange in online environments. Sharing information is not the same as sharing knowledge. Knowledge needs time to grow and to ripen, by comparing data, reasoning and discussion or dialogue, by deliberate study of knowledge-to-action and vice versa. Furthermore, Denning reminds us of the general accepted contrast between rational knowledge and intuitive knowledge. Intuitive knowing is related to, if not the same as, tacit knowing and scientists such as Polanyi & Prosch (1975) or Nonaka & Takeuchi (1995) acknowledge that difficulties of transferring practical knowledge, or know-how, from one person to another, are closely associated with our understanding of tacit knowing (Denning, 1998, 2004). Knowledge depends highly on usability and gets meaning through operations and mental activity. If we define knowledge as *capacity-in-action*, all knowledge would be tacit, as Karl Erik Sveiby (1996) postulates, and what others consider as explicit knowledge, would have to be described as information. Whether or not we agree to this supposition, in professional exchange we see that people share, complement and interpret information and that this information is transferred into knowledge by collaborative thinking ('inter-thinking') in discussions, debates and dialogues. There is no doubt that evidence based practice (or explicit knowledge) can legitimize arguments and proposals. Inter-professional consultation can be seen as knowledge-to-action and action-to-knowledge, in which the participants follow patterns of collaborative reasoning, inquiry, reflection and decision making. The contextual nature of social problem situations and the interdisciplinary and multi-perspective features accentuate the tacit and normative dimensions of knowledge in networks of social professionals.

Workplace learning

With workplace learning, we usually mean all training and learning activities, related to work, job and function or task. On-the-job learning and professionalization can be seen as workplace functions (Letiche et al., 2008). In this view, workplace learning is a contextual and situational method of local and network related interaction, negotiation and experimentation. On-the-job learning involves the ethics of collaboration, participation, empowerment, responsibility and the legitimation of normative intervention. Vosman & Baart,

(2008) emphasize the delicate position of care workers, who exercise practical wisdom. Practical wisdom is the moral variant of general wisdom and might be enriched by changing perceptions of acting with circumspection, and respecting autonomy, careful and discrete examination (prudence) and of moral and virtuous considerations (phronèsis). Workplace learning involves contextual life experiences and the exchange of practical wisdom. In online role-playing simulation we act[54] 'as-if' we were in a real practice situation of network collaboration. This stresses the importance of the transfer between simulation world and practice world, in both directions. Experiential learning evolves in alterations of acting, reflecting and evaluating. It is in this suite of actions that situational knowledge emerges. Clancey (1997) says that situated knowledge, specific to a unique environment, emerges from a contextual study of human experience. The emersion of work knowledge in workplaces, teams and networks is a result of the interaction of people with and in their environment and of the way organisms, systems and the human mind organize themselves. Fenwick (2001) explains that there are three facets to work knowledge: it unfolds in systems of environment, actors and activities; it is embedded in relationships among (parts of the) systems, and it appears as a continuum of invention and exploration, linked to the disequilibrium in systems. Workplace knowledge is closely related to systems theory.

In the present research, the supposition is that the organizational strength and agility of a youth care network is the innovative capacity to optimize the dynamic interaction between members and to share explicit and implicit knowledge. The appraisal of cooperative communication and organizational routines is vital to the effectiveness of networks and teams. Knowledge exchange in youth care networks cruxes on the connections between tacit, implicit and explicit knowledge. There is a vigorous influence of social embeddedness to knowledge and know-how in teams. Behavior in networks is affected by social relations, and the learning and innovative capabilities of a network are embedded in the structure and communicative features of the exchange. As to interactional learning and the exchange of know-how, the position of tacit knowing is essential (Maharg, 2006). The question arises, whether tacit knowing is an individual trait or something that can be shared in networks (Gourlay, 2005). Can tacit knowing be developed and made explicit in a virtual environment? Is simulation gaming the right tool to create new explicit and transferrable knowledge from the thinking and interacting of network partners? McInerney (2002) suggests to focus on shaping a knowledge creating culture that encourages learning and sharing of information in teams and organizations. And yet, one could ask, whether the elicitation of tacit knowledge leads only to the redesign and standardization of local expertise and that this ultimately may lead to disempowering contextual unique awareness (Beckett & Hager, 2000). There are as many unsolved issues to exchange in simulation

games, as there are to the concept of knowledge. Further studies might lead to a better understanding of the central concepts of youth care exchange and how simulation gaming might contribute. Practical knowledge, or know-how, is focused on improvement or change, preferably by stimulating autonomous processes within the problem situation, or, if necessary, by intervention. There are many different methods, approaches, instruments and tools available to do so. It can be difficult to find a common language and a structuring model to prescribe or to describe youth care network knowledge development. What exactly happens when practitioners exchange knowledge, experiences and views about the improvement or change of situational conditions and social behavior? How can we describe the actions, interactions and performance in networks? We need more research and theory on workplace learning and the exchange of practical know-how, to be able to do suggestions for the enhancement of network practices, in view of better youth care services.

6.4 EMPIRICAL FRAMEWORK OF THE CASE STUDY

The case study aims at delivering an impact assessment of the a priori theory about youth care knowledge exchange through simulation gaming. For this purpose, we make use of research data from a series of simulations in which youth care professionals explore a problem case and generate strategies of participation and intervention. As explained in chapter 3, the case study has been designed in close cooperation with experts from practice and has been prepared in several introductory and trial simulations in youth care organizations. We have built expediency in establishing consistency between the micro cycle of design and the macro cycle of program objectives and evaluation through the development of *The Seven Pioneers* (chapter 4). These preparations provided the required expertise for the design fundamentals, the arrangements in sessions, the progression of artifacts, and delivered the right insights to make the appropriate choices for strategies of implementation of simulation games in professional settings. The problem case with the challenging title '*When nothing works …*', as described in 6.2, is the starting point for the design of the simulation. The case offers many issues to be discussed, bears lots of unsolved questions and indecisive information about the situation, the participation and intervention. The situation is in bad need of inspiring ideas about developmental chances. The case study has been set up in such a way that the iterative and explorative approach with tests, trials and rounds of implementation, resulted in a gradual adaptation and improvement of the game model, the implementation method and the design theory. The case study strategy was kept in line with the evolving practical needs and advancements of knowing how to support exchanges in simulation games with youth care professionals. It was important to

adapt the game model and artifacts as much as possible to the professional standards of the work practices, in order to reach a convincing level of representativeness. We did not want the participants to become distracted or annoyed by disparities, discrepancies or contradictions in the model, compared to what they usually experience in practice. For reasons of accuracy, the development of artifacts has been effected in close cooperation with practice experts, who delivered the content and approved the final version of the artifacts.

The idea of engaging practice workers as much as possible in the design and meaning making processes is connected to the main research objective, to find out how youth care professionals value online simulation gaming as an meaningful tool for effective knowledge exchange in networks. The objective of successful simulation is meaningful interaction (Salen & Zimmerman, 2004). Meaningful interaction emerges, when the participants perceive their roles and contribution as valuable or indispensable for the advancement of the represented situation and the game. To encourage engagement, evident and integrated feedback loops during the course of interaction are of vital importance. The model should provoke different sorts of action and interaction, by which things may shift, alter, evolve or change. Effective introduction, inspiring briefing, direct responses and just-in-time help during the sessions and on-going process information are major factors to the involvement of the actors. It can be difficult to find the appropriate flow of feedback in the unpredictable courses of events that are so typical for youth care networks. The commitment of youth care actors depends much on the choices that are made in the construction of the model, and in how these choices relate to the overarching objectives of the program of change for which the simulation is intended. According to Salen (2007), simulations may encourage meta-level reflection on competences and processes, if players are engaged as co-designers. Their involvement can take different forms; however, the recognition of genuine professional content and work processes is fundamental. Besides that, we think that the involvement of participants must be supported by a shared interest in the potential of online knowledge exchange and by a collective wish to explore simulation gaming, to meet actual needs of professional practice. Participants in a learning community, such as a simulation game, train their abilities to gain fluency in their professional language by exchanging thoughts, perspectives and experiences. They sharpen their competences of thinking and dialoguing about dilemmas and problems through processes of constructing, performing and critiquing. Salen & Zimmerman (2004) suggest that games teach literacy skills of problem design and solution design in an ongoing use and development. The full process of collaborative design, effectuation and evaluation might work as an accelerator for learning, if we consider not only the effects and results of a simulation game. Also the arousing and interaction of different thinking skills and the collaborative construction of

scenarios by those who design, play and evaluate, entail strong stimuli for professional learning. We choose to focus on the input from practice to the stages of the configuration of problem cases and artifacts, the instantiation of the simulation, and the reflection and evaluation. With the three sensitizing concepts in mind, we invited youth care workers to participate in the co-creation of situational knowledge, the collaborative development of discourses and the cooperative construction of professional performance. The predominant goal was to substantiate and justify decisions of intervention, in view of timely and durable solutions to problems, as explained earlier. During each phase of the case study, we asked different experts from practice to comment on content, strategies, processes and results. This way, we made sure that the structure and artifacts of the model, the processes and results of the simulation game would gain enough validity as to their resemblance to real world practices.

In principle-based games the complexity of the system can be unpredictable. In fact, the respondents are the actual contributors of all information to develop the system and the situation. The method of simulation gaming, applied in this research, depends much on the participation of the people involved. To handle this process, we used a three-stages approach of configuring, implementing and reflecting on simulation gaming (Figure 19).

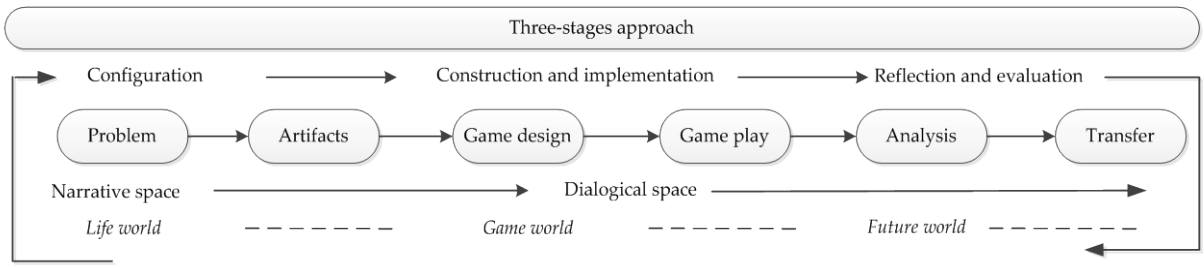

Figure 19: Three-stages approach

The configuration covers the specifications and conditions of the reference or source system. From this 'life world' system, we defined the input for the operationalization of objectives in the simulation model. We studied the problem situation and elaborated a framework of elements, in which we could work out the necessary artifacts of the simulation. The contribution of youth care in the configuration stage concerns the definition and content delivery of the situation, the problem, the role-descriptions and all further situational documentation. The second stage of the construction and implementation contained the consecutive stages of design, which was mainly the concern of the researcher, and game play, which was the full responsibility of the youth care participants. The reflection and evaluation stage was the joint responsibility of researcher and participants.

The first half of the three-stages approach is called 'narrative space', in which the problem was scrutinized through narrative accounts of all parties concerned and in which the artifacts were constructed in natural representations. The second half ('dialogical space') is characterized by dialogue in game play, analysis and face-to-face meetings, plus the questionnaire about possibilities of transfer. The model, instantiation and outcome were subject to reflection and evaluation, during several validation meetings with an expert group of youth care practitioners, researchers, game designers and trainers (please see the appendix). The meetings with this community of observers are part of the dialogical space.

RESEARCH FIELD AND POPULATION

In chapter 3 we motivated the selection of youth care, as our research field to develop and test the potential of network knowledge exchange through online simulation gaming. The main arguments for choosing this field had to do with the interdisciplinary nature of network exchange and the sense of urgency to obtain better performance for timely and durable results. In this part, we take a closer look at the position of the different groups of participants in this research. Their statements, interpretations and evaluative criteria in sessions and debriefings contributed considerably to the results. The respondents in our practice inquiries participated in model development (problem definition), whereas the actors in the case study took a principle part in model appreciation (solution definition). A difficult challenge is how to weigh the value of the outcomes from the multiple case study against the great diversity of interests and variety in complex youth care practices. To counterbalance the uncertainty of this, it seemed wise to recruit participants from a wide range of work experience and practices, which is what we effectively did in the multiple case study. In this section, we describe the input from practice organizations and from individual youth care experts in the design, effectuation and evaluation of the games in the case study.

Adequate and multifaceted ways of exchange are of vital importance to solutions that respond to the complexity of multi-problem, multi-actor and multi-reality situations. Collaborative thinking can be seen as a way to deal with worlds of experience through intersubjective consensus (Von Glasersfeld, 2001). In the configuration phase of the project, three youth care organizations and their network partners cooperated in defining the problem situation and in designing the artifacts and game model. In the dialogical phase of the project, we engaged youth care professionals, apart from organizations. From the research objectives it seems obvious to recruit participants with a wide range of experience and know-how from practice, for whom the problem case, the online network and environment represent a common reference point. From an externalist point of view, the simulation is an 'extended mind model', from which knowledge emerges through the interac-

tion of the participants (Van Mens-Verhulst, 1988). The model represents the external world to the minds that are active in the simulation, much in the way Clark & Chalmers (1998) argue that truth-conditions of thoughts are not in the individual mind; however, in active externalism, in which the environment is seen as the driving force to cognitive processes. This puts a claim on the selection of candidates, as actors in the sessions. They should be experienced in the subject and in youth care network practices and willing to act self-responsively from a professional position, independently from organizational and institutional logics and discourses, which are not relevant to the problem case. The participants should be aware of varieties of interests, and they should be able to position themselves in the broader reference field of users of simulation gaming. In the multiple case study, the participants are the resource group for the researcher and, at the same time, they are the community of observers, representing youth care professionals, who are the address group. They are involved in interpreting the problems and in specifying the solutions. They are engaged in defining the criteria of interpretation and of intervention. Interests, perspectives, goals, beliefs, traditions, customs and beliefs are brought in by the participants in our research, and influence interpretations and frames of reference. Therefore, we have to do an effort to discern the problem defining and solution finding group from the target group, as the users of solutions (Van Mens-Verhulst, 1988). Not only with respect to the stakeholders of the real problem situation; however, also for youth care practitioners in general. In collaborative design, the partial co-determination of the process and outcomes is a purposely envisaged and analyzed process and puts a claim on careful investigation of the general value and significance of outcomes for the wider community of users.

In total 55 youth care professionals[55] were involved, divided over 10 simulation sessions. The individual biases of the participants are spread over a wide range of age, work experience and education. The recruitment of participants took place in three rounds and in different ways. The first shift was recruited within the organizational structure of a training program. The second group was reached through a call over online networks of youth care professionals and the third arose from voluntary application of professionals, who were notified about the research through a national e-health conference. We wished to engage professionals, independent from organizations or existing networks, to avoid that goals and pragmatics of the case study would be intruded by organizational influences, discourses or interests. In the first round of sessions, we invited 25 social workers, who took part in a training program of outreaching care service. They participated in a role-team and session-team intertwined configuration of session B1 (Table 5). This group consisted of social workers, with a broad scope of ages and work experiences. They participated in-

dependently and for own account. The 30 volunteers of the second and third group showed an even broader diversity in backgrounds and were all engaged in youth care services from different positions and functions. They all shared an interest in online exchange and innovative approaches of youth care services (Table 4).

The participants received a thorough briefing of the expected in-game behavior and performance. In the first round, the briefings and debriefings were easy to accomplish within the organizational context of the training program. For the briefings and debriefings of the second and third round of sessions, we held regional meetings, based on the geographical spread of participants. The attendees were carefully briefed to simulation gaming and to the environment. The allocation of actors to the sessions and roles was made randomly. After the simulation sessions, debriefings in the form of reflective dialogues were organized in the same manner, enabling the actors to share session experiences and to express views and opinions. Those face-to-face meetings were grouped differently from the way the session teams were composed. Apart from pragmatic reasons, the face-to-face meetings with actors from several sessions was meant to encourage cross-session exchange of experiences. We expected that the variety in backgrounds of the session players, together with possible personal limits on time investment, could complicate the exchange processes. This appeared not to be the case. The participants apparently took their role in the sessions and their contribution in the reflective dialogues very seriously. The fact that the participants had no reciprocal personal commitments or obligations from outside the simulation game did not prevent them from performing on a high professional level. Apparently, the engagement in the simulation evoked a shared commitment and mutual involvement with a corresponding sense of responsibility for its completion and results. This effect of engagement is much similar to what happens normally in games and play. Team play brings about team commitment. This may provoke also a tendency of flattening differences of opinion, as session team players incline towards each other. And yet, we noticed that the actors encouraged each other to be critical and to put forward contrasting opinions and conflicting findings from the perspective of the role played, and in retrospective views on processes and performance.

In the next paragraphs we shall exhibit some of our theoretical considerations about constructing systems knowledge through ongoing processes of comparing problem world, discourse world and future world. The construction of systems knowledge in simulation games intends to facilitate recurrent actions of collecting, generating and structuring information, in view of strategies of intervention in complex problem situations.

The central assumption in this research is that we can project different views on situations: factual, interpreted and desired observations. We study facts and accounts from problem situations and model aspects of it in a simulation that serves purposes of interpretation, discourse and collective analysis for strategies of practical action toward a desired new state. The ontology of this is the description of the present state and possible changes over time, through the sharing of specific know-how, knowledge and experience. The empirical approach concerns the unfolding of static, formal and informal elements of a problem situation (life world), for the enactment of a model in a series of simulation sessions (game world). This allows for collaborative and cooperative case related knowledge development, while reducing cycle time and eliminating non-value-added work. The simulation can lead to the exploration of possible, probable and preferable scenarios (future world). The goal is to achieve new insights, intervention options and development chances by comparison of the real world system with ideas and expertise from the temporal simulation system and with the desired new state of the future world.

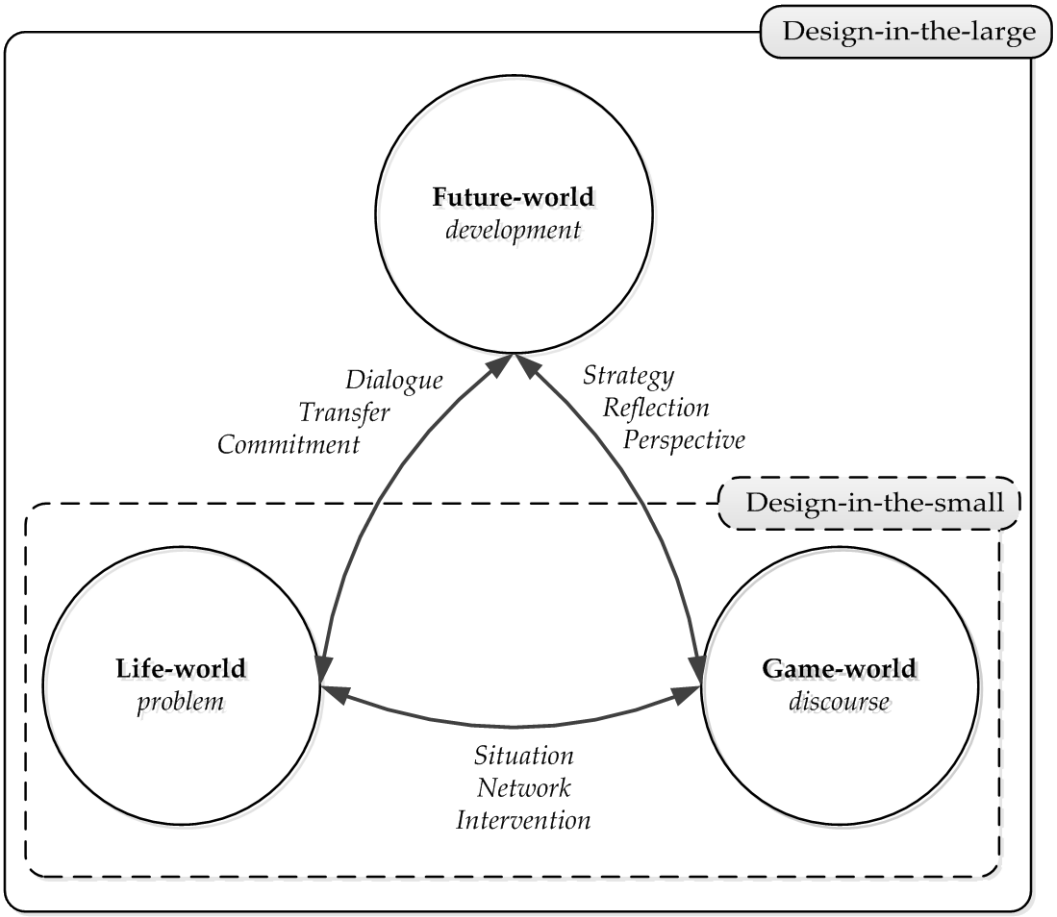

Figure 20: The connectedness of problem, discourse and development

Following Klabbers (2003, 2009), we distinguish the design of artifacts from the design of change (Figure 20). The design of a simulation model is considered as designing an artifact, or as game design as such, which is called design-in-the-small. On the other hand, we can design programs, in which artifacts, such as a simulation game, can be used as a tool or method to achieve change or development in situations. This is referred to as design-in-the-large (Figure 20). The results and effects that are accomplished in a simulation game, are meant to support learning, progress and change in a peculiar situation. The design quality of the simulation and the prescriptive value for practical know-how is directly connected to the intended descriptive claim to define and explain outcomes and effects in the wider context of objectives of the change program. The design criteria of the simulation game (*design-in-the-small*) are derived from the objectives of the change program (*design-in-the-large*).

In simulation design we compare information about situation, network and intervention with artifact construction and in-game knowledge development on the same subjects. The juxtaposition of in-game discourse with the anticipation of future development is supported by collaborative reflection, perspective analysis and strategy development. The enabling of future change in real practice is effected through dialogue about the relevance of session outcomes, agreements about the possibilities of transfer and through commitment of all parties involved. The design purpose is to offer the participants an online experience of complexity and interactive dynamics around a recognizable and realistic issue of child-rearing, so that the actors are able to compare the effects with their daily practices in similar cases. The simulation reproduces characteristics and contents of the problem case, in order to understand the conditions of the life world and future world and to experiment with behavioral change and scenario development (Duke, 1980). The design of the simulation induces a bottom-up strategy, in which suitable propositions are generated that are relevant to the situation. The design might also provoke learning and gaining insight in individual professional competences. And there is more to it, in particular when we consider a complex child-rearing situation as a system. In that case, the simulation works as an operational model to explore the characteristics of that system and might reveal its structural and functional relations (Greenblatt & Duke, 1975). This is a not insignificant option of simulation gaming for youth care networks, as understanding the systems characteristics is perhaps the most important key to intervention. A complicating factor of the case study is that it touches on more fields of reference, such as effective network cooperation, knowledge construction, voicing and professional proficiency. Not all fields are relevant for the objectives in this research; however, the wide spread foci in the case study are meaningful to how and what the professionals might perceive as feasible or useful functions of simulation gaming in youth care practices. The question is whether the partici-

pants agree or disagree to the assumption that we can use a simulation game as an effective practical exercise to understand the complexities in a problem system, in view of timely and durable change. Challenging this proposition entails the interaction and transfer between life world, game world and future world, in order to specify abstractions and, vice versa, to analyze situational conditions, circumstances and practical behavior on a higher level, or to gain new viewpoints on intervention options. Problems can be reframed and compared to future desires and can lead to interaction that bring about shifts in perspective. In comparison to the daily task of a youth care worker, this is no unusual practice; in fact this is what youth care professionals generally do. The difference and added value is that a simulation game is a comprised and compact form, and that the actors can be recruited from an extended community of expertise to participate anonymously, in switched role positions.

By way of studying the reference system, we interviewed the parties that appear in the case description, and worked out all necessary artifacts and documentation, pertaining to the situation. We asked the respondents to check the content of each case artifact, to make sure that the information provided in the application was correct. For the first version of design, we started from the apparent desperate exclamation of the family guardian in the real situation that 'nothing worked'. We wanted to address this revealing quote by asking the actors how they would estimate the developmental chances in this particular case and whether they would agree or disagree to the conclusion that in this problem situation no options for intervention or support are left. We expected that youth care professionals would refute the assertion that 'nothing works', as a well-known guiding principle of social interventionists is that there are always chances and options for development and change. What are the participants' views on probable, possible or preferable scenarios? We wanted to present the problem case as much as possible in accordance with normal procedures and practices. The virtual network examines the situation, just as if this particular case had been transferred from one network of professionals to another. And much like in real practice, the transferred information appears to be only partly factual, containing many doubts, unresolved issues and questions. The participants were explicitly instructed to follow their role-description and were asked to look at the situation and to interact from the perspectives that pertain to the role that was played.

Collecting, generating and structuring information

As explained in chapter 5, we think it is useful to compare knowledge development processes with designerly ways of thinking. Youth care professionals are often engaged in situations from which they gather information in a client-centered approach that enables

them to immerse in the subject. They incubate case data and reflect on the patterns of relationship to produce feasible interventions, often starting with seemingly insignificant small steps of practical help, just to build trust and gradually to find out what works best. This can be compared to design processes, in which a designer relates conditions and behavior in situations to gain a growing insight in the needs and requirements for the construction of artifacts. In both situations we distinguish abductive sense making processes (Dorst, 2013; Kolko, 2010): we have an idea about the desired direction of development and change; however we lack substantiated choices of what we should do and how we may achieve the desired outcome. As Dorst states, deductive and inductive analysis may not be enough to solve problems in the world of design and social intervention. Although the explorative literature search, preceding the case study, did not lead to guidelines and examples that apply to simulation gaming for intervention practices, several theories, about simulation gaming and modeling outside the realm of youth care, appeared to be useful to build our own framework of design principles (Zeigler, 2000; Kriz & Hense, 2006; Klabbers, 2009; Hense et al., 2009). Starting from the idea to consider simulation games as social systems, we borrowed some ideas of systems theory. Zeigler (2000) states that systems theory distinguishes between the inner constitution or structure of a system and the outer manifestation through its behavior. The basic concept of a system is a certain state that is affected by the relationship between input time histories and output time histories. The system's input-output behavior entails the comparison of pairs of data records, such as input data that are contrasted with output data. The internal structure describes the initial state and transition mechanisms, as well as 'the state-to-output mapping'. Studying the system structure enables to define how the inputs transform existing states into new ones. Understanding observable phenomena in a reference system, from either a problem situation or a simulation, permits to analyze behavioral patterns, conditions and effects. Resource data from the reference system can be structured as components to form a generative system to build a simulation model. In turn, output data from a simulation session can be treated as information to enrich the reference system. Static levels of information in reference systems, either from the life world or from the game world, can be considered as generative resource data for knowledge development. This ongoing process of acquiring, producing and structuring systems knowledge is illustrated in Figure 21.

As the tools, methods and processes are new in the domain of youth care and in view of the development of a grounded theory, we chose an iterative and gradually evolving approach with successive stages of design and redesign. This principle corresponds with ongoing courses of collecting, generating and structuring systems knowledge, as explained in Figure 21, and with the idea of alternating transfers between life world (problem), game world (discourse) and future world (development), which was explained in Figure 20.

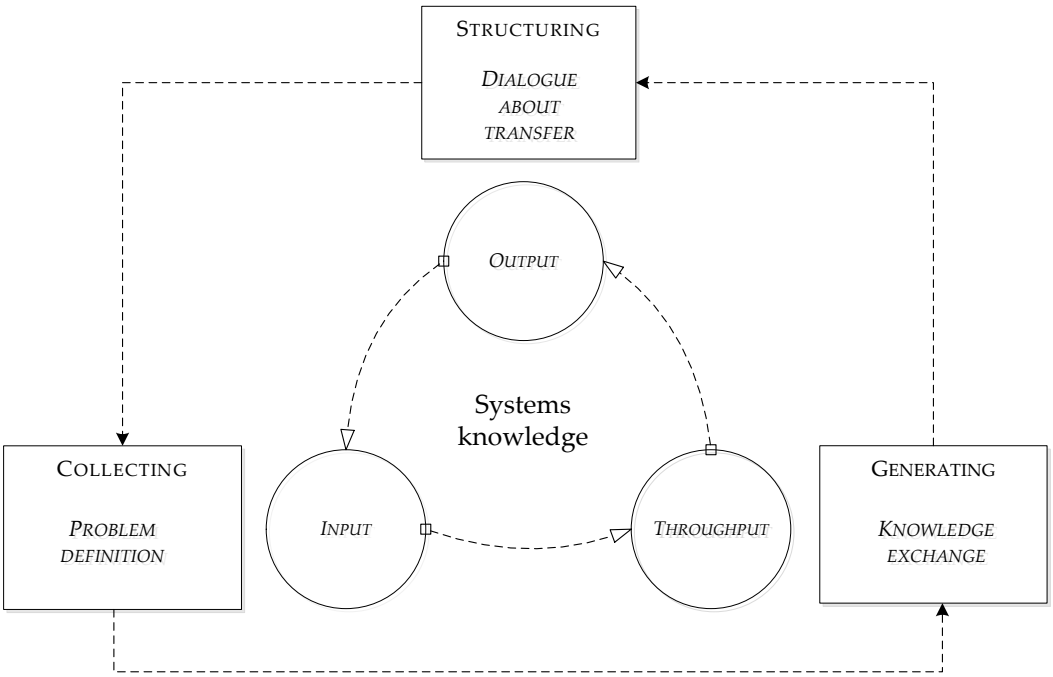

Figure 21: Collecting, generating and structuring system knowledge

The input-throughput-output model comprises a set of logical actions of exploration, discussion, deciding and justifying normative standpoints that can be applied to each task and in each phase of the simulation:

1. *Exploring situations* and developing questions. The input is the prefiguration of how to apprehend and to describe the reduction of content and encompasses all instructions to support the exploration of the case.
2. *Evoking discourses* of know-how, experience and insight. The throughput refers to how the actors in a session comprehend, supplement, interpret and understand the problem situation, in a composed and arranged scenario for future development.
3. *Establishing normative guidelines* for interpretation, strategy and intervention. The output concerns the pragmatic reconfiguration of results for transfer to the practice situation, with the explanation of normative, justified and legitimized rules.

The logical actions of exploration, discussion and reflection support the cyclic research process of analyzing problem situations, reducing complexity and generating and transferring results in the knowledge intensive practices of youth care. This cyclic approach envisages processes of acquiring and improving information about problems, strategies and solutions in fuzzy and dynamic multi-problem, multi-actor and multi-reality situations. With this basic structure, we attempt to fit in with the empirical cycle of practice research (De Groot, 1961; Van Strien, 1986). The empirical cycle entails the recurrent steps of diag-

nosing, designing, implementing and assessing and is a generally accepted structuring method of problem solution in social work (Thompson, 2006) and youth care (Eijgenraam, 2007). This cyclic approach is considered as an appropriate way to gain a progressive, step by step understanding of the problem case, presented in the simulation, and to determine what has to be done. Cyclic and logic courses of action structure the design and may support a step-by-step improvement of the model and can help to discern chronologies of tasks, phases and levels of performance in session effectuation. This cyclic approach is in many youth care theories considered as crucial to handle the intricacy of multi-problem situations. We were curious to see if the actors would adhere to this structure and how the work flow in sessions would unfold.

From the explorative inquiries, we know that knowledge exchange in youth care networks can be fussy and unpredictable in process and outcome. Although we wanted to favor autonomous and authentic behavior, the simulation model structures and thereby influences the exchange to a certain extent. The information in the case description partly determines the session activities and the task assignments will doubtlessly affect the interaction to some degree. This could interfere with the prerequisite of authentic and autonomous behavior. To limit unwanted effects that may result from the task descriptions and may hamper authentic behavior, we focused on task assignments that favor the exchange on a general and content-independent level. We chose to describe tasks in cyclic orders of gathering and sharing information, collaborative reflecting on perspectives, interpretations, conditions and possibilities, and on strategic thinking and of reasoning, clarifying and justifying choices and decisions. The explorative inquiries revealed also that the quality of youth care exchange depends much on the way the network partners share declarative and procedural knowledge and how they achieve strategic network cooperation and normative reflection. The task assignments are built on three levels of professional proficiency: describing, supporting and evaluating situational development. This corresponds with the distinction in cognitive psychology between declarative, procedural and strategic knowledge (Nickols, 2000). Although there are many views and opinions on the subject of knowledge, for the purpose of this research, we adhere to the notion of declarative knowledge, as knowledge that can be described, and of procedural knowledge, applied as know-how and as knowing-in-the-doing. Strategic knowing is part of both declarative and procedural knowledge. Strategic knowledge is inextricably connected to know-what, know-how, know-when and know-why; however, when it comes to describing, strategic knowledge becomes part of declarative knowledge. Strategic knowledge is the combination of knowledge and know-how that can take us into innovative directions, away from the beaten tracks and abandoning standard rules and procedures, as circumstances demand and allow it.

The game information about the case is scattered over websites and documents in the application. The homepage of each player serves as an hub and portal to all relevant information. Apart from finding information on the player's homepage, it is possible to find relevant content through points of entry on the city map and in the city directory. The task assignments in each phase of the simulation run in cyclic orders of informing, reflecting and deciding, through which the participants gradually explore the complexity of the problem situation. The following three question arenas are meant as starting points for self-guided processes of knowledge exchange in the sessions of the simulation game:

1. *Informing*. Describe the situation and the problems. What has happened or what is going on? What has been done in this particular case? The actors are asked to look carefully at the present state of the situation and to excavate and enrich the situational knowledge. This is the level of declarative professional knowledge, which refers to recognizing and identifying facts, events, perspectives, objectives, interests, et cetera. Declarative knowledge encompasses the understanding of all particularities, differences, similarities, alterations, conditions and constraints in youth care situations. This level of proficiency is fundamental to solve practical problems.
2. *Reflecting*. Describe the desired future state of the problem situation. What should be done and which actions are necessary to achieve better circumstances? Describe the point of reference and perspective. Reflecting includes the perceived task performance of each party. Defining the corresponding level of competence is procedural: knowing how to respond to parenting problems from the clients' perspective and from a professional and institutional point of view. This level implies not only the declarative description of the formal and informal characteristics of a problem situation; however, also the assignment and adherence to a certain classification and prioritization, and the acquaintance with evidence based practices.
3. *Deciding*. Describe how change could be effected. Apart from looking at the factual problems, and ascertaining reasonable and healthy alternatives, we ask the participants to imagine how the situation could be altered through steps and actions that emerge from the problem situation itself. This may imply unusual options, and even operations that differ from normal standards and practices; interventions that make a viable difference to change and progress. We deliberately invite the actors to think about adapting themselves to the needs and unique possibilities of the actual situation. This level of professional knowledge exceeds the more formal levels of proficiency and focusses on problem solving. Placing the problem situation and the network capabilities

in the center of attention, and to decide what is really necessary and what works, even if this makes it necessary to step aside from rules, procedures and institutional or organizational guidelines.

The design choices of the multiple case study arose from the practice inquiries (chapter 3) and the extensive tests with the simulations in curricular programs (chapter 4). The focus points for design, listed below, were refined in a spiral development process, along with the iterative stages of the case study.

1. *Envisaged outcome and effect.* The online simulation must facilitate easy and efficient exploration of problems and dilemma's and should support the evaluation and validation of decisions and strategies of intervention. In the design of the game, we asked the actors to develop future scenarios, strategies of participation and cooperation, and find normative frameworks for intervention in the problem situation.
2. *Moderation and interface requirements.* The online activities should resemble offline face-to-face meetings and any hindrances in the application should be eliminated as quick as possible. The game should function properly and technological barriers should be avoided as much as possible. Online help must be provided, just-in-time and effectively, during the game. The interface should be plain and simple and the focus should be content-driven; game elements should be applied modestly and in line with standards of professional knowledge exchange in networks.
3. *Flexibility in the effectuation.* There are many options to structure and plan the game; however, we aimed at a-synchronous participation[56]. This opens up flexibility on the side of the players. Within the general game arrangements, made at the briefings, the individual player should have some freedom as to moments of active participation and moments of reflection. We assumed that this would limit the time and energy investment of the participants. About three weekly hours of work during one month seemed feasible.
4. *Enlarging perception-action repertoire.* The game design must match well-known practices of role-play for learning and exploring, and should compensate for the often felt inadequacies of offline simulations. While encouraging role-play, the perceived limits to 'stage talents' (including stage fright) and the often felt superficiality of face-to-face simulation might be avoided in the online variant, by offering anonymous role assignment and time for reflection and inter-thinking. This tool of professional exchange should support analytical and evaluative functions of youth care practice and should enlarge the repertoire of contact and communication.
5. *Engaging professional skills*. The game should engage all sorts of available expert knowledge, attitudes and comments on the particularities of the problem case. It

must be possible to link theory to practical operations, and vice-versa. It is not unthinkable that the simulation is suitable for use in trainings, instruction programs and to introduce new workers to dilemma's and network practices. We want to encourage the display of expert know-how and expertise of the players involved. We want to create a safe environment for experimentation and we emphasize the purpose of learning in exchange processes, as opposed to assessing individual performance. The actors should feel free to argue and act responsible from their professional discretion. The players must be guaranteed that their responsibilities, privacy and the confidentiality of the generated data are respected.

6. *Challenging, collaborative learning*. Sharing and developing stories about the practice situation that is at stake, should evoke processes of learning, co-creation and co-operation. Perspective change may open the actor's mind to a multitude of experiences and views on the situation. The simulation should encourage lively interaction and feedback, which puts a claim on design. The game should be designed to improve hermeneutic understanding that might lead to a better insight in situations and perspectives as presented.
7. *Developing practical know-how.* The simulation serves as a platform to enact difficult practices in an attempt to produce know-how and reflection-on-action. The design should support the acquisition of well-developed notions of the positions, tasks and responsibilities of the different professionals in the problem situation. Each player is invited to explore his or her role in the game and to enact that person with his or her perspective, interest or assignment, challenges, constraints and position in the local situation and in the network.
8. *Validity checks.* Validity and reliability requirements imply a clear and preferably simple focus. In view of the ambitious objectives of this research, our findings must be rooted in a mixed method of triangulation. We make use of different resources and validating approaches, to see if the outcomes point in the same direction. Besides that, we maximize the opportunities for input and feedback from practice. A balanced choice must be made from the manifold variations of game techniques and game elements, following the requirements that have been defined by youth care practice workers.
9. *The participants.* The recruitment of participants will be done from a broad and diverse range of experts, work situations and experiences. We shall engage different evaluation techniques, such as database analysis, the coding and categorizing of the outcomes from reflective dialogues and a questionnaire, and we use observations during the effectuation. The participants' views on processes and outcomes of the

game and on the possibilities of transfer will be compared with factual data from the sessions environment, in order to strengthen interpretations. During and after the whole process of designing, effectuation and evaluation of the simulation game, we shall do an effort to investigate the moderator's position and the researcher's bias. All results will be presented for comment and feedback to a group of experts from the research field.

As we have seen, modeling demands smart ways of discovering valid representations of observed behavior to build systems theory. Complex systems can be understood by analyzing configurations, relationships, behavior and interdependencies within that system and its components. We translated this idea to a concise framework of development steps (Figure 22) of configuration (problem situations), construction (game) and reflection and evaluation (debriefing and transfer). The simplified model of reality enables us to learn more about the problem state and about the desired future state, through the intermediate state of simulation gaming. Following Zeigler (2000), we generate samples from practice and from sessions for systems analysis and systems inference. By systems analysis, we build an understanding of the structure of the problem and of the in-game behavioral patterns. By systems inference, we try to observe and comprehend the systems operation. By studying the participants' performance in sessions and by analyzing the constructed knowledge, we build a theory that is grounded in systems modeling and systems information development through simulation games. This way of working seems useful to feed generated knowledge back into actual practices (Peters et al., 1998; Zeigler, 2000; Crobach, 2012).

The displayed concise framework in Figure 22 affords an overview that indicates the intermediate steps of the definition phase, the modeling phase, and the implementation phase. Bearing in mind that we wanted to stay close to work practices and in view of purposes of co-creation, we needed an outline that shows all steps from the first idea up to and including the final results. The scheme illustrates the interdependency of model development and model appreciation. Each step along the process between design and outcome signifies a different focus point of the three-stages approach, as elaborated in Figure 19. With this concise framework, we could proceed with the development of a design method, in which we stressed the interconnectedness of and transfer between the practice situation, the virtual environment and the projected future progression.

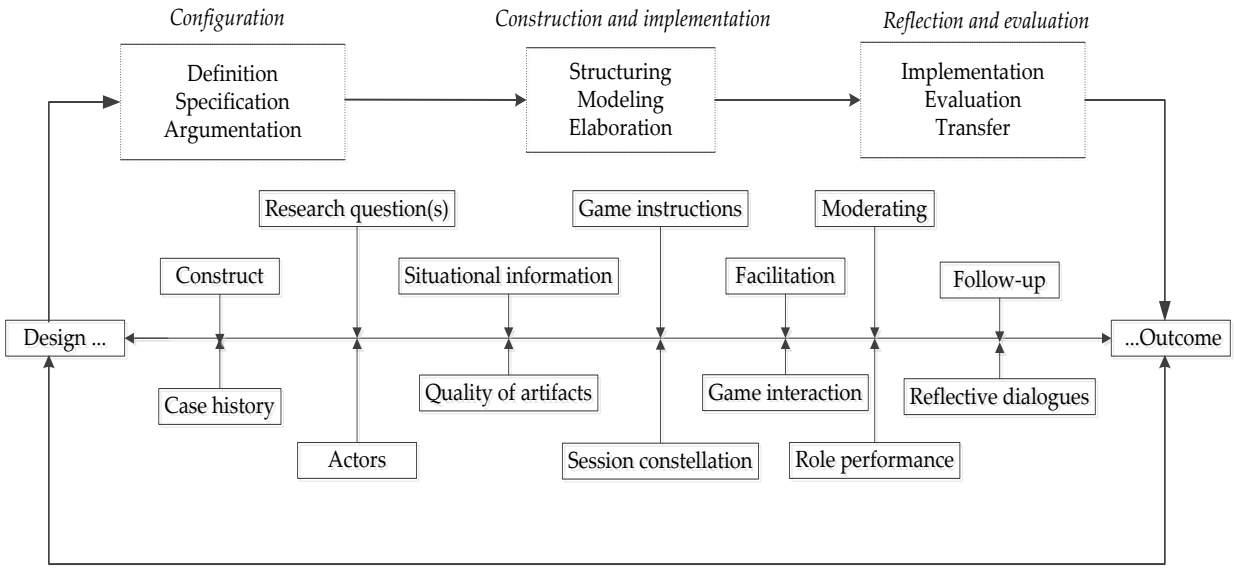

Figure 22: A concise framework of development steps

We have used the framework in a threefold way: on case level, on task level and on session level. This will be explained in the next paragraph.

THE CASE, SESSION AND TASK LEVELS OF DESIGN

We describe the development of three levels of design and appreciation (case, session and task) that are applied in the case study, in view of the main purpose of an impact assessment of the relevance, usability and usefulness of simulation gaming for youth care knowledge exchange. With the outcome we might find an answer to the research question of how youth care professionals value the significance of simulation gaming for knowledge exchange. This classification corresponds with activities of youth care network exchange: the study of problem cases, the strategic deployment of network potentials and the enhancement of professional proficiency. On case level, we aim at the relevance of simulation gaming for the advancement of intervention options, strategies and justification. On session level, the objective is directed towards usability and to find out whether online knowledge exchange is an appropriate tool in youth care networks. On task level, the goal is to know the usefulness for optimum role performance, from the perspective of the users. In the iterative design approach, the model will be tested in various rounds of implementation and improvement. In the long run, this design development process can contribute to the validity and transferability of model and outcome (Reynolds, 1998; Sidano & Sechrest, 1999; Donaldson & Gooler, 2003; Hense et al., 2009).

The design of the simulation model is directed towards facilitating the most prominent tasks of inter-disciplinary network consultation in youth care:

1. Case-based learning and reasoning about a problem from practice;
2. Network knowledge transfer in view of performance enhancement;
3. Broadening change options and solution-driven possibilities;
4. Network strengthening and strategy development;
5. Clarifying, justifying and legitimizing choices of interventions.

The simulation concerns the significance of knowledge production in view of appropriate solutions to the case and anticipates a session output of viable future scenarios, network strategies and normative frameworks for intervention. The session must support autonomous knowledge exchange, which has consequences for the way task assignments are formulated and for the method of game moderation. The tasks should indicate the envisaged output; however, without being too prescriptive and allowing a maximum of professional discretion. The moderation of the simulation process must be restricted to functional operations in the environment and should be non-interfering in session activities. The actors are expected to have a major effect on the quality of the interaction process. The case, session and task (CST) levels of design are used for the construction and assessment of the design model and for the evaluation of user-appreciation. In Figure 23, 'case' is practice; 'session' is discourse and 'task' is performance.

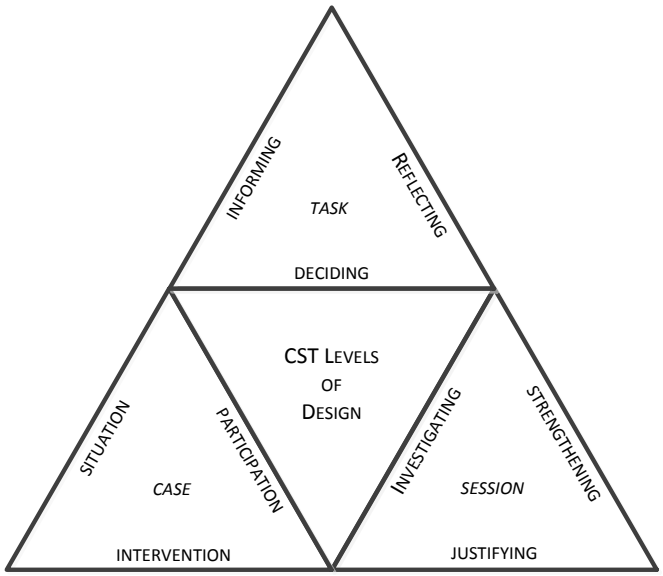

Figure 23: Case, session and task levels of design

As described above, the CST levels enable to analyze and evaluate the relevance (case level), the usability (session level) and the usefulness (task level). The usefulness of simulation design points at the efficacy for the development of individual competences. Task per-

formance can be considered as a function of relevance (case level) and usability (session level) and is an effect of usefulness, which is the intermediate level between relevance and usability. Session performance relies heavily on task performance and in-game behavior of the participants, much in the same way as every normal network practice depends on the input and participation of the members.

The simulation assignments are formulated within the wide ranging functions of *informing* (case), *reflecting* (session) and *deciding* (tasks). The general and case-independent functions of youth care knowledge exchange should initiate the exploration and enrichment of situational and network cognition and support the reflection on justification, consequences and significance of interventions. Deciding refers to determination, taking positions and drawing conclusions. The design structure of the simulation in phases and tasks should be in line with the problem situation, with average work procedures and with the feasibility of implementation. The perceived sense of urgency in the problem case asks for a relatively quick and short-termed planning. Our estimation was that the session tasks would require a time-investment of two-three hours a week over a term of three weeks. Although the effectuation of the game could be structured in various ways, e.g. in one day, the three weeks schedule seemed more appropriate for a thorough examination of the possibilities of this way of knowledge exchange and seemed in accordance with usual network practices. This led to the decision to split the simulation in three phases, each addressing a particular assignment, as stepping stones towards the envisaged outcome at the end of the session.

THE DESIGN MODEL VARIANTS

We shall explain how the above described design levels have been elaborated in the model and variants of the simulation, and how they were used in the implementation rounds of the case study. The simulation model and variants have been developed in three subsequent session rounds. Design choices as to the content of each variant, were based on the outcomes of preceding sessions and the progressive insights that emerged from implementation. This allowed a step by step improvement of the design model and the artifacts, and made it possible to experiment with different strategies of moderation. The situational information, the leading questions and basic principles of the game (6.4) remained unchanged in each variant, in order to enable comparison between variants. Furthermore, some other conditions stayed the same in each variant[57]. All sessions were accompanied by the same information. The actors were piloted in each level of the game by a general instruction that made sure that the exchange process would follow the main structure, as displayed in the above referred three leading questions. The actors were accurately briefed

and introduced to the simulation, however without giving the details about the problem case beforehand. We made clear arrangements about the time-span of the game and of the estimated time investment to fulfill the task assignments. We wanted to encourage a free flow of knowledge in all sessions. Each session had to provide enough room for player's initiatives and free interaction. The game elements, applied in all sessions, are draw from the same selection, as described in section 0. They are role-play (mimicry) and role-performance, dealing with chance and coincidental events (alea), cooperation within sessions and competition (agôn) between actors and sessions[58].

1. *Role-play and role-performance*. Each role-playing actor was subject to a particular role instruction. Through explicit role descriptions, we tried to stimulate the actors to challenge each other with different, confronting or even conflicting views and approaches in this problem case. This was motivated by our experience that session players are often inclined to consensus and agreement, in view of the advancement of the game. This could partly smoothen out the variety of opinions. We hoped that the confrontation of different views and disciplinary approaches would lead to more chances for new and unexpected ideas and options. It appeared that the actors took up their role-prescriptions very seriously and, as they stated afterwards, this indeed resulted in shifts of perspectives on problems and solutions. We applied a competition element during the course of the simulation in order to stimulate self-reflection on role-performance. This was done at the end of each game level (3 times). We asked each actor to review the role-performances of all participants, including one's own, by awarding a grade. The results of these series of 360^0 feedback were presented on the homepage of each player[59] and helped each actor to think about the effects of actions and interactions. Each new score was added to the previous one and changed the score chart. We deliberately left out argumentation and explanations of these scores, to encourage autonomous reflective thinking and interpretation of each player on role-performance and the effects on the session members. The aim was not to assess; however, to provide an impetus for reflection on perceived role-performance.
2. *Chance and coincidental events*. In all sessions uncertainty as to the players' actions and interactions was evident and predominantly contributing to elements of chance and unpredictability. Each session demonstrated different patterns of cooperation, interaction and initiatives. In the last session, we experimented with random actions, by introducing new facts during the course of the simulation. The new information concerned a serious street fight, in which Mouad was involved, and was presented to one of the actors through a telephone call from an apparent police officer from the virtual city of Cyberdam. The nature of the incident could be interpreted as a violation of his probation and therefore increased the critical level of the problem situation. The infor-

mation could be checked and completed in Cyberdam, through various sources, such as a local newspaper, a website of a youth center and in the role-description of the (non-playing) police officer.

3. *Cooperation and competition.* Effective network cooperation is vital for the construction of the desired outcome. Studying processes in different sessions reveals many details about effective communication and interaction. Some actors were highly effective in developing new ideas or strategies in bilateral contexts in the chatroom. After these informal preparations, they worked out their ideas as a comprehensive email-proposition to all actors. This resulted in transparency, because all preparatory communication could be read in the chatroom reports, with enough room for interference, comments and rebuttals. We noticed remarkable dissimilarities in processes and outputs between sessions. These contrasts of performance were valuable input for the evaluations and reflective dialogues.

As explained above, the explorative and cyclic approach helped us to realize several variants of the basic model (Table 4).

Basic design model	SITUATIONAL COGNITION DISCOURS PARTICIPATION REFLECTION ON INTERVENTION		
Roles	*MOUAD AND HIS FAMILY (NON-PLAYING CHARACTERS)* CLIENT REPRESENTATIVE FAMILY GUARDIAN JUVENILE PROBATION OFFICER SCHOOL TUTOR FAMILY THERAPIST		
Variants	B FUTURE SCENARIOS	S NETWORK STRATEGIES	H NORMATIVE REFLECTIONS
Sessions	B1: 4 SYNCHRONOUS ONLINE SESSIONS ROLE-PLAY IN TEAMS 25 PARTICIPANTS F2F MODERATION	S3: ASYNCHRONOUS ONLINE SESSION 5 PARTICIPANTS ONLINE MODERATION	H5: ASYNCHRONOUS ONLINE SESSION 5 PARTICIPANTS ONLINE MODERATION
		S4: ASYNCHRONOUS ONLINE SESSION 5 PARTICIPANTS ONLINE MODERATION	H6: ASYNCHRONOUS ONLINE SESSION 5 PARTICIPANTS ONLINE MODERATION
	B2: ASYNCHRONOUS ONLINE SESSION 5 PARTICIPANTS	HBS 7: NORMATIVE REFLECTION & FUTURE SCENARIO & NETWORK STRATEGY ASYNCHRONOUS - ONLINE SESSION 5 PARTICIPANTS - ONLINE MODERATION	

Table 4: Basic design model and variants of the simulation game

We employed three variants of the basic model, each aiming at a different end state product. The B-sessions produced future scenarios. In the S-sessions the participants worked out network strategies for the situation and network in this particular case. The H-sessions achieved frameworks of normative guidelines for intervention In the last round, the three basic variants were combined in a comprehensive and enhanced final variant, called HBS, in which the participants started with the determination of normative standards. From this level on, the actors worked out options and priorities for practical action, continuing on the third level with the elaboration of operational network strategies. This ultimate version of the simulation entails the best design choices of the preceding variants[60].

Each of the three variants, B, S and H, figured in parallel sessions with different participants, to enable comparison. At the end of each session, the participants were invited to an online questionnaire about their views on the possibilities for knowledge exchange through online simulations in work practices. Shortly after the simulation, the actors participated in face-to-face reflective dialogues about processes, effects and results. Just like the preparatory meetings (the briefings) these debriefings were held in mixed groups, so that processes and outcomes of different sessions could be shared. In the reflective dialogues, each actor was granted enough time to reflect, not only on session interaction and performance in the multiple case study; however, also on the more general level of online simulation gaming for professional knowledge exchange and the prospects for professional youth care practices.

The first round of the simulation was effectuated in a more controlled way, compared to the succeeding ones. In variant B1 we organized four parallel sessions with 25 professionals in small teams. Each team (3 persons) played one role, so that the members of a role-playing team had the opportunity to cooperate and reflect together on steps and interactions. Moreover, each role-playing team operated simultaneous in 4 sessions, which enabled the actors to experience and compare differences in response and interaction. Through this web of connections between roles and sessions (Table 5), the role-playing teams could benefit from the contribution of all other teams that were engaged in variant B1. The final goal in the B-sessions was a script for future development of the problem situation, through the maximization of mutual exchange of information and ideas that could lead to the enrichment of the players' views on the problem situation. This first round (B1) was effectuated synchronously, on fixed moments, with moderation on the spot.

The actors participated from different locations in the same building, on three separate log-in times, planned over a period of three weeks. This way we could realize the maximum control and closely observe the players' behavior and we had the opportunity to experiment with face-to-face moderation, diminishing the risk of wrong interpretations or

false assumptions as to help needed. This approach suits educational or training objectives at optimum level, as the chances for exchange and the opportunity to attain an individualized task-competence fit are high. The participants had the best possible chances to learn from each other (Table 5). At the end of the game, each role-playing team delivered a written scenario, picturing an imagined future situation after 18 months, based on the exchanges in the sessions and narrated from the perspective of one of the family members or network partners.

	A	B	C	D	E
1	Josefien Roodnat, family guardian *(safety-diven)*	Patty Eggers, family therapist *(solution-driven)*	Harm Feijnaert, juvenile probation officer *(problem-driven)*	Fatouch Belhaj, client-representative *(demand-driven)*	Karim Chakir, school tutor *(supply-driven)*
2	Anna Rietkerk, family guardian *(flexibility-driven)*	Patty Eggers	Harm Feijnaert	Fatouch Belhaj	Karim Chakir
3	Dirk Janz, family guardian (*rationality-driven)*	Patty Eggers	Harm Feijnaert	Fatouch Belhaj	Karim Chakir
4	Nurdia Uzmen, family guardian *(intuition-driven)*	Patty Eggers	Harm Feijnaert	Fatouch Belhaj	Karim Chakir

Role-team configuration

Session-team configuration

Table 5: Role-team and session-team configuration in variant B1

An important observation from this first effectuation was that the participants did not have problems with the functionalities of the interface, and that the players were able to fulfill the assignments within the given time-slots. They stated, however, that they lacked a feeling of control and interaction on the homepage. This seemed an important remark, on which we based alterations of the game model and the artifacts. In the next round we introduced a chatroom on the homepage of each actor for informal contacts and for general questions and remarks. We adapted the task formulation on the basis of feedback

from the players, to afford more feeling of control and professional discretion. We noticed that the players had no apparent difficulty in 'narrating the future' and even enjoyed doing so.

At the evaluation, the actors put forth that it would be more challenging to compete between teams on the best scenario. At the end of the game, the actors received feedback on the developed future scenarios from practice experts[61]. Analyses of the players' in-game behavior showed that writing future scenarios as such, led to less interaction than we expected. We adapted the assignments in the session B2 in such a way that exchange would be more obvious and necessary. We decided to rerun variant B, though under changed independent and mediating variables.

As we can see in Table 4, variant B2 was effected time, pace and place independent and with a minimum of functional moderation. We noticed that in sessions B1 less attention was paid to strategy development and to the legitimation of choices of intervention. Therefore, we decided to develop the S and H variants that focused in particular on network strategy and on the reflection on choices of intervention. From the new variants S and H, we learned that the tasks to generate situational network strategies and to define situational values uncovered certain deficiencies in experience and knowledge, as we shall discuss in section 6.6.

Although the function of variables in this research is very modest, we can distinguish between independent, mediating and depending variables that have a certain influence on the outcome of sessions of simulation games. Please refer to Table 6.

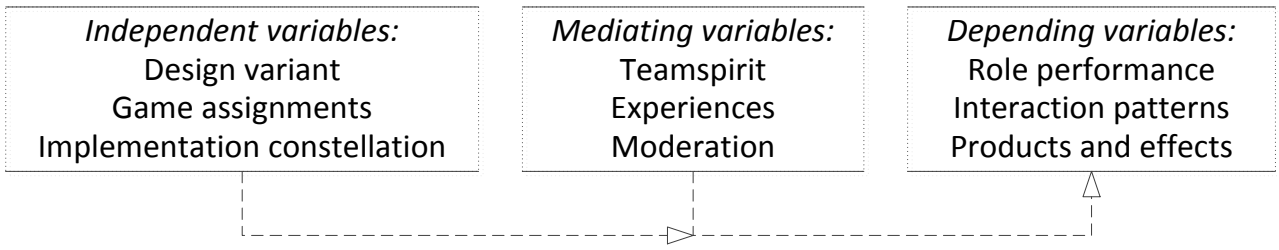

Table 6: Variables in the simulation sessions

The depending variables are affected by the conditions of the independent and mediating variables. The independent variables are determined by the variant used, the tasks and actualities of the implementation. The team spirit that arises from the interaction, the input of experiences, strategy and style, and the effects of moderation, are considered as mediating variables. The actual role performance, the interaction patterns and the realization of output are the depending variables or effect variables.

We had no control over the mediating variables of personal talents, styles and responsiveness. Still these mediating variables appeared to be of great value for the quality of session processes and outcomes.

In the course of effectuation, we noticed that the players had apparent difficulty with strategy development and with identifying value-driven normative frameworks for intervention. Concerning strategy development, the actors found it hard to take the unique features of the situation and of their own network constellation as a starting point. It seems that youth care professionals are not accustomed to or trained in strategy development that takes full account of the idiosyncrasy and practicalities of a specific and unique problem situation and network constellation. As to the work on value-driven normative frameworks, the simulation indicated the possible need of more training in concepts of value-driven decision making and ethical dilemmas.

THE REFLECTIVE DIALOGUES

In this research we are interested in authentic, genuine opinions of youth care professionals as to the possibilities, practicalities and pragmatics of online simulation gaming for professional knowledge exchange. We decided to borrow some of the methodological aspects and theoretical notions about dialogue, shared listening and collective learning from theorists such as William Isaacs (1999); Brown (2005); Buber & Miranda (2007) and Scharmer (2009). Dialogue is an art of collaborative thinking, to which the contribution of each member is indispensable. The persons, involved in dialogue as exchange form, agree to listen unconditionally and with an open mind and heart. It can be difficult to avoid questioning or judging experiences and opinions of other people, even more when the content is very much value-driven and depending on positions, interests and perspectives. And yet dialogue is vital to progression in social work practices, because the main motivator for change is participation, which can be enhanced by dialogue. Tsang (2007) has elaborated the concept of reflective dialogue in social work practices and stresses the importance of listening to internal and external dialogue to shift one's awareness to the multiple perspectives of people that share the same experience, interest or problem. Tsang explains that reflective dialoguing is of great value to social practices. Social professionals are often exposed to the danger of the misuse of authority, on either side of relationship. Dialogue supports acquiring broadened sights on the varieties of experiences and insights, which is necessary in view of social values as respect, trust, fairness and justice. The integration of dialogic processes in youth care practices holds rich promises for motivation and participation of all persons involved in complex situations. It is beyond doubt that we need a further development of the concept of dialogue in social work, both as theory and

method, preferably tested in evidence based practices. In Table 7 we propose a set of guidelines to reflective dialoguing.

We intended to organize debriefings, directly after the sessions, in the shape of powerful conversations that would engage the professionals in constructive dialogues for collaborative session based learning. The aim was to uncover the most important constraints and possibilities of simulation gaming for youth care knowledge exchange. We wanted to encourage the sharing of experiences, with open mind, open heart and open will, and to create an atmosphere in which the attendees would feel free to think aloud and to express their personal doubts, ideas, insights and views. Listening, in a sphere of true and impartial attending, is central.

Table 7 provides some simple guidelines for reflective dialogues.

Some simple guiding principles to conduct reflective dialogues
1. The dialogues have a clear and explicit start and an 'open ending'.
2. There are no conclusions at the end.
3. There is no chairperson and all attendees are treated equally.
4. The participants are invited to sit in a circle, so that everyone can see the others.
5. Following the traditional talking circle of North American indigenous people, we use a rain maker[62] as talking stick.
6. Each time a person takes up the talking stick, the sound of rain is heard, after which the person starts to talk.
7. He or she got all the time needed to talk, without interruptions or questions.
8. The others take active listening postures.
9. There is no hurry. Silences are welcome moments of introspection.
10. When everything is said, the talking stick is put back on the table in the middle and we eventually listen to some rain sounds again.
11. Then, we wait till a next person takes up the talking stick, in any order, and we listen with the same intensity.
12. After everyone has spoken, there is a 2nd round, in which each person has the opportunity to add remarks and observations that came up, during the 1st round.
13. Each person, who talks in the 2nd round, rises and stands behind the chair.
14. All of the guiding principles of the 1st round apply to the 2nd round as well.
15. By the end, all attendees are standing and leave the meeting in silence.

Table 7: Guiding principles for reflective dialogues

The word dialogue refers rather to listening, than to speaking; only one person speaks at a time. This conversational and dialogical practice of collaborative thinking resembles how musicians listen and play together: at the same time unifying thinking, listening, assessing and acting. The ultimate goal is knowledge creation, as a self-seeding process, in an ambiance of trust and with both a personal and a more than personal character. We invited the actors to stay close to their individual thoughts and feelings, and to cherish the inner conversation, and at the same time, to be open to something more important, something larger than individual talk. We hoped that this collaborative process of listening, sharing and learning would add value to the individual comprehension. This approach is different from debates or discussions, in which the contestants easily end up in theorems that are defended and that search for the highest position in ranks of truth and persuasion. We wanted the collective thinking and questioning processes to continue, even after these generative dialogues (Isaacs, 1999), much like youth care problem situations, in which questions are often more important than answers. We envisaged a diversity of opinions and views and an optimal coherence of perceptions. Compromises or suboptimal standpoints, shared by the majority, were not our objective. Each reflective dialogue took about two hours and was audio recorded. The transcriptions of the reflective dialogues were presented to the participants for verification and approval.

The transcripts were treated in a qualitative data analysis program[63]. The code tags that emerged from the texts, are: problem case (23 segments), knowledge exchange (270), simulation model (126); simulation process (171) and simulation output (31). These codes are not mutually exclusive and show a close coherency and interdependency. After this initial code, we recoded the data to the categories of the case, sessions and task levels (Figure 23). Though it is helpful to discern data as case, session or task related, these levels are closely related and interwoven. It was not always evident to which level a remark or statement refers. The choices that were made to attribute each statement to a specific level, are based on the researcher's interpretation, though each statement was interpreted in context. To decide to which tag a statement should be attributed, we held on to the following distinction between the three levels:

1. On case level: the *relevance* of online simulation gaming for the exploration and creation of situational cognition, for the support of network participation and strategy development and for legitimizing interventional propositions;
2. On session level: the *usability* of simulation gaming in teams. Statements about broadening viable possibilities and options of cooperation and coordination, strengthening network relations, and structuring collaborative discussions about network strategies.

3. On task level: the *usefulness* and perceived pragmatics of online simulation gaming for learning and competency improvement or assessment, in function of network exchange, on an individual level.

6.5 THE TRACK RECORDS OF SESSION PERFORMANCE

All data from interviews, questionnaires and reflective dialogues have digitally been processed and coded. The statements about user-experiences and views on online simulation gaming for youth care knowledge exchange from the perception of youth care professionals are the main resource for the data-analysis. We decided to apply a comparative analysis of user-experiences with the factual data from session interaction and session results. The large amount of unstructured data from sessions is hard to analyze without processing. For that reason, we developed a tool, as explained in chapter 5 and displayed again in Figure 24.

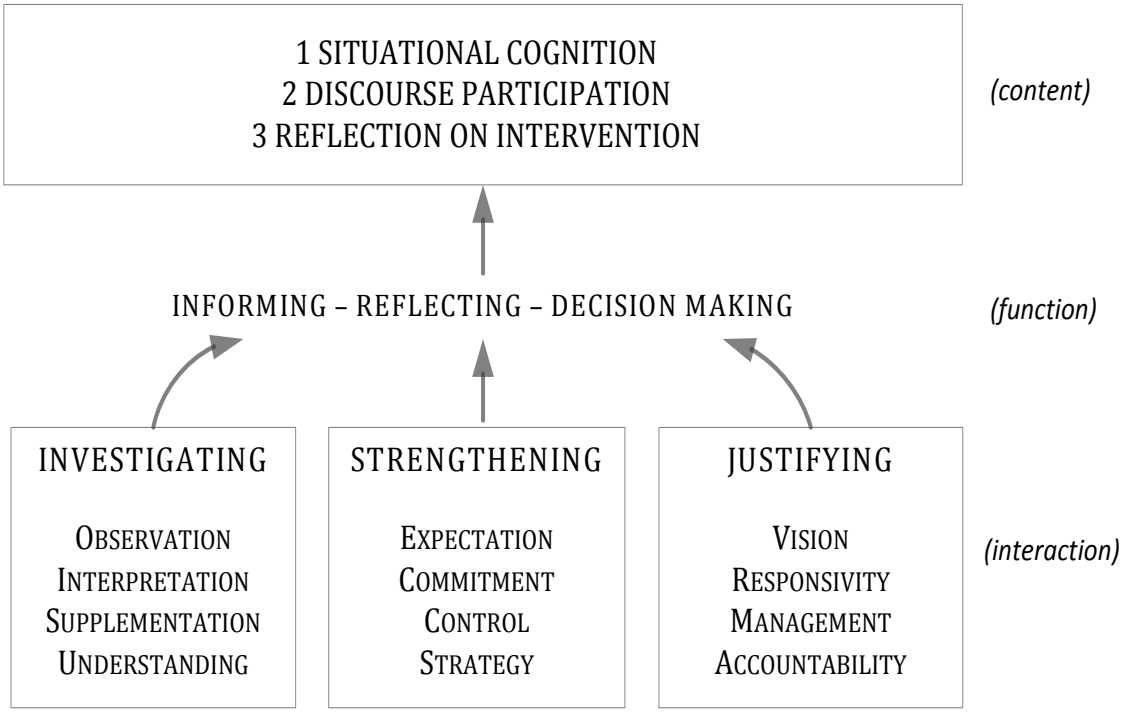

Figure 24: Analysis tool to structure session data

In this chapter we enumerate some quantitative diagrams that resulted from applying the tool on the track records of the sessions[64]. The tool represents a rigorously organized and selective abstraction of the main categories of activities and content of youth care network exchange. The constitutive elements are based on the outcomes of the explorative inquiries of this research, and sprout from meta-analysis of the session performance. In fact, the tool is an example of how to construct an instrument that can be used by all people involved in the sessions and problem situation, representing a consensus of how to structure session

data in a framework of referential tags. The tool enables to compare inventories of session data with statements of participants in reflective dialogues. The records in the diagrams, which are shown below, give an impression of the logic and foci of attention in each session. The significance of an analysis tool depends on how it is used during the development, implementation and interpretation of results (Evans, 2004).

The analysis tool in this research can be understood as a referential language for all actors involved and is based on mutual agreement about the structuring of network knowledge and activities. It is very well possible that the content and contextual choices that constitute the tool may change from observer to observer. The instrument does not provide unequivocal results, as its use depends much on the observer and on the way one looks at session records. The instrument can be used by more than one person to look at the same data, probably revealing different outcomes. Thus, it will be possible to compare different views on the data with this tool, to enrich the dialogues on session performance. Session team members can use the tool to deeply investigate their own session interaction and content, by way of preparation for debriefing or for learning. The analysis tool could be used to obtain inter-rater reliability of findings and interpretations of session processes and results. The point is that varieties of outcome may lead to new or better insights in the value and significance of the results from simulation games, depending on qualities of dialogue, analysis and interpretation. As explained in section 5.4, this domain specific analysis tool consists of categories of session interaction, in function of the co-construction of content that pertain to the three central themes of *situational information*, *discourse participation* and *reflection on intervention*. The categories investigating, strengthening and justifying have been defined as the main, general classes of action. The core activities, specified under each category of interaction, have been chosen as logical tags, which originate from the first analysis of session activities. These choices might be disputed; however, we think that our choices of these constitutive elements display enough generality to be applied to a broad range of interaction in youth care network exchange and that they can be accounted for in the context of the outcomes of the case study. The utility is that it provides a lucid, conceptual framework to guide the diversification of interpretations and perspectives, experiences and statements about processes and results of simulation sessions. The tool grew in processes of analysis and discussion about exchange practices and session outcomes. A domain specific analysis tool becomes rich and valuable through iterations of design and evolves as a part of the research texture (Evans, 2004), which is applicable to this research.

The analysis tool produced several diagrams that indicate the relative importance of subjects and interactions in the case study as a whole (case level) and in each of sessions (ses-

sion level). The graphs offered cues for questioning and discussing session experience and assessing choices of design and implementation. Figure 25, for instance, shows the produced practical knowledge on case level (total) and on session level (B, S, H, HBS); also exposing dissimilarities of knowledge production between sessions within the same game variant (V1-4). On case level (left side of the graph), we see that the total of accumulated knowledge is fairly equally divided over the three knowledge fields: *situational cognition*, *discourse participation* and *reflection on intervention*. The overall picture in the first column is different from what we see in the session columns. We may also notice variances of levels of content, when comparing the game variants. We see that *situational cognition* receives less attention in the S-sessions 3 and 4 (V2).

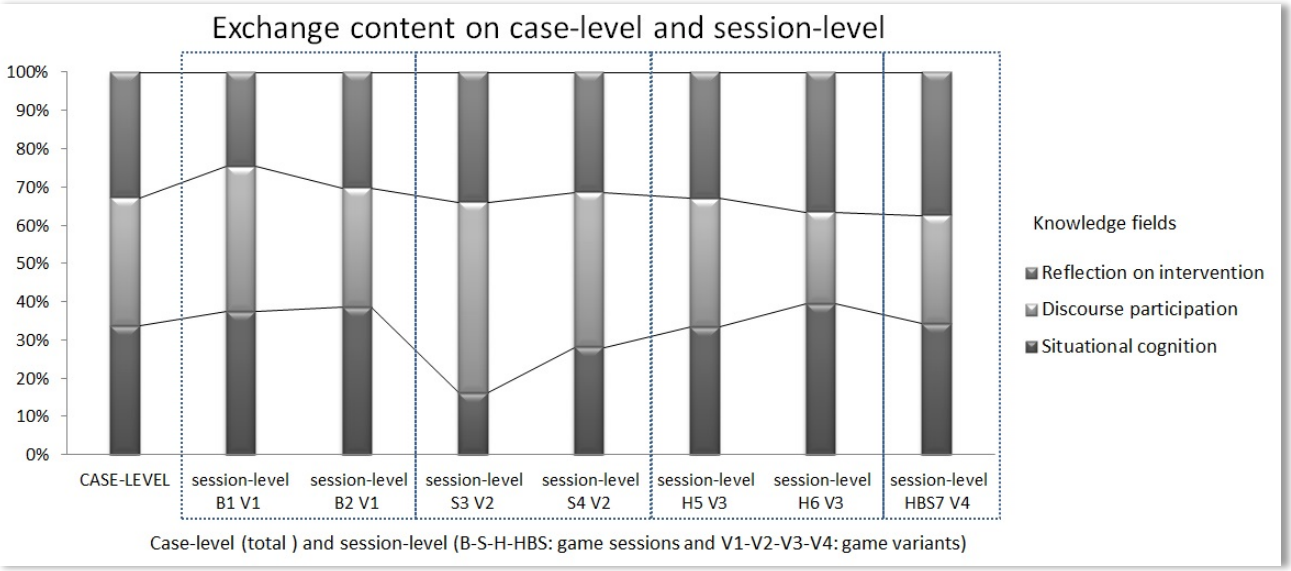

Figure 25: Comparing exchange content on case level and session level

On the other hand, we see more interest in *discourse participation* in these sessions. This assertion is supported by statements of the actors in the S-sessions that the alignment of direction and discussion was hard to establish and by the fact that the envisaged end product was the construction of a network strategy, which was considered as a difficult task. In the H-sessions (V5 and V6), as well as in the HBS-session (V7), we see accents on situational cognition and on reflection on intervention. This might be explained by the fact that the H-session assignments focused on situational values. The dissimilarities between sessions may prompt questions about the design features in each model variant. It is likely that the envisaged different end products of future scenarios (B-sessions), network strategies (S-sessions) and normative principles (H-sessions) have an impact on the session interaction and performance. Besides that, as the participants indicated, the random combination of personal actor styles and performance abilities in a session appear to have a strong effect on session processes and production.

Discussion about how we may interpret the outcomes in the diagrams have led to reflection on design choices and the particularities helped to discuss the network qualities within each session constellation. Although the investigation of session output is not the central quest in this research, the indicators supported the interpretation of user-experiences and the assessment of the utility of the artifact.

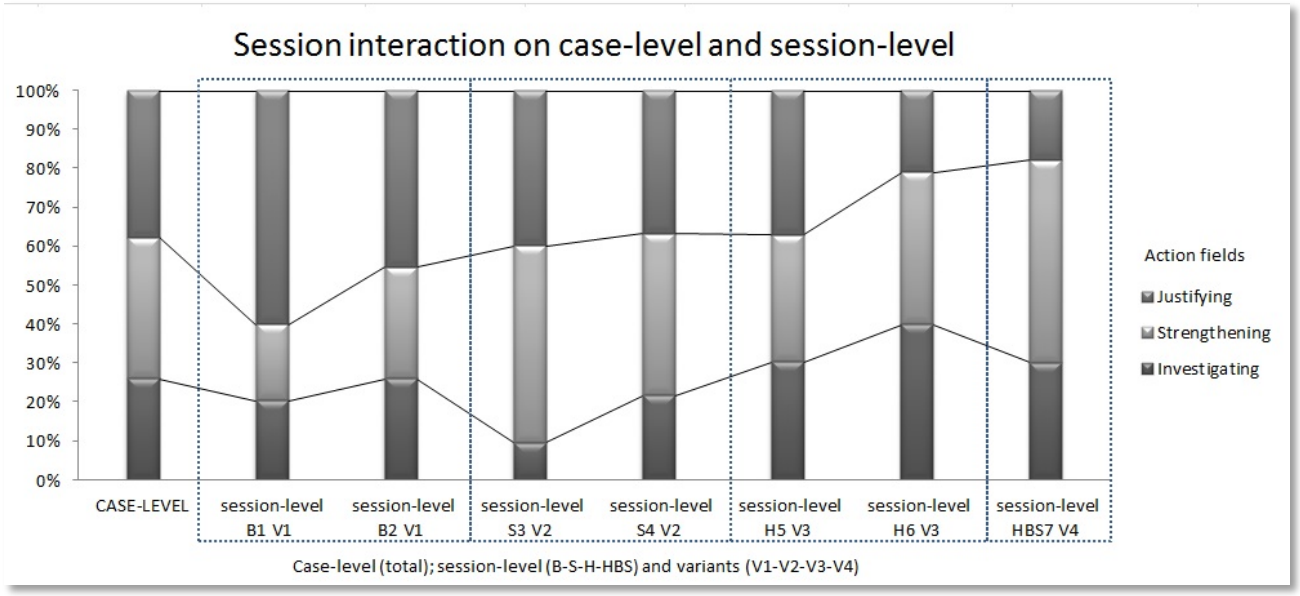

Figure 26: Comparing session interaction on case-level and session-level

In the same way, we can look at session interaction. Figure 26 shows the results on case-level and on session-level in the three action fields: *investigating* the situation, *strengthening* the network potential and *justifying* choices of intervention. Comparing the totals of these action fields on case-level (left side of diagram) with totals of game variants (V1-V4) and sessions (B-S-H-HBS), we can conclude that there are considerable dissimilarities. The tentative questioning of possible relations of session performance and design choices or team composition might bring us to deeper layers of comprehension of session interaction. *Justifying* choices of intervention seems to have played a main role in the B-sessions, which focused on future scenarios, and *investigating* the problem situation appears to receive only little attention in the S-sessions that focused on strategy. As we see an increased focus on *justifying* in the B-sessions that worked towards future scenarios, we may wonder what the relationship is between the desired end product and the interaction patterns. We assume that accents in session interaction relate to the game variant and the uniqueness of the session constellation. We may compare session HBS7 with session S3 and ask, why these sessions devoted so much attention to strengthening. Discussions about these peculiarities may contribute to more awareness of team competences.

We have designated four categories of core activities to each of the four action fields. *Investigating* concerns all activities that explore situational information and its core activities are *observation*, *interpretation*, *supplementation* (complementing) and *understanding* situational data. In Figure 27 we may notice some remarkable contrasts in the activities of *observation* and *understanding*.

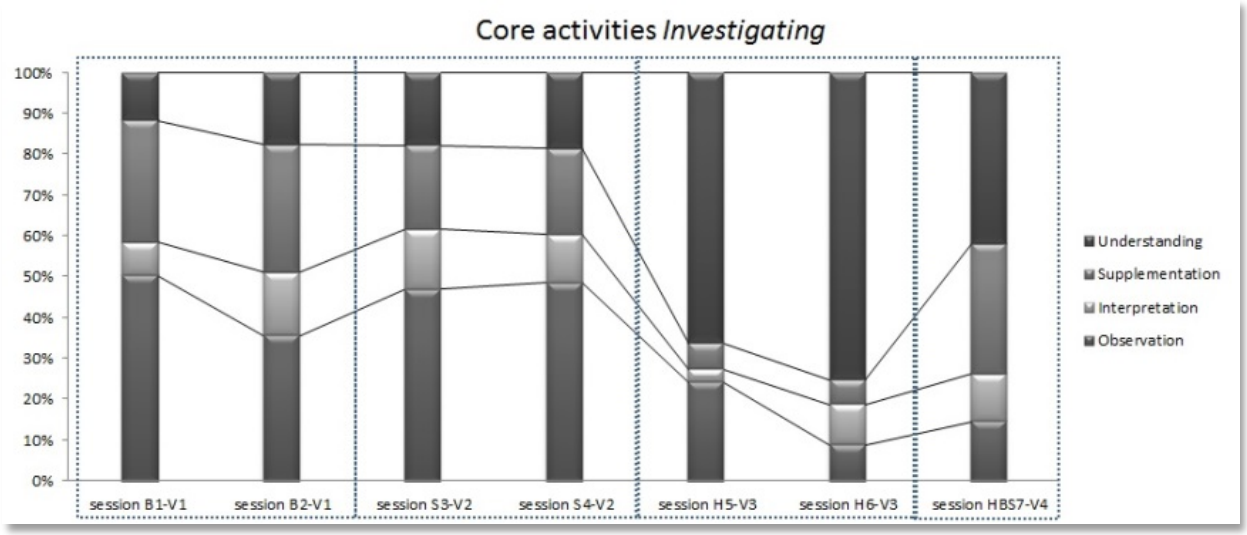

Figure 27: Comparing core activities of Investigating

Studying the striking dissimilarities, in particular between variants, one might consider that the task assignments have a potentially heavy impact on the session activities. The H-sessions focus on normative principles for intervention and the diagram shows that much effort has spent to understanding the situation. The actors apparently paid less attention to interpretation and supplementation. Also in the other sessions the actors seem to neglect the core activity of *interpretion*. Does this mean that network partners accept the input of information, as such, without questioning perception and meaning? Do they underestimate the consequences of interpretation for the case and the exploration?

Figure 28 leads to preliminary insights in session performance of *strengthening* network potentials. In this field we applied the core activities: *expectations* on the network performance; *commitment* to participation and input; the attempts to *control* and guide network processes and the contribution to *strategy*. A first thought can be that there is a relatively large amount of attention paid to aspects of control in almost all sessions. It should be noted that session B1-V1 required less process control by the actors during the course of the session, thanks to the pre-structured and synchronous effectuation and guidance by the game master (Table 4). This explains the low score in core activity *control* in this session.

We can well imagine that actors seek control over network interaction, as a normal aspect of gaining influence and positioning oneself. Besides, we noted that the actors often tried to persuade each other to pay more attention to the interests of the clients of the case, in attempts to counteract the risk of too much inward orientation. These actions were also labelled as *control.*

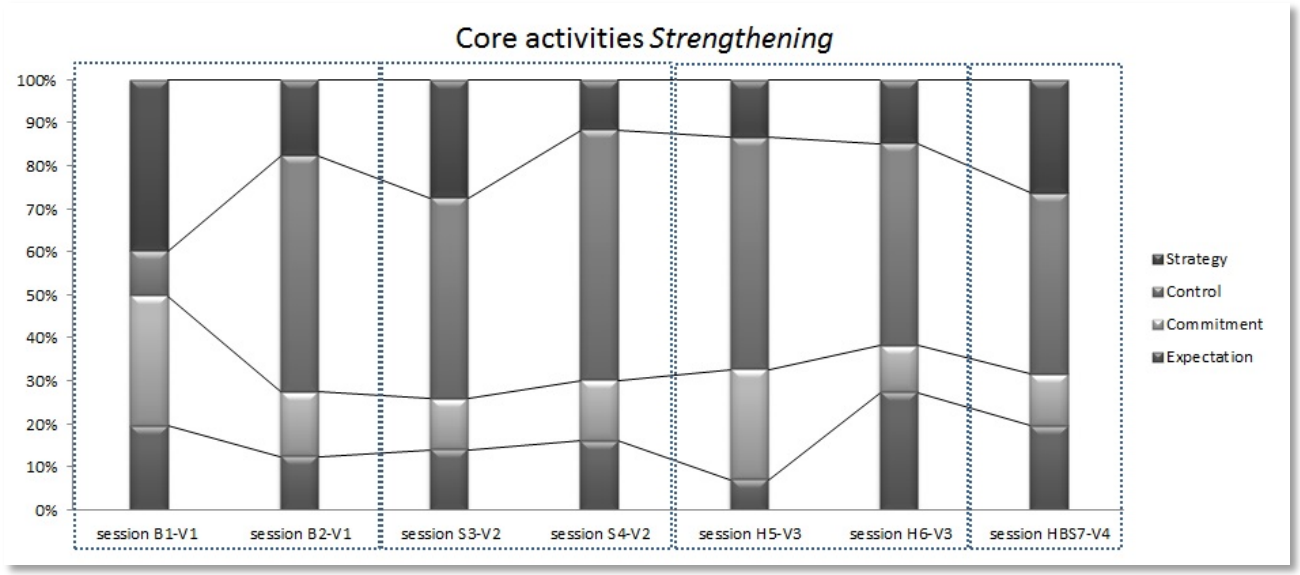

Figure 28: Comparing core activities of Strengthening

From the session tracks, it became clear that the professionals found it hard to relate strategies of network cooperation and coordination to the particularities of the situation and of the network configuration. Each symbiosis of problem situation and scaffolding network offers a particular potential and unique possibilities for strategy and intervention. And yet, from studying the session exchange it seems that the actors paid little or no attention to analyzing the synergetic chances in this distinctive situation and network. During the reflective dialogues the participants stated that they are not used to analyze network strengths, which is remarkable. We shall return to this issue in chapter 7.

Figure 29 displays the variances of session performance in action field *justifying* choices of interventions and we termed the subsequent core activities: display of *vision*, susceptibility to *responsivity*, demonstration of *management* capabilities and *accountability*. The relatively even distribution of attention across the four different activities of *justifying* in session HBS7-V4 sheds light on the particular concept of this variant. The session started with discussing situational values and their significance for options of intervention and strategy.

This sequence of thinking and acting may seem only logic, although this was a distinct design feature that emerged from the evaluation of the preceding sessions.

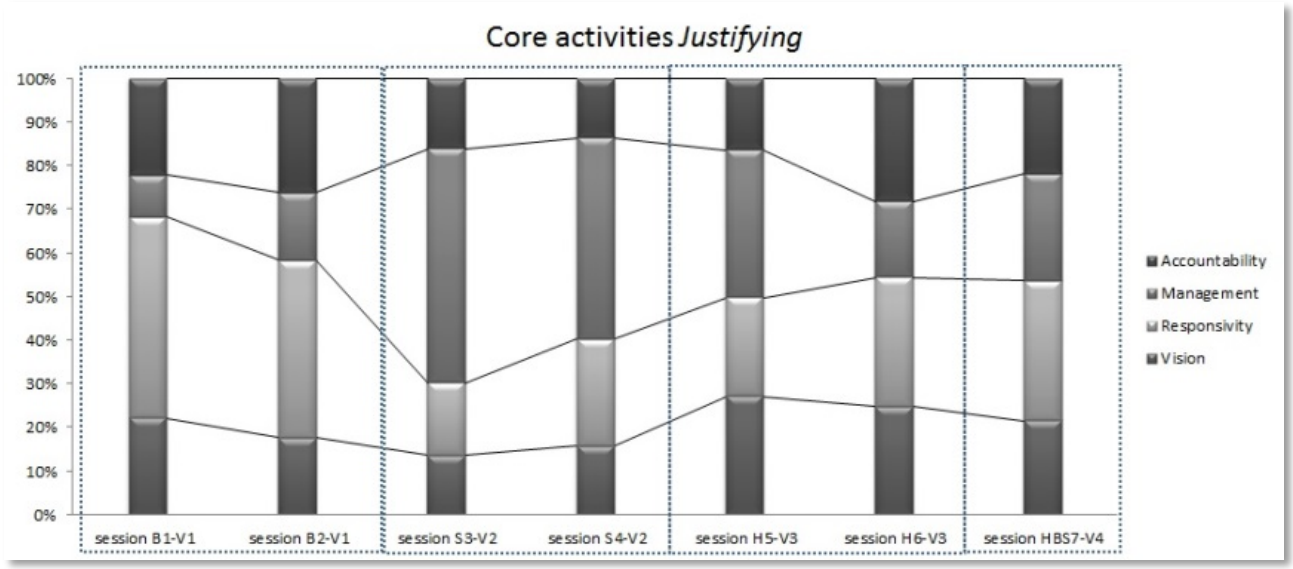

Figure 29**:** Comparing core activities of Justifying

The general impression of all actors was that justifying is a difficult to grasp action field. Responsiveness to values is not unproblematic, however highly necessary, and the participants claim that in-depth studies of the meaning and significance of values and norms in specific parenting situations is necessary and pays back in terms of efficacy and accountability of intervention. The orientation to values will however always be incomplete and open-ended as multiple perspectives across various social roles and reference groups may lead to endlessly revised narratives of meaning and coherence. Wynne (1992) says that beliefs and values are functions of social relationships and one of the often implicit missions of network deliberation about complex situations is to excavate patterns of moral and social identification. All participants affirmed that the action field of justifying covers important notions of reflection on intervention, for which in most practices there is too little time. They asserted also that practitioners need more training and learning on values, ethics and normative ground rules of intervention and that there are hardly opportunities for common reflection on these important issues. In chapter 7 we shall return to this second, remarkable observation.

Comparing results and discussing backgrounds and relations of outcome, design and behavior is vital to cycles of learning and research concerning youth care intervention. The diagrams, produced with the analysis tool, proved to be useful for the confrontation of the players' experiences with factual data about the interaction and knowledge production in

sessions. It should be emphasized that the graphs do not have an independent and validated significance, because of the interpretational ambiguities. The tool provides prospects to develop theories that predict or explain the efficacy of design and the phenomena that occur when using the artifact. These theories may be generated through additional external validation research.

6.6 THE PROFESSIONAL APPRECIATION OF ONLINE SIMULATION GAMING

In this chapter we look at the relevance, usability and usefulness of simulation games for knowledge exchange in youth care networks, as brought forward by the professionals who participated in the sessions. We follow an interpretative and associative method of data-analysis of the outcomes from the questionnaires and reflective dialogues. The answers in the questionnaire show more diversity as to the perceived functionalities and possibilities of simulation gaming, while the reflective dialogues revealed more consensus, which is not surprising. In the questionnaire we asked the respondents to specifically look at practicalities of online simulation gaming in their individual work situations, while the group meetings focused on common session experiences. All data from varied sources (sessions, questionnaire and reflective dialogues) were transferred to text documents and entered into a program for data-analysis, and, in an *ars combinatoria,* all data were also processed in Excel, to recode, rearrange and compare the data sets. Thus, it became possible to assess outcomes in a cross-code analysis to get a deeper appreciation of what had been said, and to see if different techniques and comparisons would reveal similar or dissimilar results. First, we briefly summarize the main points of the valuation of online simulation gaming, in the eyes of youth care professionals. After that, we analyze the statements with reference to the relevance of the model, the usability for network exchange and the usefulness for workplace learning.

The main points of interest from the reflective dialogues are summarized in the following observations:

1. The participants consider online simulation gaming a good tool for quick and thorough preparation to complex cases, in view of timely and durable help.
2. The participants state that simulation gaming adds to the exploration of situational opportunities and to disentangle deadlock situations.
3. They believe that online simulation gaming is helpful to prevent complex problem situations from worsening and network partnerships from wasting time.

4. The actors see viable options for the enlargement of the clients' involvement in problem situations and finding solutions, when they would be engaged as active or non-active participants in the game.
5. The participants think that simulation gaming can be an apt workplace for the collaborative study of dilemmas and other institutional or professional problem issues.
6. The participants esteem simulation gaming as an effective learning tool for professional competences and for networking abilities.
7. The professionals think that online simulation gaming stimulate participation in networks.
8. The actors state that participation leads to better network understanding in chain-cooperation.
9. They think that this way of knowledge exchange contributes to time and cost effectiveness of inter-disciplinary consultation, cooperation and coordination.

THE RELEVANCE

The central question for the relevance of youth care knowledge exchange through simulation gaming is, whether or not the method, model and instrument are efficacious to produce the desired results in a certain problem situation. We want to know whether the design choices and the instantiation effectively led to the enrichment of situational cognition and to the production of possible, probable and preferable scenarios for the future. In how far resulted the model in the exploration and strengthening of individual competences and network capabilities in sessions? Did we make the appropriate design choices to enable collaborative reflection on decisions of strategy and intervention? The answers to these questions can be used for the assessment of the model and for the evaluation of the methodological and instrumental foci in this research & development project.

The problem case

As to the problem case in the simulation, some 70% of the respondents[65] affirm that the content is recognizable and familiar to their practices. They think that success in simulation sessions depends partly on the descriptive quality and contextual complexity of the proposed case. They believe that online simulation gaming is less relevant for fairly uncomplicated situations. The case complied with the collaboratively developed case criteria for simulation gaming (see section 0). Some participants thought the case was too complicated and unclear. It is possible that they did not do the right effort to inform themselves of all information that was hidden in various descriptions, objects and instructive documents in the simulation. Much like in real practice, each actor had to actively search the virtual city, in order to gain a full discernment of the problem situation and to acquire a good understanding of the other role-playing professionals, their work and their organiza-

tions. Some of the actors struggled with this aspect of the model. The background to this feature of design is that active searching, interpreting and combining data about problem situations is crucial in professional youth care network.

Professional know-how

The participants asserted that online simulation gaming can be an appropriate instrument to refresh and enlarge professional knowledge and know-how. In daily practice there is limited time and opportunity for reflection on theory, they argued. In their view, online simulation gaming is suitable to interrelate theories and methods to real cases. The players perceive the virtual environment as an apt tool to explore multi-problem, multi-actor and multi-reality situations. They affirmed that the environment gives a good and quick impression of the different opinions and professional views on aspects of the problem case: *"I think, this might foster mutual understanding and rapport, because in the game you observe the thought paths of others and you see how partners come to their decisions."*[66] The participants appreciated the realism in the simulation: *"For me, it was interesting to see how the ideas emerged from the interplay between the network parties and to notice how each of them dealt with the varieties of ideas."* Some participants experienced troubles in keeping pace with the speed of interaction and conversation. This can be as daunting in simulation sessions as in face-to-face meetings, though in online work you can take your time to reassess everything that has been said. Another practicality of online simulation gaming, according to the players, is that you learn to react quick and agile to remarks and questions.

Future scenarios

The end products of the sessions show that the participants were quite successful in unraveling the situation and the possible development, through the elaboration of future scenarios. Contriving future plans can be seen as the core of youth care expertise. It is not surprising that the professionals managed to create so many different scenarios[67]. One might expect that the players would only produce scenarios with positive results; however, this was not the case. Some of the projected future stories showed a deterioration of the situation or revealed backgrounds to the problems that threw new light on approaches and intervention options. The model and environment encouraged scenario thinking, according to the participants. One of them put it this way: "*In this game environment, you can develop a story about someone, and gradually add and change things. This is what I liked about the environment*." The scenarios showed a wide variety of positive and negative developments. Although none of the scenarios have been tested in real practice, they have been presented to key experts of the participating organizations for comments and feedback as to the feasibility and practical consequences. The feedback and comments were passed on to the

session players, before the reflective dialogues. The same applies to the produced network agreements and frameworks for normative ground rules for intervention.

Network discourse

As to network management, coordination and project strategy, the players were dependent on collaborative thinking and co-creation, which turned out to be difficult. As to the network strategies, the problem was how to collect and synthesize different intentions of commitment and expertise in a joint document. The session members found it hard to take the uniqueness of the problem situation and network constellation as a start and inspiration for options of strategy and cooperation. The produced network agreements focused instead on more general points that could in fact apply to many other, similar networks and problem situations. The actors were less able to produce ingenious and imaginative network approaches to the problem case and network. By way of explanation to this observation, the professionals stated that in real practice there is little or no time for meta-reflection on the specificities of networks. Besides, the professionals say that they simply have little or no experience of how to handle network potentials. They said more training on the subject of strategic network thinking and negotiating could make a difference.

Reflection on intervention

The field of accountability proved challenging for substantive and theoretical reasons. The actors regretted that in practice, they find little opportunity for mutual reflection-on-action and brought forward that the abstract concepts used, such as 'situational values', 'normativity' and 'reflexivity', posed some misunderstanding and dispute. Yet, the sessions that focused on normative ground rules, produced thought-provoking statements as to what the actors considered as central situational values. They acknowledged that collaborative reflection on normative standards contributes substantially to the individual repository of reflective argumentation. The participants statedthat scrutinizing situational values is of great significance for network practices. However, they say that in reality, there is hardly time to pay attention to these important issues. Reflecting on values and on choices of intervention, they said, is in most situations not an explicit network or team activity, which seems quite alarming. Someone said: *"What I found fascinating about the simulation was that these reflective discussions went much deeper than what I usually witness in my network and team conferences."* The partakers value the importance of network professionals who are curious, competent and accountable, and they assume that simulation gaming supports the developmental objectives in that direction.

Creative thinking

The professionals produced many practical ideas to escape from the deadlock situation. In itself, this might add value to the perception-action repertoire of the participants, regard-

less of the practical value of the outcome for the direct stakeholders in the problem case. We emphasize that network consultation and effective action in practice are two different entities. The simulation environment boosted collective processes of creative thinking about the problem case, which continued in the debriefings. The alternation of group thinking and individual thinking instigated deep consideration about the case and about the decisions and strategies. In-game inter-thinking and out-of-game reflection is part of the method to analyze and interpret different layers of meaning and to understand their interconnectedness in reflective dialogues during debriefings (Konzack, 2002). The elucidation of shared meaning is of importance to the assessment of solutions and strategies in the problem situation. The players contested that the playful setting helped to enlarge the individual range of alternate ways of thinking and acting in complex situations. They experienced the simulation setting as a knowledge workplace with a relative freedom to experiment, without the interferences, risks and other practical constraints that regularly pop up in reality. This does not mean that the respondents were not very much interested in direct feedback from stakeholders from the actual situation. They wondered what intermediate feedback on session activities from practice would do to the processes and outcomes. Feedback from practice during the course of sessions is certainly an interesting option; however, we should not forget that one of the most valuable features of simulation gaming is the virtual refuge, it offers from the harsh practice conditions of real life. It allows free thinking, without interruptions or interferences. Discerning the unique qualities of switching between the three worlds of practice, game and future helps to make a full advantage of the learning opportunities.

Better help

It is noteworthy that the actors show a remarkable positive attitude towards highly complex and complicated situations. Most of the respondents to the questionnaire believe, there are always possibilities and options to make advancements. Only one person stated that you have to accept that sometimes, in certain situations, nothing works. Fear and distrust are seen as the most probable causes of stagnation. The actors are convinced that it is often necessary to break through fixed patterns of behavior and conditional circumstances, if necessary with the help of recognized and accepted professional authority; however, rather by empowering persons, to stimulate autonomous inner change. They think that simulation gaming can help to find the right approach or strategy to this. The majority of professionals believe that inadequacy of social support and professional help is often the cause for deadlock positions. They argue that the cause of a deficient relation with the client and the client system can often be found in rigid positional and inward attitudes of youth care services and workers. In those cases, they say, expectations are incorrectly ori-

ented, causing blind spots and an underestimation of strengths in situations. The participants think that online simulation can help to break down misconceptions and supports the appreciation of different positions, perspectives and interests. They alleged that role-play is useful for perspective change and immersion and beneficial to open-minded attitudes. From the questionnaire, it appears that the respondents think that help-avoidance and care-resistance are consequences of mistrust, damaged confidence and negative preconceptions of professional assistance. Also the tangle of care services and different workers, as well as the poor alignment and cooperation, are considered to have negative effects on problem situations, according to the players. They confirmed that online simulation gaming might help to fight these type of network problems.

Contraindications

The youth care professionals see also some contraindications of the use of simulation gaming for knowledge exchange. The use of digital tools is not at all customary in youth care. The necessary support and hardware are often not available and some functions of the application, like video or social media, might be blocked by ICT support in organizations. Others state that some organizations rapidly try to catch up. One large national institute provides all employees with laptops and demands to use digital devices for online supervision, team meetings and inter-professional consultation. Most actors confirm that online contacts should be additional to face-to-face meetings. In contrast, other professionals said that in certain cases online contact can be the only feasible option for contact. *"Sometimes it is easier to get access to a family via the Internet provider, instead of knocking at the door,"* someone explained. To adequately handle these new methods of contact, professionals should train the necessary skills, as building and maintaining virtual contacts is different from what the respondents perceive as vital in face-to-face contact methodology. About 25% of the youth care professionals is not convinced that online simulation gaming is suitable for the exploration of complex youth care problems. Over 40 % is not sure that the complexity of practices can be reduced to its main systemic characteristics. This is an important observation, in view of the fact that systemic reduction is a prominent postulation in this research. Another remark concerns the session interaction. Some of the players proposed that it would be a good idea to ask one of the actors to chair the interaction. This could help the session team to reach more efficacy of performance. It should be noted that we tried this option in the third round, however, we observed no significant results. It could work, if this is part of the overall agreements that are made in the briefing and instruction, preceding the simulation. Some say, they prefer little control and directions, as this could be perceived as hindrance in the free flow of thoughts or as a rejection of what is actually going on at a certain moment in a session, and of free and associative thinking. This interesting point has to do with expectations as to effective network discourse and with the

methodological choice of stimulating authentic and natural network interaction. This point might be one of the foremost issues of the progress of simulation gaming for youth care network exchange. One last remark in this respect is that the youth care workers showed much interest in the further development of the model, the method and the technical evolution, as appears from the quote: *"It is a creative defy to collaborate in the thinking and development processes of the design model."*

Recommendations

The actors perceive the application as suitable to introduce new professionals to the mores and tasks in teams and networks, and to train people to handle recurrent issues. A suggestion was that online simulation gaming can be useful to uncover, analyze and question certain non-productive, ingrained patterns of behavior in teams and networks. The youth care experts came up with some practical suggestions to improve the model and the implementation. They think, it could be interesting to ask actors to work out their own role-descriptions and see how this effects the results. Some proposed that a training in advance could help players to deal with the environment. Others think that the simulation would run much quicker if the tasks were more prescriptive and with deliberate process steering. *"Clear instructions as to the assignments help to activate session members and to keep the focus on the desired outcome."* As mentioned, some proposed direct feedback from context experts at certain moments in the game and the interference of unexpected events and new information, during the course of the simulation. They say that they expect more depth and challenge, when simulations would return in cyclical order, so that players can continue their training on a regular basis with results from earlier sessions. It is thought that this approach is instructive for methodical, systems-oriented work and case management, Besides, the professionals share the opinion that online simulation gaming is an important tool to learn how to validate choices of intervention. *"The effect is that you learn to make better judgments of the consequences of proposed interventions and approaches."* It was suggested that it makes a difference if the model, stages and tasks were designed in cooperation with the players, as this could enlarge the chance that the game is close to the perception and experience of the actors. Others argue that a good design should contain new elements and unacquainted propositions, in order to realize shifts in thinking in the perception-action repertoire.

THE USABILITY

It is not always evident to which level (case, session of tasks) certain statements of participants might refer. We paid attention to what the actors said about the practical use of simulations in teams and networks and assign such statements to session level. The profes-

sionals see inter-disciplinary consultation, team assessment and exploring options and strategies as useful and value-added functions of online simulations. They reported that the sessions led to an increased understanding of disciplinary thinking, reasoning and methodology. Linking case relevant theory and methodology in sessions could probably support knowledge-to-action awareness. The reverse can also be true, as the participants stated, when practical action is taken as a starting point to investigate the theoretical and methodological dimensions.

Knowledge development

The respondents said that online simulation could counter the perceived lack of opportunities in practice to actively get engaged in knowledge development. They think that the knowledge development through simulation gaming can be time and cost effective. The simulation was perceived as an accurate systemic representation of a network conference and the reduction of complexity and complication of the case is considered as being functional, relevant and effective. The textual character makes session work laborious; however, writing promotes accuracy of argumentation. Session members searched regularly through what had been said earlier, in order to better follow the course of discussion. They contested that going through all the documents and reports took much time. The time consuming process could be a serious threat to successful implementation, unless it appears that this meticulous work finally leads to quicker or better help. The overall conclusion of the youth care professionals is that online exchange has a couple of practical benefits that make it suitable as a flexible form of multidisciplinary and normative reflection in networks.

Joint reflections on action

The session work enforced joint reflections on intervention and led to well-informed, mutually agreed choices of strategy and to an argued justification of normative guidelines for intervention. The actors affirmed that in practice, there is little opportunity for discussion on situational values, which may be hazardous, considering the numerous important decisions that are taken. They profess that a multi-problem situation benefits from intensive reflection and that the online simulation approach is a meaningful contribution to quick and effective consultation. With the insights that emerge from the sessions and from the debriefing, it must be possible to confirm or refute the virtues of choices made in complex requests for help. This confirms the alleged function of retrospective assessment of intervention through simulation gaming. The respondents experienced the simulation game not as a solution, nor as an answer to complexity. They agreed that a simulation game is a starting point to reach better results in networks, as exemplified in the next quote: *"The result shows that our final product is just a start up... and that the simulation is not just another ap-*

proach, but a better way to formulate values, as agreed principles for action in a certain situation." The simulations showed that it is possible to make clear agreements about commitment, participation and strategy, however that these must be worked out in further face-to-face meetings. The professionals acknowledged that the instrument is potentially effective, taking into consideration that there are infinite possibilities of variation in design and constellation. Also the unlimited recruitment possibilities from a wide range of content and context experts, and the fact that all data can be kept for analysis and further development, are considered as strengths. The downside of this is that it might be difficult to make the right design choices. The participants say that new methodical approaches are needed to optimize the co-creation of design, implementation and evaluation. They state that co-creation supports the relevance of content and increases commitment and motivation. The respondents think that expert help and full managerial commitment are preconditions to implementing online simulations in programs of training and change.

Time for thinking

The time, pace and place independence of simulation gaming enables more reflection time and ripening of ideas, compared to synchronous variants. The phased articulation of the simulation helped to structure thinking in recurrent steps of empirical research and improvement cycles and offered intermediate evaluation of role performance. The organization of tasks along the lines of the empirical cycle was not appreciated by all participants and, frankly speaking, it appeared that the factual session interaction seemed to neglect these logical argumentation steps all the same. For players, as well as for the moderator, it was sometimes hard to find any rational or sensible order in the discussions. A characteristic of parenting problems is that just about everything is important, although not everything deserves immediate attention or priority and not just any contribution is relevant at a certain moment. A meta-perspective can be necessary, to understand thought patterns. One actor said: *"For me, the tricky thing was that someone's mindset could show such unexpected jumps, from one argument switching to the next, and then a third claim that was again completely different,... This made me unsecure whether I could follow the discourse."* This was not the only reference to the somewhat chaotic and non-structured way of interchanging information and opinions.

Streamlining actions

In every session genuine actions to streamline the discussion erupted every once in a while, which is a natural necessity in conferences. In online simulation it is not difficult to analyze these corrective actions and their effects step by step, by reproducing the session interaction. The actors recognized these blurred processes of hesitation to take the initia-

tive: *"What I recognize from this in my work, is the recurrent question 'who is in charge'?"* The reflective dialogues turned out to be very instructive as to what one can do to take the lead on difficult moments. The session work in this respect appeared confronting to most of the actors. The actors noted that streamlining the discussion comes down to taking up initiative and showing the courage to direct the team in the desired direction. They stated that this is an ability that can be trained, although it receives little or no attention in trainings and work discussions. The sessions led to a variety of network strategies, and the players admitted that further discussion about how to effect these strategies in real practice, are necessary. With this, they convey the apparent need to transfer the learning effects to the real world. The assumption is that, exchanging and elaborating expectations and commitments is essential for effective and appealing teamwork, however the effectuation in specific and fixed agreements and plans must be done in the real situation. The sessions show that simulation gaming is fruitful to establish coherency and committed cooperation, even if the network bears a temporal and virtual character. According to the players, the collaboration felt real and as meaningful and substantial as in real life. The session results concerning team play and collaboration skills can be used for the analysis and evaluation of individual styles and effectiveness. The respondents recognized, during the sessions that online simulation and role-play evoked new aspects within their range of skills and competencies of networking strategies.

Game elements

We applied only a minimum of game elements in the simulation, to guarantee conformity with real practice, which had a favorable effect on the sensed seriousness of knowledge exchange. Some players contended that the competitive aspects could be left out of the design. And yet, the interaction seemed to be influenced positively by the regular scores of role performance feedback. It is important to stimulate different interaction in sessions and to provide direct response on action and interaction. The role feedback incites to think about the effects of one's performance on fellow session members, in particular when this is done in sheer numbers, without explanation. This was one of the conclusions of the participants in the reflective dialogues. Studying allegations about the use of media in daily youth care practices shows that the professionals are convinced that digital tools have significance for the media-literacy of clients and workers and that this enriches the variety of communication and learning styles and skills. In the questionnaires, the actors state that digital media are important for the innovation of knowledge exchange and to reach more efficiency and efficacy of accessibility and contact. Some point at risks of privacy and superficiality. Others argue that they find it more easy to express themselves through social media and the Internet, compared to face-to-face meetings. Although the application asked mainly text-based communication, the remark has been made that this brings about

more accuracy than usually is the case in other forms of work conference. It should be noted that the participants used often images and icons to stress the intention or meaning of written texts and statements. Occasionally video clips were uploaded to exemplify strategy propositions.

Network practices

Most of the respondents deal with regularly changing, external relationships in work practices. A big part (40-50%) are not involved in regular internal teams. Some 30-40% cooperate with other workers in recurring situations on a regular basis, and a minority of 10-20% is always engaged in the same networks. As to the effectiveness of these networks, the answers are quite varied. About 40% says that it is often difficult to meet network partners, because of the different agendas. Most of the respondents say that their partners show too little effort in crossing their disciplinary borders. Two-third of the professionals postulates that in networks it takes too much time and effort to come to clear results. More than 60% does not agree to the statement that differences in work practices and daily hectic inhibit collaborative work agreements. On the other hand, over 50% says that insufficient commitment to work agreements is a problem in network practice. The conclusion from this is that the experiences in networks of the participants are quite divers and that the quality of network results could be enhanced, in particular where it concerns crossing disciplinary borders, commitment and time-effectiveness.

Contraindications

As to the usability of online simulation gaming in practice, the participants said that conditions in most work places are not yet ready for online exchange. *"I liked the experiment very much, despite the fact that my practice is not at all consistent with these type of exchange. This made me wonder what we can and should do to advance in this direction."* The professionals think that online knowledge exchange is accessible and familiar to modern workers and that it could mean an extra exchange tool. *"We need only think of the ever occurring difficulties of making appointments or the many times you have to explain the same situation, and you will readily admit that online tools can be a very efficient addition to our work. Moreover, digitalization is becoming more and more important."* The participants see opportunities for acquiring new ideas and gaining insight in different professional views and experiences, and for learning to develop network strategies. As to bridging knowledge to action, and vice versa, someone remarks: *"Often, I have the idea that theory is far removed from practice. At my first introduction to the simulation environment, and when I opened the directory and explored the city map, I became thrilled. I saw right away that this could be a tool to connect theory to practice."* The professionals think that online simulation gaming is useful for the exploration of really com-

plex practice situations. When asked what they normally do, when confronted with complex practical problems, it appears that most workers start examining the problem situation and the client's demands. Fewer respondents say that it is important to analyze the situational network and to start studying the history and files of the case. Based on their session experiences, there is a remarkable harmony of answers to the question of what they think is the best foundation for cooperation. They say that trust and confidence and a good balance of common ground and varied expertise are crucial to network success. To prevent network problems, the respondents are almost unanimously convinced that good communication is paramount. This is defined as being open, adhering to communication arrangements, being attentive to signals that indicate possible communication problems and a learning attitude. Others state that it is important to find a good balance in the distribution of tasks and responsibilities. After the sessions, the participants say that it would be extremely useful, if a network is able to dispose of a virtual environment, where the partners can place and find relevant information about their cases and clients. A critical remark has been made as to the difficulty of maintaining an overview of the flow of information in a game session and of the total of information in the directory and city map. Apparently, the digital skills and abilities to find your way in the application vary widely. The actors prefer to make use of a broad gamut of learning and work styles in task assignments. The application makes it possible to respond to this apparent need of youth care professionals. Another commentary concerns the professed urge to develop and strengthen network relations in youth care services. It is not certain what the exact contribution of online simulations can be to this point. The respondents suggest to focus on follow-up of arrangements after-game sessions, and to continuously work on systems improvement with respect to networking, through analysis of session results. This applies to strategy agreements, as well as to adhering to normative ground rules for intervention. The incentive of strategies and guidelines for intervention can be found in their realization and evaluation and therefore, network arrangements should be properly transferred to practice and follow-up should be well supervised.

Recommendations

The players propose realistic, practical and animated case studies and intensive face-to-face seminars on design, implementation and transfer. The mentioned direct feedback from practice in sessions could alter or maybe enhance the results, they think. They also made some recommendations as to the betterment of the model, the environment and the general usability of this tool in practice. They see some difficulties, when thinking of implementation of online simulation gaming in youth care practices and advice to focus on long-term benefits. Although it takes quite some effort and time to develop and implement online simulation gaming, the players argued that there can be a profitable return on in-

vestment, on the condition that there is a good match between game model design and the needs in network practices. This asks for a deep investigation of network objectives and model requirements. Some professionals think that a virtual meeting place could serve as a source of information, concerning specific situations, target groups or clients. *"We often miss information about people who are entrusted to our care. You could easily assemble and post situational data on a secure place, such as Cyberdam, and make this online accessible to the relevant partners."* The actors suggest to establish ready-made online workplaces for specific communities, where the members are free to share difficult cases and to work out the necessary props and characters, if possible, in cooperation with the clients concerned. It is fairly easy to use templates for this purpose and to let the members take care of role assignment and moderation. Although the realization of such functions is indeed feasible, it is clear that the implications should be carefully examined. Some professionals argue that online exchange fits into existing practices. *"In Cyberdam you can pose questions and do suggestions in a very direct way. In practice, we already hand in written cases and questions for work conferences. I believe that this kind of preparatory work could be more challenging and dynamic if we did this in Cyberdam."* This idea has importance for the development of the artifact and for the way the application is administered. All these creative propositions arise from the need to find attractive and stimulating ways of knowledge exchange. They deserve to be investigated, preferably as collaborative projects of practice organizations, researchers and designers. The actors consider the application as a strong tool for learning and they point at the features of experiential learning and at the potential for knowledge-to-action training. For in-corporate training, they see advantages of using the application for tasks and assessments between face-to-face sessions. It should be acknowledged that solid coherency between learning programs and model design is compulsory.

THE USEFULNESS

The actors made numerous comments on task-accomplishment and role-performance. The feedback concerns individual and group behavior, learning effects and session experience and refers to possible consequences for the training of competences. All such remarks have significance for the design choices of both the program and the simulation that is used in that program. The results on individual level are perhaps the most relevant source of information as to the estimation of the usefulness of simulation gaming for youth care knowledge exchange. Each player can be considered as a moderator between content and effect. This means that there are two ways for studying results: there might be effects that relate to the design choices and there might be effects that concern the responsiveness to these choices.

Tasks and structure

Almost all participants agree that simulation gaming supports reflection on individual and group performance and that this way of exchange helps to analyze and account for participation and outcome. Around 65% of them are absolutely sure about this, and 30% think this is partly true. The rest (5%) disagree. This indicates a peculiar high level of perceived learning in online simulation gaming. We agree to theorists (Crookall and Thorngate, 2009), who argue that learning from simulation is a process of action-to-knowledge that, principally or exclusively, takes place in debriefings and through the transfer of insights to new practices. It is of great value for learning to discuss the choices and the argumentation of certain methods or tactics in debriefings. The participants think that studying the argumentation and interaction of other team members is a fruitful action for learning. Debriefings can foster explanations and understandings of action and interaction patterns in sessions. The evaluation of learning results must be in line with program objectives that form the basis of design. The professionals noted that learning also takes place during the sessions, thanks to the fact that online simulation offers plentiful reasons and occasions for reflection-on-action, not seldom as collaborative learning with other session members. Compared to other ways of inter-disciplinary consultation, the professionals say that online simulation gaming offers more time to study issues and to think about the most appropriate action or comment. For the design of the simulation, this is an important observation, not only for task assignment. The assertion has also practical consequences for the time table that is applied to session planning.

Pre-structuring action

In the questionnaire, we inquired after the respondents usual structuring procedures in work practices when it comes to network and problem exploration. No one brought up an explicit use of general task-structuring methods. Most workers start by examining the client's needs, the situational conditions and circumstances, without a clear methodological substantiation. Others point at the importance of analyzing the network and history or files of the case. Practically all workers study the social and professional networks that are involved in the problem situation. They analyze positions and functions and look at the division of tasks and responsibilities. Some say that they study the perspectives and points of reference, and that they look into the mutual perceptions of performance. A relatively small number explicitly proclaim to take the client's needs as a reference point, when examining the situation, the social panorama or the professional network. Those workers state that they try to understand the significance of each contact from the perception of the client. Few say that it is essential to analyze the constraints of support in social and professional networks of clients. The actors were divided about the usefulness of prescribing certain methodological steps of practice research. As remarked in section 6.6.2, the interaction

and thinking processes in sessions followed a capricious and unpredictable course, notwithstanding the proposition to adhere to cycles of informing, reflecting and deciding. We anticipated that the actors would keep to a certain sequence of reasoning, such as in the empirical research cycle (De Groot, 1961) or as in the practice research cycle (Van Strien, 1986). This was not the case. Some argued that they like to be free in the approach en open to what happens. Others opposed this, by stating that guiding principles can avoid wasting time and confusion. Some of the participants revealed that they were worried about the actual course of interaction and discussions during the session. It seemed that not every actor in the session ascribed the same importance to gathering enough situational cognition and sufficient insight of the network potentials and possible strategies, before entering discussions on intervention. A quote in this respect says: *"Some players persisted in adhering to a 'personal agenda', by continuously proposing new interventions and help, whereas this was certainly not our assignment."* The lack of structure in session interaction was more troublesome in sessions, where the players tried to achieve a common goal. Network strategies and frameworks of collaborative, normative guidelines are more dependent on a common path, than elaborating future scenarios. Sessions B (scenario development) were more competitive and sessions S and H (network strategies and normative guidelines) were more cooperative, and therefore more structure dependent.

Reflexivity

What we did not expected was that many participants were rather unsure about issues of normative reflection. It seemed that reflexivity was no clear concept to the professionals. The respondents gave a lot of different explanations of what they do when they reflect on intervention. Some stated, in different words, that reflexivity demands defying organizational rules and procedures, which is an interesting assertion, in respect to matching situational needs and enforcing change. Some argued that reflexivity implies careful navigation between different objectives and loyalties. The workers said though that online simulation can serve as a laboratory to reflect on possible consequences of choices of intervention. This can be exemplified by something that occurred in the last session. The family guardian took some risk by actively interfering in the leisure activities of Mouad and his social network, and she found herself criticized by her session members. After the game the players mentioned that reflexivity demands to take the client's interests and situational needs as a starting point, above the prescriptions, mores or habits of the profession or organization that you represent, and that the approach of the family guardian worked well as a break through. Despite the virtual character of these actions, their effects on the in-game processes and results were remarkable and felt as real and realistic.

As explained, on three moments during the course of each session, all players revealed their personal impression of the role-performance by valuing the input and contribution of every session member, including his/her own. The participants attributed credits for specified session interaction and contribution. The totals were processed in score diagrams on the homepage of every participant. The reactions on role-performance feedback were both positive and negative. Some players did not like the idea of competition, while others said that the scores stimulated to reflect on how actions and contributions came across. *"The wish to achieve a high feedback score was an attractive session element. I studied each diagram to think about our strengths and weaknesses."* And yet, some thought that it was difficult to weigh role-performances with the brief instructions in the game. Others interpreted the scores as role-assessment, instead of role-feedback. Some stated that they missed a substantive argumentation on role-performance, however we deliberately left the argumentation out to avoid that the actors would take the feedback as instructions and would start reacting in line with comments and tips. This would interfere with the objective of genuine and authentic behavior. The mere indicators in the scores were supposed to encourage self-reflection on role interpretation and role performance. The feedback score, as a game element, was meant to stimulate the immersion in interaction. Some participants observed that the strong immersion in the game interaction involved the risk of drifting away from the case and from the main stakeholders. *"I feared that we lost track, to some extent, of the interests of Mouad and the family."* Another example shows that the actors were much engaged in meta-reflections on session performance. *"I got the impression that we overlooked the fact that in real practice, youth care had reached the end of possibilities. We should ask ourselves if we agree to that interpretation. In my opinion the case is far from deadlock and I think, we should make a better use of our mutual practice based experience."*

Know-what, how, when and why

One of the most important questions is whether the participants think that the simulation contributed to the improvement of know-how in complex youth care problem situations[68]. In the reflective dialogues it was brought forward frequently that the session teams had to work hard to develop a practical vision on the problem situation. The respondents confirmed that new interesting points of view emerged in the sessions. *"It is without doubt that our team produced a fresh view on the case. That is why I am convinced that this environment is indeed suitable for supervision, work conferences and case management."* The actors see advantages of the use of online simulation for learning, a free exchange of ideas and for the development of situational and strategic know-how. *"I simply see a lot of relevance of this way of working. Certainly for educational purposes and in training programs, but also for corporate learning. The virtual environment allows experimenting with intervention proposals, strategies and supports all kinds of network negotiation. This is very effective for learning."*

The participants affirmed that in online simulation gaming, players are subject to a distinctive appeal to communication, compared to offline alternatives, and they think that this can be enriching for learning in networks. *"It is not always easy to have the guts to comment on someone else's participation or actions. In my experience however, this online way of knowledge exchange helps to step over a certain threshold and to be more open and frank to one another."* This is an interesting observation that could implicitly refer to features of game and play. Online interaction might be perceived as less threatening or frightening, compared to face-to-face contacts. 'On stage' there are less obstacles to what people dare to say and the acceptance or tolerance might be higher. Participants postulate that it is more easy to pose questions in a virtual meeting place. *"For me, Cyberdam is a forum where you can put questions, without fear or feeling stupid."* Some say that much of the normal, informal, and often repeated, social talk can be left out in online knowledge exchange. *"What I liked in particular, was that in this game environment, no time was wasted on irrelevant social talk. We talked about the problem situation in a very direct and honest way. To me, this is a strong benefit for professional practice."* It is obvious that a hidden hierarchy of values may lead to assertions like this. Various participants declared that the simulation encourages direct criticism to fellow players, as a part of the game. This applies to criticizing each other's participation, so someone-else explains. And he/she adds that this ability is not trained enough in realistic professional contexts. Another person says: *"I think that in face-to-face contact, the physical aspect partly fixes the expressiveness of your accounts. In a simulation, the content of your contributions can be perceived by others as more significant than you experience in real life contacts."* Apparently, the players feel that in online conferences, there is less interference to the content of statements. Reversely, it is certainly also true that face-to-face contact offers qualities that are absent in online meetings. The directness of content and indirectness of relationships are important observations of the possible value of online knowledge exchange. *"The nice side was that the impression of your counterparts in the game is much more determined by content than that it is by what they think to know about the person. Through the role-performance of a player, I could feel the energy in a very direct way, notably, in someone's work style and talents."* Perception is a two-sided phenomenon. It could very well be that in online contact and role-play people pay attention to action and interaction otherwise than in vis-à-vis contact. One of the features of online knowledge exchange, as someone said, is that the environment prohibits from talking too much, while stimulating to be to the point at the same time.

Role performance

In the role-instruction, each player was asked to explicitly interact from a role-perspective that fits with the network role, and to consequently adhere to what role-play demands. We wondered what that game aspect would do to the emergence of new understandings or insights. *"It was quite an experience to operate from an imposed role. My role (Harm Feijnaert) focused very much on offering safety, structure and clear rules, and I noticed that my adhering to this orientation provoked certain respectful, but predictable, reactions and anticipations from the other actors. This resulted for me in new and unfamiliar interaction dynamics, based on how my session partners perceived my role. It was interesting and really nice to observe that this worked out fine."* Many professionals attested that it was very instructive to see how new standpoints and views emerged from taking an unusual role and perspective. Playing a role was said to result in new experiences. *"As soon as I turned on the computer, I noticed a change from within: I became Fatouch! And I started thinking and acting from her view on the case. I did not find it hard to adhere to this role and I found it captivating to see what it did to me and what I could learn from it."* Another player remarks that it takes time to grow into a certain role. She thinks that it could be worthwhile to extend a role over a longer period, eventually over a number of simulation sessions. As said before, it could be interesting to ask participants to work out their own role-descriptions as a preparation to the session work. This could be a way to communicate ideas about network cooperation and to emphasize personal strengths and commitment. This type of design choices can be stipulated in cooperation with the players involved. It is obvious that these choices should be in line with the program objectives, the problem case and with what the network needs.

Role-play contributes to understanding complexity in networks and in relationships, say over 80% of the respondents, and yet 17% refute this idea. The answers to a number of different questions about the perceived importance of role-play, reveal the same proportion of people, who think role-play leads to a substantial better comprehension of problem situations (over 80%) and professionals that do not agree to this (13-17%). The simulation asks a certain flexibility, and not everyone finds it easy to let go off the usual dispositions in role, function and work practices. The simulation asks for adaptation to work procedures that are possibly dissimilar to what a professional might experience in his/her daily situation. A few participants had troubles with this flexibility and adaptation. We were curious to know, whether the actors experienced differences between their in-game professional behavior and skills, compared to experiences in real practice. One person gives a clear insight into this aspect: *"Notwithstanding the role-instructions, I noticed that I adhered to my personal style. Work style is something that you cannot fake in a simulation."* This actor explains the difference between style and function within role-play. *"The role provides a framework for tasks, positions and perspectives; however, your personal style affords authenticity to*

session behavior." It is not surprising that professional the behavior in sessions showed a wide range of skills, talents and abilities. We distinguish between the functional capabilities to handle the simulation activities in the environment and the professional aptitudes to handle the session interaction. All participants managed to handle the necessary functions of session interaction As to professional behavior, the empirical character of the sessions offered an effective way to experiment with skills and technics, as many of the participants acknowledged. The significance of the comprehension of professional performance in sessions is anecdotal; however, the professionals think that online simulation offers chances for personal development. Game elements, such as role-play, taking initiative, strategic thinking, dealing with new information or unexpected changes and competition, could support the training and assessment of tasks and job functions. The actors said that participating offered plenty of opportunities to learn by reflecting on their own and on each other's performance. A condition for effective learning from simulations is the facilitation in briefings and debriefings, and in follow-up plans for the transfer of results to real practices. The participants declared that the comparison and analysis of simulation experiences and real world experiences is vital to performance enhancement. Half of the players declared that their in-game behavior was not very different, compared to their conduct in real practices. This outcome is confirmed in a second question, in which we asked the reverse: whether the player had the impression of acting and reacting in ways that were dissimilar to positions in real life. Only 9% admitted that this was the case and to 22% this was slightly so; though over 70% denied having observed considerable variations. A fixed part of 13% shared the observation that personal opinions and role-opinions were blended in the game. When asked, if they were able to experiment freely with role beliefs and appraisals, nobody could fully agree and all remained doubtful about this. The overall image of the question, whether the actors really played out a different role, remains blurred. And yet, most professionals confirmed that the simulation helped to change the way they look at network relations. *"The simulation with its role-descriptions and role-perceptions, had a certain impact on me, by which I started looking differently at the people with whom I regularly work together."* Some stated that the simulation was useful for better estimations about the impression, they make on network partners.

Some participants were surprised by the effects of certain stereotypes in the simulation. A woman, who played a male role, said that she noticed typical male behavior in the way she acted out her role and in the way the others approached this male-role. A typecast example is that men mostly want to act and take initiative and women are more interested in depth and contact, she said. She affirmed that these stereotypes we surely present in the simulation, regardless of the fact that a male role was played by a woman or that a female

role was played by a man. About her own role perception, she stated that she was amazed by the fact that the role-enactment changed the way she normally react and talks. *"I entered typical male conversations, and this felt so real! Every time I logged in, I was astonished by what happened to me!"* The affirmation that the players could not tell, whether a certain role was played by a man or a woman, was shared by all actors. The interesting side of this is that it reveals a well-known phenomenon: role identity depends on who you think you are and on how you are perceived by others. Another fascinating fact of role perception was demonstrated in the last session. In this game, the participants knew each other very well, for a long time. Their expectation was that they would quickly recognize each other's style and personality, once the game had started. At the beginning of the reflective dialogues this was tested in a small unmasking activity and it appeared that everyone was wrong in the anticipation of who played which part. The acting out of roles was done quite well, in general. One of the professionals tells us the following: *"Certain aspects of my role puzzled me. This Dirk Janz, who is my role: what kind of man is he? At work, he acts very socially and communicative. At home, however, he has little or no contact with his wife and turns to his PC, whenever he can."* It is apparent that the participants completed the role information with personal interpretations. Another point of reflection is, what role adherence does for the interaction and session results. Someone reported steady effects from strict adherence to her role-perception. *"I noticed consistency in the way people responded to my propositions and actions. This had a favorable effect on the clarity of the normative ground rules that we draw up for intervention."*

The model of the first variant of the simulation was organized in such a way that the interaction was mainly directed towards the family guardian, who was supposed to coordinate and manage the case (Figure 18). This meant that the network partners had less overview of the total interaction. This may be an example of negative effects of case management, in which one person has the lead and others are more dependent. What we learned from this, was to encourage the actors in next sessions to have contact with all partners and to stimulate maximum exchange. The design of the next variants was altered, so that interaction was natural and could not be missed. We took care that every action and each contribution was shared with all members of the session[69]. The participants appreciated this, which becomes clear in the next quote: *"I saw that we could efficiently share much information in the restricted time available, and receive optimal feedback from different sides."* In order to support the contact between actors, we introduced a chatroom on the session members' homepage. The chatroom had the immediate effect of much liveliness and animated interaction. *"The availability of the chatroom meant that I had to deal with several places of contact, which made the interaction sometimes more difficult. I felt the need to be present and this made me puzzle what to do first, engaging myself in the chat or working on case documents?"*

Looking back on role-performance, the participants were open and frank to each other and showed a readiness and willingness to learn. They criticized one another in a positive way. *"I expect the family guardian to take a leading role in these problem situations. That was certainly not the case in our session."* Another professional said that in her session, the participants had the pleasant habit of complimenting each other regularly. *"I found this a very constructive way of dealing with the diversity of tasks and perspectives in this complex problem situation."* The professionals affirmed that the communication in the simulation felt free and without negative claims about the ownership of ideas and propositions. Someone said: *"In practice, I often see that colleagues claim a certain solution as belonging to his or her discipline. I liked the open and communal approach in this simulation."* This does not mean that there were no initiatives from specific discipline perspectives. We also noticed bilateral constructive cooperation between persons, who shared the same attitude or ideas about approaches to the problem case. New initiatives started in the chatroom and were worked out in documents and messages that were later dispersed to all session partners. The session partners dealt in a realistic and pragmatic way with insecure or accidental dynamics in their team. If one of the partners appeared rather absent or less participating, this was openly discussed in the chatroom, and this had no apparent negative effect. We noticed that either an actor took over someone's role, as was the case in one of the sessions where the family guardian was temporarily absent, or they simply proceeded without that person's contribution. The disadvantages of missing a part of the discussion became soon evident. This is said to be not much different from face-to-face conferences, although missing out parts of the interaction is perceived as more obvious in online simulations. One of actors observed that the fun increases proportional to the personal influence on processes and results. When asked, whether the participants experienced any differences in network dynamics, compared to real life, the majority (57%) indicate a partial and only 9% a strong difference, whereas still 35% perceive no change. To one third of the actors, the game offered an impulse to give voice to perspectives and opinions. For 19% this was partially true and 26% did not share this experience. The actors said to have gained new insights in how different disciplines develop and present ideas about situations and actions, and that the simulation helped to acquire understanding of the varieties in views and approaches. Some professionals said that the tool is probably suitable for the introduction to new tasks or job functions. Another player reports that the simulation led to a new personal experience of taking the lead in a network conference. *"Normally, I am inclined to follow others and to stay in the background. I adapt myself easily to a given culture or atmosphere. In my session, however, I tried to influence and change the ineffective way of working. It was a particular stimulating experience to see that I was successful in this more leading position."*

Although most of the participants reported new insights and learning effects from their involvement, some of the professionals doubted if this way of network cooperation brings about their best role performance. Some stated that the interaction speed was sometimes too high and that this blocked their presence in the team discussions. This refers in particular to the interaction in the chatroom. During the second implementation round, the messages in the chatroom went booming and messages passed in rapid succession. In the last session, we deliberately instructed the participants to use the chatroom only for brief and informal contacts and to make use of messages and documents for initiatives and proposals. This worked out well: the chatroom was much like a coffee corner, where people talk informal and where new initiatives could emerge that are worked out later.

Contraindications

The application and this particular methodology of practical knowledge exchange appeared to be not the most appropriate tool and approach for everybody. A few contested that they could not attain their optimum level of performance. At least one worker expressed her troubles in adapting to the case that was so dissimilar to what she knows from her usual practice. The simulation demands a lot of imagination and flexibility and those abilities might not be present in the front row of competences of each professional. We should take into account that the participants in this research had to perform right from the start and without any training or preparation in the application. The transition between virtual world and practice world, and with that, between written text and practice skills, can be perceived as a giant step. Some stated that workplace learning happens mainly through demonstrating and imitating of actions in real situations. This means that the online environment is not apt to train the more active handling patterns of intervention. The participants denote, however that this online simulation gaming helps to train the ability to recognize systemic aspects of situational problems and how they can influence them.

As cited before, some partakers thought the task assignments were too complicated. For some, the instructions were sometimes difficult to understand, and for about a quarter of the professionals, dealing with the technical aspects was somewhat troublesome. This could have significance for the evaluation of the design model and for the technical development of the interface. Apparently, different learning styles demand a variety of task formulations and handling options. About a quarter of the contesting professionals is not convinced that online simulation gaming could be an effective training instrument for network skills. They contradict the suggestion that simulation games can elicit hidden know-how and expertise in situations with complex and complicated problems. They however, believe that the involvement and participation of parents and children could

shed a new light on this alleged quality of online simulation gaming. Some participants state that it is too difficult to integrate simulation gaming in normal routines in work situations. We should not overlook the fact that the involvement in this research took a lot of time for most of the participants. This was partly due to the novelty of this method and to the complexity of the simulation. The time-investment differed between actors. It might be clear that time-investment correlates with getting a complete picture of the potentials of simulation gaming. All respondents agreed to the observation that the looks and feel of the application need improvement. They think that it could be wise to reshape aspects the interface in cooperation with youth care professionals, or that a separate playground, exclusively dedicated to youth care services, would be an interesting option.

Recommendations

On various occasions, it became apparent that the exchange of opposing opinions from different roles and disciplines worked out well for the construction of a personal view on the network abilities and on various aspects of the problem case. Someone argues that *"it was very interesting to see different opinions evolve. For me personally, this is the added value of online simulation gaming: to unify perspectives from a variety of disciplines and orientations."* More than 65% of the youth care professionals believe that this is a genuine characteristic of knowledge exchange through simulation gaming. From this assertion, it is important to involve actors with dissimilar positions, interests and perspectives in one and the same simulation. And eventually, to invite content experts, such as clients, to participate. Anonymous role-play can help to break through all kinds of communicative handicaps and predispositions that are often apparent in real network conferences. By far, most participants think that inequalities of power and knowledge or know-how block open communication and endanger a free flow of thoughts and propositions. The respondents state that in work practices these disparities often frustrate stakeholders and partners. The same is true for engraved patterns of behavior and miscommunication in regular networks. The partakers in the sessions believe that online simulation gaming can bring about change in problematic communication. In the multiple case study we have observed that a careful analysis of youth care problems, as content for simulations, is conditional, and that the design of model and artifacts must be done in close cooperation with the stakeholders of the problem situation. This supports the commitment of the participants and reinforces the credibility of the game. A vast majority of the participants is convinced that online simulation gaming offers advantages to learn how to deal with complexity and with moral and ethical issues. They experienced that participation helped to gain more insight in their personal competences and know-how. To test this proposition and to build theories of the methodological use of online simulation gaming for professional development more re-

search is necessary. Only a relative small part (20-30%) of the professionals said to have previous experience with offline simulations in various forms, in their work with clients, and slightly more people said to use offline simulations in behavioral trainings and to stimulate perspective change. The respondents affirmed that the learning benefits of a-synchronous online simulation gaming was higher than they ever experienced in offline variants of synchronous simulations. This may imply that online simulation may be advantageous to train competences. Based on the outcome of the questionnaire and the reactions in the reflective dialogues, we can say that the professionals recommend further studies of the distinct functions and effects of online simulation gaming for personal development and the training of network skills. We have to acknowledge, however that successful offline simulation gaming depends highly on the design choices and the strategy of implementation. We need to advance theories of appropriate simulation design and implementation strategy in relation to learning and workplace training.

FINAL REMARK

At the end of this chapter, we may say that the participating youth care professionals see online simulation gaming as a suitable tool and method for deep studies of complex problem situations, although there are still many loose ends as to the impact assessment in intervention practices and the development of the application, and about the possibilities of practical implementation in operational contexts of networks, teams and organizations. On the other hand, the processes and results of this research are promising, considering the professional enthusiasm for this way of network exchange. The method of co-construction and feedback on design and implementation, as applied in this research, may appear essential to future success, considering the importance of the integration of professional discretion in artifact construction and evaluation, in a knowledge intense sector as youth care.

This extensive description of the multiple case study is a study apart. This chapter can be read as a unity on its own, thanks to the theoretical and empirical setting that has been described in the first half. In the next chapter (7), we shall analyze the outcomes of the multiple case study on a higher level and in conjunction with the outcomes of the other chapters, in view of the construction of a theory of online simulation gaming for youth care network exchange.

SEVEN

7 Conclusions and general discussion

Abstract

Youth care multi-disciplinary networks need flexible, interactive and attractive tools and methods for knowledge exchange in view of timely, effective and durable help in complex parenting problem situations. The stakes are high, demand increases, efficacy in the most difficult cases stays behind, and costs are skyrocketing. An iterative design study has been conducted to develop a simulation game model, appropriate for use in complex problem cases, and to find out what youth care professionals think of the relevance, usability and usefulness of simulation gaming for network exchange. The game model is noteworthy and unconventional, in so far that the users have the lead in the design and the definition of content and interaction. Youth care experts participated in processes of design, play and dialogue. By alternations of performance and debriefing, the participants were engaged in the interpretation of session results in a multiple case study. The first line of outcome analysis leads to the assertion that the end-users appreciate the model construct as a valid systems representation of recognizable, complex network dilemmas. The second line highlights the pragmatic utility of simulation gaming for cooperative and coordinated normative reflection, joint strategic operation and enhancing knowledge-to-action patterns. Based on the results of both dimensions of analysis, a constituting theory of youth care exchange and simulation gaming is briefly summarized from the preceding chapters. Subsequently, the general discussion points and conclusions are presented and the research questions are answered.

Keywords: simulation gaming, youth care knowledge exchange, relevance of simulation games, usability of simulation games, usefulness of simulation games, game model development, game model appreciation

7.1 INTRODUCTION

In this final chapter we look back from the contextual points of view that locate this study in and between the domains of simulation gaming and youth care knowledge exchange. The contextual points, as discussed in the research outline of chapter 1, concern the two dimensions of *systems information design* and *user-experience analysis*[70]. The dimensions signify the main lines of research: the representation of youth care problems in simulation artefacts and the utility of youth care network exchange through simulation games. The outcomes are related to levels of relevancy, usability and usefulness[71], and cover the elements in the design research framework (March & Smith, 1995), which has been described in chapter 5. The outputs of the framework are the *construct, model, method* and *instantiation* of simulation games for youth care knowledge exchange. They form the tangible results of the design research activities *build, evaluate, theorize and justify*. We added the analysis categories of in-game *production, behavior, performance* and *intervention* and propose to relate the design activities to the analysis categories, to study the outcomes. We have put the substantive focus of exchange on *collecting, generating* and *structuring* information for scenario construction (*situational cognition*), network strategies (*discourse participation*) and normative frameworks (*reflection on intervention*). We advocated the harmonization of problem, discourse and development, by comparing *practice world, game world* and *future world*, and to carefully match *design choices* with *program requirements and objectives*[72]. The aim of this chapter is to relate these contextual perspectives to the research outcomes and by doing so, to provide answers to the research questions. We present a summary of the principle findings by elaborating a constituting theory of youth care knowledge exchange through online simulation gaming. This is followed by reflections on the research method and on the main constraints and challenges to further development and research. The chapter ends with conclusions and answers to the research questions.

The emergent design of the study stands in the tradition of qualitative research and follows a course of effectuation, evaluation and ongoing improvement. The analysis of the research design process is less subject to linear reasoning, compared to other types of investigation. Instead, the precarious course of design and progress decisions in this research are a systematic part of the overall approach to afford optimum user-participation. They arose from and shaped the process at the same time, resulting in interdependence and consistence of all findings, conclusions, answers and recommendations.

Theories of simulation gaming for professional practices, learning and organizational change can be found in scientific studies that aim at describing the adequacy and productiveness (Klabbers, 2003, 2009; Kriz & Hense, 2006; Chin et al., 2009; Hofstede et al., 2010). In these studies the use of simulation gaming for knowledge elicitation receives less attention (Sauer et al., 2000; Fietkau, 2003; Bitter-Rijpkema, 2005). In the last decade scientists are gaining an increased interest in cooperative ways of constructing, maintaining and exploiting collective resources in multiplayer games (Smith, 2007). Social dilemmas and conflicts can be treated as resources of meaningful interaction and knowledge. They may sprout from different views on situations and possibilities, often instigated from disciplinary knowledge and experience, and perhaps more often prompted by personality and individual style. Collective action, and the mere fact of playing a game, creates a sense of commonality that may smoothen out differences of opinion and view. Collective action, which is a characteristic of youth care networks, maximizes the effort to reach common objectives of enhancing problem situations (Smith, 2007; Olson, 2009). This research shows that simulation gaming supports understanding of complex situations and leads to the comprehension of different points of view and disciplinary know-how. This is a powerful effect that enhances network cooperation. We have seen that youth care networks badly need cost-effective tools to establish good and quick cooperation and exchange about difficult problem situations. Online simulation gaming can provide the right tool and method, despite its current experimental nature. We need theories, methods and skills that afford further model development and implementation by teams, supervisors and trainers.

We positioned this research on the crossroads of design and behavioral science and argued that theory construction depends on a sound balance between relevance (practice) and analytical rigor (justification). To this purpose, we advanced Hevner's theory of the three design circles (2004) and March & Smith's framework for design research activities (1995) in an extended model, in which we integrated categories of analysis. The methodological elaboration of these theories resulted in an analysis tool to structure and analyze inventories of session data. A model of knowledge fields and session interaction has been used to structure network exchange about complex problem situations of youth care. The contribution to social intervention theories concerns the enhancement of youth care network exchange through innovative gaming simulation. The study relates to game theories with the switch and integration of standpoints of practitioners and observers in the design, implementation and debriefing of simulation games. The results add to youth care theories, in so far that the relevance, usability and usefulness of online simulation gaming for

network exchange has been investigated from the viewpoint of the intended users. The resulting method and theory can be used to analyze knowledge construction processes in youth care networks. Besides, the study adds to methodological intervention theories, as we have shown that it is possible to work out intervention options and strategies in the relative short time-span of role-playing simulation games. It is plausible, not proven, that this method can be beneficial to achieve quick, durable and effective help in situations that bear risks of lengthy intervention. Theories that aim at linking design science and analytical science, and their practical application, appear useful to study youth care knowledge construction on a general level. Building a benchmark of standards and criteria for youth care intervention, with the help of online simulation gaming, may help to effect trend analyses to anticipate future developments in particular classes of problem situations, or to study uncertainties of past interventions. As we have extensively described, comparative analyses of life-world, game-world and future-world support the construction of a referential language, based on consensus of all actors involved, about problem situations and their developmental chances. Furthermore, the research adds to game theory, as we studied and utilized online simulation gaming design in a new domain of application. A theory has been developed on the use of simulation gaming to elicit, develop and apply practical knowledge in knowledge-intense and multi-disciplinary networks. The co-development and the co-construction of the tool and method, and the collaborative reflection on results is a further development of evaluation theories in game science. The theory builds on concepts of game design (Klabbers, 2003, 2006, 2009) and design science (March & Smith, 1995; Hevner et al., 2004; Van Aken, 2004; Cross, 2007; Hevner, 2007; March & Storey, 2008; Dorst, 2010, 2013; Van Aken & Andriessen et al., 2011). Klabbers' theory (2009) of achieving consistence and coherence between artifact design (design-in-the-small) and program development (design-in-the-large) has been applied and tested in the particular domains of vocational training for social professions and youth care services.

Simulation gaming is new in youth care practice, and research on knowledge development in youth care networks is scarce. Outside this particular field of application, much investigation has been done on the effects of simulation gaming for the training of specific competences and organizational change and the results are mainly about the rating of effects against the backcloth of predefined game behavior and performance. That kind of research is called end-state-driven (Hense et al., 2009) and pays little attention to the processes of knowledge acquisition and exchange. In youth care, the focus is on the interpretation of process-oriented approaches of knowledge development and exchange, in which the intricacy of the problem itself is central (Evans, 2004). The human interaction focus entails interpretational challenges, relating to multi-reality perspectives and behavior in complex problem situations. In behavioral contexts we are confronted with the complexity of sev-

eral hermeneutic layers (Giddens, 1984), and with the interpretative interplay of observation and practice. This complexity is an essential characteristic of simulation gaming for knowledge exchange in particular, and of youth care practice research in general. In this research, the multi-layered interpretational difficulty has been addressed by a method of co-construction and ongoing feedback from the users on the design and implementation and on the transfer of results to practice. The construct of problem cases and the modeling of simulation artifacts have been done by concerted interpretation of all involved. Besides that, the effectuation implied the interpretation of construct and model by the players. Finally, the retrospective interpretation of processes and results and decisions about transfer and follow-up were again a combined action of all stakeholders. The ambiguity of interpretation can be confined by affording maximum transparency of interpretation and by applying frequent feedback loops and dialogical reflections. We endorse the opinion that designing and building should go hand in hand, enabling a model to grow and mature over time. The strength and the reliability of a simulation game increase when its model evolves and improves during the course of effectuation. A simulation game works as an extended interpretation of perspectives on developmental chances and scenarios in a particular problem situation. Seur's (1992) emphasis on the interplay of research and local action shows how observers and practitioners might modify their views and interpretations during the flow of exchange in all stages of design implementation and transfer. We agree to the statement that a researcher should attempt to place his interpretations on the same level as the understandings of the local actors and to integrate the positions of observer and practitioner. Balancing different interpretive layers may reinforce the comprehension of values and realities in youth care practices.

An actor-oriented and constructionist approach

The theoretical principles can be articulated in the contexts of gaming, media, learning, change, youth care and social intervention and are based on constructionist approaches of design and implementation of simulation games for youth care knowledge exchange. The blend of youth care network exchange and simulation gaming appeals to the imagination and seems suitable for studying knowledge exchange. The most engaging effect of this research appears to be the opening up of academic dialogue about the development and appreciation of online simulation for the coordination and alignment of knowledge-to-action repertoire in youth care practices. The design of youth care exchange through online simulation gaming impacts system development methodology and knowledge construction behavior in multidisciplinary networks. The recurrent activities in both this research and in simulation gaming for youth care knowledge exchange are dual. They are about con-

certed normative reflection on the construct and model, pertaining to a complex problem situation, and they are about joint strategic operation through method and instantiation, in order to reach better intervention results. The actor-oriented approach could be regarded upon as an example of learning by design as the participants are engaged in knowledge production and practice research. The participants share information, ideas and knowledge, and at the same time, they reflect on processes, interaction and performance, thus contributing to the repository of practice and methods of social intervention. The methodological aspects aim at iterative and co-constructive processes of exchange about situational cognition, discourse participation and reflection on intervention. Simulation gaming can be regarded as a tool to administrate and record the processes, predispositions, preferences and styles of the participants of a network constellation. Each session can be studied as a social system in which the actors display collaborative thinking, social interaction and personal conduct. A session functions as a social system for the co-evolution of know-how with the emerging qualities of its main constituent elements, being the actors, the actions and the interaction (Klabbers, 2009). The binding elements are the recognition of diversity, through deliberate strategies of voicing and the support of multimodal ways of communication and expression, in which the actors move between written, visual and spatial (virtual world and real world) modes of meaning-making. The overall approach of simulation gaming for youth care network exchange should not dictate a fixed formula of model design and implementation, nor should it prescribe any compulsory rules or methods for effectuation. For knowledge-intensive practices as youth care, we propose to use principle-based games with much room for professional discretion. The choice of game strategy[73] depends on the situation and the desired outcome; yet the four strategy directions (Caillois, 1958) of mimicry (simulation, imitation, role-play), alea (chance or unpredictability), agôn (competition and assessment) and ilinx (handling risk and disorder) seem appropriate for youth care contexts. The aim is to clarify shapes and forms of youth care network exchange in an iterative methodology that stays close to the demands in practice and to the learning abilities of the intended users.

Systems representation in network exchange

Crosswalks between social intervention theory, game theory and learning theory are useful for theoretical reflection. Theories of scenario development and narrative methodology in social work practices can be linked to simulation design. The same applies to social intervention theories and the quest for the most appropriate exchange tools. If simulation gaming is considered as a possible tool to explore complex issues, the question is how to define suitable sensitizing concepts as the bedrock of design. Online simulations function as information processing systems to address such concepts from the domain of application. We defined situational cognition, network efficacy and intervention as the constitu-

tive elements of systems knowledge in youth care. Simulation gaming is an effective way to collect, generate and structure systems knowledge within this conceptual framework, although other choices are possible. The design of simulation games aims at systems representation in artifacts, matching professional standards of the reference field, and focuses at normative reflection for strategic operation. An infrastructure of design fundamentals and implementation strategies must preferably be made in cooperation with the end-users. It is wise to apply collaborative strategies of transformational learning in each phase of design, effectuation and evaluation. It is vital to achieve regular cross-overs between life-world (collecting data from the problem situation), game world (generating new insights) and future world (the projection of envisaged change).

The evaluation and transfer of results to practices of intervention, and vice versa, should receive our prime attention. We should carefully define the game objectives in order to make the right design choices. These choices depend fully on the change program or problem situation for which the game will be deployed and in which the results will be assessed (Klabbers, 2009). The design should serve the purpose of optimum relevance on case-level, suitable usability on network-level and usefulness on individual task-level. We found that the relevance of simulation gaming depends proportionately on the quality and utility of the design model and on the value and significance of the results for network exchange. On the other hand, a game must meet the rigor of scientific evidence, by the assessment of validity, trustworthiness and generalizability to other practices. We suggest to use the design research framework that we adopted from March & Smith (1995) to define the outputs of construct, model, method and instantiation, and to develop the activities of build, evaluate, theorize and justify. The analysis tool of session performance and interaction may provide insight in the torrent of data, to compare the players' experiences and impressions with factual session information, and can be used to scrutinize the categories of knowledge production, behavior, performance and intervention.

There is a theoretical impact of exchange design on professional proficiency, when we consider the statements of the participants that role-play and simulation support the reflection on professional and network abilities. Perspective change shakes up personal beliefs about professional skills and talents and helps to open up to new visions on network capacities. Anonymous role-play is an important asset in simulation, because it helps to adopt different views on professional issues and it appears to be fruitful to experiment with different positions in a playful setting. The relative freedom in an adopted new role can be of particular significance to find a way out of deadlock situations. The participants confirmed that playful interaction in roles that differ from regular practice, encourages the

exploration of unusual thoughts and proposals. The learning effects depend on design choices and session interaction. The comparison of results between sessions in our research educed the notion that the random assembly of session members relates to the character and degree of success in the interaction and exchange. Personal styles in communication differ considerably and resonate on the communication and collaboration patterns in sessions. The content level of assignments should remain in the zone of proximal experience, and at the same time, should be different enough to stir up the mindsets of the actors. There must be a sound balance between play and reality to enable transfer between the worlds of practice, game and the desired future state. Youth care network exchange can be considered from a socio-cultural viewpoint. The members, just as in any other collective, are engaged in constructing and maintaining shared values and norms. The network partners derive parts of their professional identity from adhering to, or opposing the implicit and explicit network consensus. We can look at networks as collectives that provide members with a joint consciousness and consensus as to problem definition and strategy arrangements. The hidden function is to afford the members a better understanding of problem situations and a substantiated choice for action. At the same time we have to acknowledge that groups tend to cherish beliefs and an often implicit worldview that may not be questioned. Thinking differently can easily be experienced as undermining the group's legitimacy. Freethinkers are regularly associated with threatening the raison d'être of a group. There is an almost natural tendency among members of a collective to adaptation. Nobody wants to be an outsider and the fear of being excluded is fundamental. The liberating power of free speech, as in play, theatre and literature appeals also to role-play in simulation games, in particular when roles are anonymously assigned to the actors. Role-play in simulation games renders youth care professionals many options for the expression of ideas and propositions. Simulation gaming offers space for unconventional thinking in situations and about problems that benefit from usual views and perspectives.

Meaningful ambiguities

Uncertainty is an evident consequence of this research as there are many unanswered questions to simulation gaming in general and to its use in youth care practice in particular. Uncertainty applies equally to causalities of intervention and to the efficacy of exchange in youth care networks. These ambiguities problematize the validation and it is not possible to generalize the outcomes. And yet, our research population affirms the general value of simulation gaming for different sorts of network activities. The consistency, reliability and trustworthiness have been achieved by the approach of co-design and co-creation with all relevant stakeholders from youth care practice, and through an iterative method of assessment and probing of choices and effects. We presented all results to a group of experts who represented a broad range of specializations in youth care, innova-

tion and research. Still, many questions come up when we look back on the research. If applied within organizations, would that lead to similar outcomes? It remains uncertain what the impact of simulation gaming could effectively be in youth care practice situations. Is it at all possible to attain logical rigor and unequivocal results from simulation games? Nonetheless we can argue, with Gaver et al (2003) that ambiguity is neither a risk nor an anathema to design science and to social intervention. We could rather look at uncertainty as a resource for change and as a stimulus to close personal engagement with systems and situations. Social work practice is imbued with dilemmas and uncertainty and its core concern is not to avoid or eliminate irregularities and contradictions, yet to find ways to use them as sources of information. Gaver presents ambiguity as a property of information, context and relationship. Ambiguity of information rests in the design of artifacts. In the same way, uncertainty unfolds in undetermined information of complex problem situations. There is ambiguity of context in discourses and perspectives about parenting problems and we find ambiguity of relationship in the individual positions toward interpretation and evaluation. This equally applies to knowledge exchange in simulation gaming. Through the ambiguity of interpretative relationships, persons engage themselves in puzzling problem situations. In simulation gaming the participants develop personal relationships to the model and artifacts from their interpretative diversity. We promote a stance of openness to the understanding and craft of ambiguity in online simulation gaming for youth care intervention. Instead of ruling out uncertainty or refuting ambiguity, which is a rule in analytical science, we could treat ambiguity of information, context and relationship as a resource for research. This study confirms that the interface and simulation model are fit for knowledge exchange, despite the vagueness that remains to be cleared in the transfer between the world of simulation and the world of practice. As explained in section 0, situational and network cognition is achieved through the analysis and discussion of thought and behavior. This applies in particular to debriefings and the transfer of work from simulation games to real practice. In social care practice, doubts are omnipresent, when it comes to choices of strategy and intervention. Youth care professionals balance situations by uncovering uncertainties as assets for change and situational development. One could say that the appeal of ambiguity leads to learning and progress in life. The main operative criterion is willingness to explore the richness of conceptual potentials that are hidden in uncertainty. Simulation gaming helps to value doubts in situations and could even enlarge ambiguity and increase the variety of predispositions or preferences. It is not the diversity of opinions and uncertainties that we should fear. Instead, we could try to accept and handle ambivalences. We might address ambivalence as

a source of obscurity, frustration and confusion, and as a source of opportunities and options for social learning and change.

Another point of doubt relates to the concept of situated work practices. The concept itself is not always clear in literature (Schultze and Boland, 2000) and neither has it been possible to clarify its meaning in this research. There are many aspects to work practice, which makes it hard to pinpoint the full relevance and significance. There is the notion of 'action' and that of 'real', as in theory versus practice. Besides, the transfer of work practices, outside the usual context of reproduction, can be problematic. Schultze and Boland define workplaces as circuits of reproduction of *"the reciprocal relationships through which practice creates and recreates the objectified social structures and conditions in which it occurs."* This definition can be related to Giddens' structuration theory (1984), which applies to behavioral studies that are strong on action and weak on institutions, and on the actor network theory that focuses on action and agency in understanding how actors in networks shape each other's roles and positions in a practice-oriented approach (Walsham, 2006). The central idea is to look at practices to see what people really do. Rather than, as in simulation gaming, what they say they do or what they think they ought to do (Pickering, 1992). The frailty of this research is that it does not include the transfer of the outcome to real practices, to observe and theorize the significance for practice creation. Turner (1994) defines practice as intentional, goal-seeking actions that follow certain general principles or procedures. The definition applies to how the concept of work practice is used in this research. The counterargument to the referred gap between simulation and practice might be that it is very difficult to access and comprehend work practices, partly also because of the tacit dimensions to practice knowledge. Though it is too early to jump to conclusions, it is very well possible that simulation gaming helps to uncover situational flaws, local habits, wrong assumptions and biases, and to convert tacit into explicit knowledge.

We have dealt with a cross-over of theories about knowledge, youth care and social intervention, game design, workplace learning and network exchange. This intermediate position might lead to divergence, concerning the theoretical claims. As the subject of research spreads out over unproven territories of expertise, the outcome will certainly provoke discussion. The research is oriented toward design science, which implies that the results refer to design aspects of the game model, not to evidence. It has been emphasized that the case study is not about the assessment of online simulation gaming in youth care practices, however on gaining insight in the appreciation of model, tool and method for network exchange practices. And yet, it is understandable that anyone, who is interested in online simulation gaming for youth care knowledge exchange, also wants to know what the possible effects could be for professional intervention in youth care practices. This however,

concerns second order goals that can be achieved in follow-up scientific research of analyzing, theorizing and justifying the effects of simulation gaming in intervention. There are many options to investigate knowledge exchange processes in youth care practice; however, online simulation gaming has the advantage of introducing game elements such as anonymity, role-play, competition, cooperation and dealing with coincidental information and dynamic events, and it enables the use of scenarios and structuring propositions as to envisaged exchange processes. And finally, the data base of the digital environment affords easy access for analysis and learning.

Discerning positions of practitioner and observer

On several occasions we have discussed the distinction between the positions of practitioner and observer (Klabbers, 2009). The distinction helps to analyze and interpret what practitioners do and how we may determine, from an observer's point of view, the outcome as being independent of context and person. The observer should be concerned with neutral considerations as to the value and significance of processes and performances in simulation games. In simulation gaming the practitioners create systemic interaction and share information in a virtual social reality, through experiments that test theories and practices of youth care. This sustains the idea that simulation gaming provides a method for the study of network and individual behavior and reasoning. The transformational power of simulation gaming is strongly determined by the quality of analysis, interpretation and dialogue about processes and outcomes. In collaborative processes of learning and transfer the participants change positions from performer to spectator, and transform from a community of practitioners during the sessions, into a community of observers in the reflective dialogues about the meaning of results. The respondents should take up responsibility to investigate the model and artifact, the conditions and implementation and the performance and production in sessions. For youth care professionals the ultimate incentive lies in these transformational processes of analysis and interpretation, in which they relate personal and group experiences to questions of practice research and to domain specific theories. These collaborative processes can be seen as reconstructing the past (session performance), in view of shaping the future (creating better models and new strategies of intervention). In doing so, they translate universal concepts of youth care intervention to the specific, local circumstances of the simulation game and of the problem situation involved, and vice versa (Klabbers, 2009). By studying and discussing the conceptual, interpretive framework, we may face the interplay of interpretations that appear in various stages of design, implementation, evaluation and transfer. Much in line with what Giddens (1984) states about theories of the social sciences, the interpretations must

reflect the ideas and experiences that were held by the actors to whom the interpretations refer. It is of utmost importance to share academic knowledge, conceptual frameworks and choices of research & development with youth care practitioners, in order to advance the practices and theories of both social intervention and simulation gaming. Shared worlds of practitioners and observers may not only encourage the discussion about the significance and transfer of certain outcomes from simulation sessions. It may as well help to improve youth care knowledge exchange in general and the design of simulation models in particular.

The interpretative defiance is to affiliate the positions of practitioner and observer (Klabbers, 2009) and to equate viewpoints as to processes and results of youth care knowledge exchange through simulation gaming. In simulation gaming we explore the positions of practitioner and observer, as members of a learning community, who use this tool and method as a scaffold for learning, knowledge production and the planning of interventions, by alternating performing and reflecting. Model development is established through the design research outputs of the construct, model, method and instantiation (March & Smith, 1995). Model appreciation can be investigated by analyzing knowledge production, game behavior and performance and by discussing the options of transfer of results to real work situations. Design is user-driven and practice research facilitates processes of emergent knowledge, conducive to practice situations. The performers or practitioners of design activities build, evaluate, theorize and justify action-to-knowledge patterns. Analytical science is knowledge-driven, with researchers as observers, who perceive from a neutral, outside standpoint (Klabbers, 2009). The observer explains, on a phenomenal level, what happens in the research situation and the results can take the shape of a verifiable theory of concepts and relations in a causal system of phenomena that have been investigated. Different observers may produce a variety of theories in order to explain the same phenomena. This applies in particular to the breadth of research into simulation gaming for knowledge exchange in social work practices. An actor-oriented research implies that validity claims of the respondents are taken seriously. The presumptions of the practitioners are as legitimate as those of the observer (Seur, 1992; Hessels & Van Lente, 2008). Thus, the claim to value and significance of simulation gaming stems from a mutual, conceptual framework of reference that is established in debriefings and in reflective dialogues, in which the actors frequently change positions between performer and observer. This provides a methodological basis for replication research and empirical efforts in order to develop and test theories. The theoretical reflections in this research project may be the start of an ongoing effort to support social workers in their knowledge-intensive practices, so that they may make a better use of the widely dispersed expertise of professionals and context experts of youth care issues. We hope that this favors a future, in which networks

of practitioners function as highly effective exchange communities that invite partakers to cooperate as knowledge providers and knowledge creators.

The simulation model offers a replica of a social life-world situation, that engages the actors in meaningful interaction about a real-world problem. This enables to examine how individuals and session groups respond to youth care problem situations and how they create action-to-knowledge repertoire. As Seur (1992) maintains, meaning, attributed to problems, events and experiences, can be elicited from the actors' actions. Sessions of simulation games convey indirect access to these actions and to the thoughts and feelings that are expressed in words, symbols, sounds and images. The interdependency between actions in simulation games and actions in life-world situations can be studied and discussed and the results may affect future behavior. This assumption underlines the importance of transfer between practice-world, game-world and intended future world. The communicative action in sessions entails the co-construction of a shared experience that helps to reach a mutual judgment and understanding of elements of social reality. In simulation games, the actors take part in developing and confirming their membership in session groups and evolve role identities through communicative action. Habermas (1981) said that communicative action aims at the progression and reshaping of a shared life-world and of social identities. A simulation session works as a temporal world with the same objective of sharing life-world experiences and developing identities. This idea enables the study of how the actors bring about desired end products and how they obtain access to resources of information and strategy. We may investigate how they construct meaning and develop intentions and objectives in view of solutions to the problems presented. In simulation games the actors are influenced by situational information, conditions, claims of truths, normativity and effectiveness and their joint strategic operations are regulated by notions of rightness and legitimacy.

BALANCING MODEL DEVELOPMENT AND MODEL APPRECIATION

The end products of the sessions could be considered as tangible evidences of the efficacy of simulation gaming in youth care networks. And yet, the discernible outcomes of the sessions offer no clear indicators of the quality and efficacy of simulation games. To that end we must analyze model development on the levels of the design research output (construct, model, method and instantiation), and model appreciation through the study of user-experiences and session performance. An actor-oriented approach can effectively lead to the exploration of problems and solution-driven strategies and embodied, shared know-how in sessions can be transformed in conceptual, practical knowledge, through processes of inter-thinking and reflective dialogues (Weick, 1995). The interaction and performance

in simulation games allow actors to respond to a complex problem situation, even if this situation has reached a deadlocked position in real practice. We may consider the positive responses as an indicator for the success of the model, even though it is unsure in how far the results are due to the quality of the model or of the session interaction. The end products are not the only and probably not the most important session yields. Network interaction and performance delivers important learning effects that affect individual and team competences. Session experience contributes to capabilities that question intervention practices and that handle network cooperation effectively. In order to adjust model development and model appreciation, it is advisable to discuss and translate comments and feedback on the efficacy of the model into newer versions for next rounds of simulation sessions. This iterative approach and close cooperation with practice experts in stages of configuration, construction, implementation, reflection and transfer is essential for success with simulation gaming in youth care practice.

7.3 Methodological reflection

In this research we embraced the idea that it is relevant to study youth care network exchange about complex issues for the improvement of intervention. The applied method uncovered relations of personal perspectives, experiences, actions and knowledge exchange. This entailed the intentional engagement of the researcher in joint practices of simulation design and simulation appraisal. The study fits within the characteristics of qualitative research and its emergent design is a result of the methodical choice to stay close to professional needs and practical conditions. The method is based on the twofold objectives of achieving knowledge about the efficacy of choices of design and implementation of artifacts, and the development of theories about the appreciation of online simulation gaming for network exchange from a user-perspective. We started off with an exploration of the domains of game theory and social intervention, with an accent on youth care network exchange. The decision to choose youth care as research field was made as a consequence of the outcomes of the practice inquiries. The respondents stated that the motivation for participation is driven by a strong involvement in future scenarios, which is a shared feature of simulation and of daily youth care routine, and by a major interest in the utility of digital devices for better task performance in network cooperation. Reflection-on-action is a problematic and prominent concern of youth care proficiency and we wanted to test the hypothesis that online network consultation can be a useful complement to the existing network repertory of exchange tools for the collaborative study of complex situations, network efficacy and the substantiation of interventions. The research population was recruited partly in organizational contexts, partly in professional training programs and through social media. This way a certain breadth of age, sex, experience, knowledge

and education was achieved. It is conceivable that our respondents had a non-average digital orientation, although we did not find cues that endorse that presumption. The marked interest of the respondents in the use of digital devices for network consultation is probably a prerequisite for participation in this type of innovation. After selecting the research field and population, we deliberately linked the narrative nature of youth care with simulation gaming. From there we examined the needs and prerequisites for the design and implementation of simulation games. We focused on principle-based games to afford a maximum of the actors' discretion of game behavior, with a limited regulation of game structure, task assignments and envisaged output. Subsequently, we focused on the progression of simulation design in the organizational structures and programs of higher education and on the development of design fundamentals and implementation strategies. The results of these preliminary studies are the foundation of the multiple case study. The multi-layered interpretation of outcomes and effects was done in consultation with all actors involved and with experts of the community of experts that provided comments on the choices of design and on the findings from different data resources. In the next paragraphs we shall discuss some of the main ambiguities in this research from a methodological viewpoint, followed by aspects of reliability of the applied research method and some reflections on the validity of results.

The method was directed to clarify shapes and forms of simulation gaming for youth care network exchange in an iterative approach that stayed close to the demands in practice and to the learning abilities of the intended users. An important ethical and epistemological guideline was to examine the potential of simulation gaming as change agent in youth care programs and to consider the artifact design and the actor-artifact development as intermediate instruments in the progression of learning and change (Klabbers, 2009). The binding elements are the recognition of the actors' diversity through deliberate strategies of voicing and the support of multimodal ways of communication and expression in which the actors moved between written, visual and spatial (virtual world and real world) modes of meaning-making. The overall approach did not dictate a fixed formula of model design and implementation, nor did it prescribe compulsory rules for the utilization of simulation gaming in youth care network practices. Instead, the approach focused on a gradually evolving and cooperative practice that suits the context, the actors and the chosen objectives. The recurrent research activities are dual. They are about normative reflection on the construct and model of a complex problem situation and about strategic operation through method and instantiation. The same duality of normative reflection and strategic operation applies to the proposed method of implementing simulation games in youth care practices. As explained above, the actor-oriented approach is conditional to

achieve high learning benefits and to assure a valid standard of appreciation of the model and method. The conceptual frame of reference is established through the exchange of positions of practitioner and observer.

The design of the artifact appeared to be effective for the exposition of complex practice problems in an online exchange environment and the actors demonstrated their control over knowledge acquisition and sense making in simulation games. The model displays a simple structure of roles, phases and assignments that fits the problem case and might also be effective for similar cases. The comment of the users was that the task levels of exploring situations, strengthening network participation and reflection on intervention are probably also suitable for other complex situations and dilemmas. They confirmed that the approach and procedures in the simulation game are recognizable and realistic. The model is easy to change and adapt tasks or information in the course of sessions, according to progressive insight. The model allows intermediate changes and interferences, which come up to the dynamic, variable and unpredictable features of social problem solving. The opinions of our respondents comment on the adequacy of the functionalities of Cyberdam and the participants advocated further adaptation to youth care needs and practices. The choice of game fundamentals appeared to be functional. This applies to the game features mimicry (role-play), agôn (competition) and alea (chance). There were various opinions as to the degree of clarity in the task assignments and game instructions. We must keep in mind, however, that the players had no previous experience or agility with the environment. They showed an average level of media-literacy, though some were highly competent in digital media and others had only limited digital skills. Considering the average digital abilities of the participants, it speaks in favor of the model and the environment that all players were able to successfully reach the end of the game. The actors think positively about simulation gaming for network exchange on the basis of their experiences in the multiple case study. We believe that this positive result is partly attributable to the co-constructive method of design and model improvement, in which we eclectically took advantage of feedback from various experts to make sure that the model would respond to practical needs and requirements. An appealing feature is that all data are kept in the application, which supports the transparency of analysis and interpretation of session outcomes. This is a meaningful aspect for regular practice research of highly complex practice problems, and for scientific research of knowledge exchange. It is fairly easy to replicate and customize simulation models for follow-up sessions and various contexts. Game models have the practical advantage that they can be reproduced and repeated to an unlimited extent. It is possible to give access to participation, and to the analysis of results, to all kinds of parties: clients and content experts, professionals, researchers, educa-

tors and students. It should however be noted that youth care practice knows rigorous privacy codes that have to be respected.

Reliability of method

The nature of this project incites the growth and refinement of a lot of specific, substantive, technical and process knowledge and experience as to designing, implementing and evaluating simulation games for youth care practice. The advancement of simulation gaming for knowledge exchange is an important yield of this research & development project, and embodies primarily the researcher's expertise and proficiency on the subject. This implies a certain dependency on the researcher's bias, which involves the risk of influencing the arguments of reliability and validity. The rigor of scientific research demands a particular care to the role and influence of the researcher and to the method of analysis and interpretation. The precarious aspects of the researcher's position were reason to stay attentive to illusory correlations (Chapman, 1969) and to assure optimum transparency of interpretations and conclusions. This is why we asked expert feedback on all relevant choices and interpretations of research data. We reckoned with different reality and value perceptions of the actors involved. The feedback included the design and development of the model and artifacts, the briefing, effectuation and debriefing. At the end of the game, the session products have been presented to experts to gain feedback about the estimated effects in the problem situation. The reliability of the method of research is sustained by the ongoing comparison of the systematic complexity of game design, from the viewpoint of observers, to the organized complexity of game play, in the perception of practitioners. This mental and epistemological switch from the positions of observer and practitioner is a vital feature of the method in this research.

The multiple case study strategy appeared to be a suitable tactic of the qualitative method of exploring and interpreting youth care network exchange in simulation sessions. The multiple case study strategy (Stake, 1995; Yin, 2009; Baxter & Jack, 2008) has been applied in experiments that invite to look at the simulation as a reality model to study exchange processes and results (Mens-Verhulst, 1988; Klabbers 2009). This reality model is in fact a system in the shape of a simulation that generates information for the understanding of another system: that of youth care network exchange. This approach made it possible to analyze single sessions as well as to effect cross-session analyzes and to compare the specific results with the overall outcome (Eisenhart, 1989). The chosen research method made it possible to carefully examine outcomes and to study relations between session activities and results from questionnaires and reflective dialogues and to compare the outcome with findings from the explorative inquiries. The digital availability of model, processes and re-

sults makes it possible to retrospectively go through all research steps and eventually to verify the outcome through inter-rater reliability or to repeat the simulation under the same or similar conditions and see if the results differ. We applied a strategy of writing up all case study material to keep the interpretations grounded in the situated language of the interviews, sessions and dialogues. To avoid that the design and interpretations would be influenced by the researcher's bias, we took several measures to reinforce reliability. It was a methodical choice to discuss all design choices with youth care practitioners and to present the intermediate proceedings on five occasions to the group of experts for comments. By this meticulous iteration of inquiry, design, conceptualization, feedback and correction, we tried to establish ample reliability of our research activities.

The reliability of method is sustained by the involvement of youth care professionals in all output sections of the research. In close cooperation with practice workers, we constructed a suitable problem situation from a collection of about 10 different workplace dilemmas. The model design was discussed with all parties that are relevant to the actual problem case and that were important for the elaboration of artifacts in the simulation game. Experts from practice organizations provided feedback on object and role descriptions. Through the effectuation of test simulations in the explorative phase, practice workers in organizations provided us with commentaries and experiences to determine a method and moderation strategy for the case study. The involvement of practice experts is even more evident in the instantiation and evaluation of the case study. The questionnaire, which was completed by all actors of the simulation games, provided us with information about the professionals' estimation of the implementation and transfer possibilities of simulation gaming in workplaces and networks. The reflective dialogues gave us insight in the individual and collective impressions and experiences as to the session activities and outcomes. This mixed research approach enabled us to combine and compare different outcomes and to look for incongruences or disparities in the results from different sources. The comparative data analysis of user experiences and session facts enabled us to link design efficacy and session performance to the demarcated knowledge domain of youth care network exchange.

VALIDITY OF RESULTS

We applied a triangulated method by using multiple sources of evidence to strengthen the trustworthiness of the outcome to the research questions. All results from the practice inquiry, the questionnaire and the reflective dialogues point at an esteemed value of online role-playing simulation games to enhance network performance, in view of timely and effective intervention. The prospects and expectations from practice organizations concerning the potential of simulation gaming are confirmed by the results of the multiple case

study. The questionnaire outcomes provided a broader picture of the possibilities of simulation gaming in real practices and were used to substantiate the interpretations of the session results and the reflective comments of the actors. The theoretical propositions for design were related to the outcome of the practice interviews and to the sensitizing concepts, that evolved from the literature study, and that applied to the exploration of situational and network cognition and to the reflection on strategy and intervention. The statements of user-experience were associated with the diagrams that were made with the analysis tool and they were correlated to the answers in the questionnaires. We used comparative techniques in the analysis of patterns in the outcomes of different research resources, such as the literature search, the practice inquiries, the simulation games, the questionnaires and the reflective dialogues. The proportionate results balanced interpretations and supported discussions with the actors and the group of experts.

The significance of the research outcomes is reinforced by the repeated effectuation of the game, and by the fact that the outcome of all sessions indicate the same effectiveness of the model and the appreciation of online simulation gaming for youth care knowledge exchange. The trustworthiness has been proofed by the repeated effectuation and recurrent perfection. The internal validity is sustained by the discussion of model design, methodological steps and implementation results and relates to the representational value of artifact and session processes and performance. The rigor is built on the assessment of the significance and value of the experimental design and of the user-experience of simulation games. The external validity of the research results has not been studied and generalization fails yet, because there are no causal inferences available as to the effects of simulation gaming with the same model and method in other situations outside the multiple case study of this research. To measure the external validity of simulation games for the enhancement of problem situations, we need diversified effect research. Theorizing and justifying statements about the relevance, usability and usefulness demands a meticulous assessment of interpretations from different sources, and includes the detection of possible validity threats of the researcher's bias.

The validity is not unequivocal, due to any possible conflicts between different layers of interpretation and systematic errors that might be caused by the tentative itinerary of the project. We adopted Yin's suggestion (2003b) to converge the interpretative stances of a case study strategy (Chamaz, 2006) with theory construction in a grounded approach (Glaser & Strauss, 1967), in order to comply with the scientific criteria of consistency and objectivity. In order to address cogency of the research results we need to confirm potential validity claims. Campbell (1986) says that internal validity is mostly used to indicate

similarity of relation and causality in fully controlled experiments. The core of research, however, is the design of artifacts, through tryouts of program ameliorations. This means that the design is subject to construct validity checks. We looked at the construct validity of the model by determining the extent to which the session outcomes reflected the design promises. We verified the legitimacy of the artifacts to be relatively sure that they are sufficiently related to real practice. We confirmed the findings with the actors and with the external group of experts and exercised caution as to possible, hidden expectancies in the bias of the researcher. Although it is hard to make cause and effect statements on this type of research we guessed that internal validity checks are important for the persuasiveness of the outcomes. We aimed at concordance with professional standards that apply to youth care knowledge exchange about complex issues, both in content and process. The ecological validity[74] of simulation gaming for individual professional development has been examined on the level of the participating youth care professionals. We reckoned with the privacy rules that are applicable to the personal exposure in simulation gaming. We were very much aware of the problematic aspects of objectivity and rigor, knowing that the data are constructions of constructions. The interpretations by the researcher are based on textual clarifications and verbal statements of youth care professionals, which in turn are interpretations of situational circumstances, qualities and conditions of network actions and interactions. To cope with the pitfalls of interpretative research, we followed Walsham's proposal (2006) to spend lots of time on the research conduct and method, to assure a close involvement in the research field and in the thinking and interaction processes of the research population. By comparing design choices and findings to practices and practice theories, we applied a form of primary analysis (Strauss and Corbin, 1990; Czarniawska-Joerges, 1992). For a systematic handling of data, we organized systematic reports of all results to the group of experts. The purpose was not to generalize the case study results to youth care practices of intervention, instead, we tried to stabilize the design choices and outcomes to standards of credibility and transferability of the model of design. By assessing intermediate results we established consistency of the design and theory about simulation gaming in complex professional youth care practices. The results of this research, however miscellaneous they might be, can only be a first achievement in a much longer trajectory of research & development, in which we might establish valid theoretical concepts and evidence based practices of knowledge exchange through online simulation gaming in youth care practices.

Looking back on this research from the standpoints of practitioner and observer, we may anticipate critical comments on the merits of results. Although, we see a positive appreciation of online simulation gaming for youth care knowledge exchange, from the perception of youth care professionals, and despite the fact that we have found appealing prospects of the utility of the tool and method, both in practice inquiries and in the reflective dialogues, the scope of the outcome is limited. At this point, our research gives rise to a number of tentative hypotheses, that have not yet been challenged in scientific research. We may think of comparative investigation of network proficiency and evaluating the effects of network exchange through online simulation gaming on intervention. We advocate a broader investigation of validity threats that may emerge in design research. The authorial voice and the bias of the researcher have a certain influence on the selective set of design choices. We need more diversified research to enforce the claims of effectiveness. An inter-rater reliability approach, as described above and in section 6.5, may support the trustworthiness of method and outcome. The outcomes are still lacking enough scientific substantiation. What we have seen is that the expectations and prospects are high, as far as it concerns online simulation gaming for youth care network exchange. We have ascertained a strong enthusiasm for its practical use, in the perception of the intended users, although there are still many uncertainties as to implementation and embedding in other contexts. As there are many other questions, a research agenda may be useful. Subjects of further research apply to aspects of design, pertaining to different types of problems, and to the appreciative features, concerning the address groups and practices of intervention. For follow-up research, it seems sensible to keep a clear distinction between *design effects*, which have to do with the utility of the game model as to the embedding in a program of change, and the *appreciation effects*, which are about the effects on behavior, skills and knowledge. The key to insight and further development of theory is the bridge between design effects and appreciative results. To gain a growing understanding of the value and significance of online simulation gaming for youth care practice, it is essential to study the relationship between the design of systems information artifacts and the response from users in change programs. We believe that the results of this research provide a legitimate basis for that method.

The theory, resulting from this research, concerns a distinct set of design principles and methodological approaches. To test and to advance this theory, we should establish different research frameworks of design and appreciation, based on selective choices of program objectives, complexity of problems, method, session constellation, and implementa-

tion strategy. This research opens the discussion about a wide variety of subjects by applying different dimensions of analysis to research data. We have found that it is possible to address game session data analysis from various angles, such as individual performance, network communication and inter-disciplinary skills, strategies, choices of intervention, situational values. Exploring those dimensions appeared useful to enrich the answer to the main research question about the value and significance of online simulation games for youth care knowledge exchange. At the same time, they leave us with a lot of unsolved issues. In view of the quite laborious process of designing and effecting online simulation gaming, a legitimate question would be, if it is worth the effort to do all that work in situations that need quick results. Could online simulation gaming be developed in directions of simpler use and of the utility as a quick and effective tool, at the same time? Although this has not been investigated, there are serious cues that it is possible to make use of readymade formats, which have been proved to be suitable for a certain range of similar cases. We believe that a certain quality of facilitation and moderation by experts will nevertheless be needed. Not only for the design of models; also for strategic supervision of workers and for the transfer of results to practices. We still have to find out what the possible implications are of simpler models versus more complicated ones as to projecting forecasts on future behavior in youth care problem situations, on the basis of the outcomes from sessions of online simulation games.

In a research & development project that has various tangents with innovation, one might expect many unsolved issues and suggestions concerning the improvement and continuation. In youth care there is a strong effort going on in search for better ways and results of intervention. Problem solving in youth care practice is arduous, because of the constant changing constraints of politics and organizations. This adds to the already demanding circumstances of intervention practices with many interests and normative decisions. The causal linkage between problem statements, intervention and (perceived) effects is particular problematic in youth care. For that reason, the successful model and the effective exchange in the multiple case study invite to proceed with validating tests and theory development. One of the most intrusive questions refers to the efficacy of simulation results in real intervention practices. This demands well-structured, longitudinal research programs, preferably in close collaboration between practice organizations, research and development experts and social work scientists. During the course of this project we have seen quite some eagerness and positive spirit to undertake endeavors in this respect. The respondents suggested that simulation gaming might be a further development of client support. Earlier we stated that youth care practice needs new methods and technics to cope with the increase in demand for help and with extreme complex situations and that the actual problematic state of youth care practice might imply a reorientation on the pro-

fessional mission. It is quite possible that simulation games can add value to the repertoire of self-help and self-organization of certain clients, who are likely to accept help from other sources, such as content experts who share the same cultural or social background or experiences, with remote support from the official care circuits. Simulation gaming could serve as a platform for the exchange of views, options and experiences and the playful character might help to collaboratively develop new horizons in problem situations. New approaches may help to reinforce self-direction and self-reliance, to ultimately strengthen the problem-solving abilities of people.

A logical concern of simulation gaming in youth care practice is to work out ethical codes of conduct. The axiom is that all that is digitally created, is no longer private. There is an ethical concern to protect participants from unauthorized use of the data from simulation sessions, and to develop moral standards for simulation gaming. A simulation game remains the exclusive space and intellectual property of the professionals that produced the game and the session results, until the moment that they decide to make the game accessible to the public for learning purposes or research. The respondents pointed occasionally at the implications of the use of client information and it goes without saying that normal privacy rules from workplaces apply equally to online exchange. It is however necessary to co-construct guidelines, as to how the usual methods of moral reasoning and argumentation about family affairs can be applied to online practices. In complex behavioral problem situations, there is often a lack of consensus about values and norms. And yet, the respondents affirmed that it is of utmost importance to track the moral ground of action and support in parenting problem situations. Complex youth care issues need moral and strategic discussion and dialogue to justify choices of action. This cannot be done without sufficient contextual knowledge and involves all stakeholders. Tough problems are open to abrasive contrasts of perspective and conflictual (un)certainties (Klabbers, 2009). One of the ways to handle ethical dilemmas is to frame implications and consequences of strategies and scenarios. Ethical dilemmas are socially defined, as people construct perception and meaning according to personal preferences, cultural and educational backgrounds, experiences and associations and this predisposes the actors in different ways. As to child-rearing and parenting issues, we might say that, in a sense, we all are specialists. This gets problematic, when each one believes to hold the truth, or worse, when one tries to impose his/her view on the subject to others. Simulation games offer the opportunity to get the whole orchestration of opinions in one score, to take notice of discords and even to play with various standpoints. Many theorists have pointed at the value of collaborative learning and of learning to appreciate differences as opportunities to try something else and to experience change (Roberts, 2000; Cooperrider and Stavros, 2003). Appreciative learning is

collaborative and asset-based approach to recognize and value those things that present strength, potential and success and to explore and discover the best in people. Appreciative inquiry aims at discovering what works well in certain situations, and is solution-focused, instead of analyzing problem-cause relationships. Collaborative learning and appreciative inquiry envision dialogue about and the co-construction of the future (Coghlan et al., 2003; Yee Leng et al., 2010). Simulation gaming might be an apt way to frame and reframe tricky issues and moral dilemmas, thanks to the fact that through design choices it is feasible to change actual negative conditions, risks and perils, and to picture less threatening and more positive conditions. Klabbers (2009) argues that addressing ethical problems through simulation gaming is two sided. First and foremost, we need smart ways to involve all stakeholders, via appealing and appropriate designs. Playful and creative methods might help to bridge or even reduce dissensions about values and solutions in situations. This is a framing objective that refers to design-in-the-small, or to the model and artifact design. Secondly, we try to reach viable options for the betterment of conditions in situations, by which people acquire new chances to overcome difficulties. By experimenting and a proper transfer between simulation and practice, we might acquire a longer-term objective of change, which is a trait of design-in-the-large. It might be interesting to examine the opportunities that simulation gaming can offer for the exploration of ethics in youth care practice. The better we understand the moral dimensions of youth care problems, the closer we come to possible solutions.

The artifact works as an apt tool for the exchange of explicit knowledge and know-how. Other modes, such as tacit, cultural and embodied knowing, might be transferred to explicit knowledge through the extensive method of online simulation gaming as described in this research. To enhance the benefits of the exchange of different modes of knowledge and knowing, we emphasize the necessity to embed online simulation in face-to-face contacts, reviews and dialogues and to continuously discuss the transfer between the worlds of practice, simulation and projected future developments. Online simulation gaming for network exchange should be regarded as a preparatory or incremental strategy instrument and as a processing activity that needs further elaboration of processes, results and effects in real contacts and meetings. Direct (analogue) contact is important for the building of trust and for learning. We tend to mimic, learn and copy much of what we perceive from embodied and cultural personal exchanges. It seems that simulation gaming alone, does not provide complete understanding of how connections between perception and action work. We advocate online simulation gaming as an instrument and a specific methodology for practice research and the development of practice behavior, in addition to modeling and mirroring in real practice and networks. In game theory, there is a growing scientific interest in neuropsychology and in how mirror neurons influence and support cognitive

functions. In cognitive psychology the mirror neuron system is investigated to get a better comprehension of how perception-to-action works (Klabbers, 2009). Youth care situations can be considered as learning situations in which parents, children, youth professionals all are equally involved. Physical contact, modeling and personal coaching are indispensable to mirror behavior for learning and change, which is of great value to youth care services.

Another problem is that we still know little about the impact on reality of the experiences in online simulations. We are unsure about the effects of simulation gaming in real life situations. How can we influence the relevance of simulation experiences for real world learning and change? Salen and Zimmerman (2004) state that a game is artificial and therefore apart from ordinary, daily life. They argue that a game is a system that engage players in an artificial conflict, defined by rules. The simulation produces meaning, within the context of virtuality, and acquires a specific identity from the system of the game. It is very well possible that the experience remains restricted to the virtual environment. It is still very much uncertain how we should deal with the relocation of virtual competences to real life practices. The more we are able to design games as open systems that are similar to real life, the more chance there is that the artificiality unravels and that the experiences can be transferred to real life situations. By developing methods of co-design and co-creation, and by discussing the kinship of life world, simulation world and future world, we might be able to integrate simulation experiences in daily life. Content management and strategic monitoring across different channels (virtual and face-to-face) of information and knowledge processing is an evident necessity. The adjustment and coordination of the 'eco system' of youth care exchange through various forums is vital to achieving transparency and efficacy. We must avoid the risk of creating separate worlds of virtual reality and real practice.

We should also look into the issue of safety. In our research the youth care professionals considered partaking as relatively safe for the exploration of situations, network and personal capabilities. The problem situation and produced solutions did not directly affect their personal work situations and relationships. How do youth care professionals perceive participation in simulations that concern their own doubts, uncertainties and failures? Are online simulations safe environments to clients and what are the benefits to clients when they interact with care professionals in simulation games, in comparison to face-to-face encounters? What can we say about the perception of the actors as to the virtual and playful reality in games? The actors must cross the magic circle to participate and therefore understand the inside and outside of the simulation space. Huizinga (1938) defined a game as a magic circle that offers a "*temporary world within the ordinary world, dedi-*

cated to the performance of an act apart". This implies that the participants in a game should have enough comprehension of the explicit and implicit conventions in a game. Reversely, the magic circle works only on the condition that the actors understand and adhere to the rules of the game. Explicit standards of behavior might pose less questions, as they can be clearly defined and explained in briefings and game documents. Implicit codes, however, arise from the cultural values, habits and conducts of the players (Salen & Zimmerman, 2004). It is probable that different groups of actors make up dissimilar sets of implicit rules. For an effective and attractive play, the actors must perceive and understand the implicit conventions of play. The implicit, unwritten, rules might bridge the inside eloquence of the simulation to the outside, real world. The assumption is that the learning effects of simulation gaming depend on the consistency between the inside culture of the game and the external culture in real life. Achieving this consistency depends on constructionist principles, as thinking and learning are rooted in societal and environmental frameworks (Wiggins, 2012). The in-game culture of agreed (explicit) and hidden (implicit) standards of game behavior should reflect the culture of the reference system (Hofstede, 2010). The level of intuitive understanding of the 'game etiquette' (Sniderman, 1999) drives the player's performance and satisfaction. The session results made clear that youth care professionals share a common field of reference, language and implicit professional standards, which is extremely useful for the interaction and performance. Our guess is that a mixed group of players could bring along the risk of misunderstanding the implicit 'rules of the game'. By applying an integrated method of co-design and co-creation, we can establish a mutual ground for understanding and we may anticipate reciprocal confusion. In short, we need further research into the recognition, awareness and feelings of safety in simulation games, to develop methods to cope with differences of perception in simulations and to advance theories of players' experiences.

Finally, we acknowledge that the interface needs further development. The functionalities should be brought in line with the latest functionalities of apps, mobile devices and social software. We recommend the integration of the most useful technology for effective and uncomplicated, accessible exchanges of text, sound, images, video and other information processing software. It is ever more simple to connect real world, simulation world and future world through the expression of facts, scenarios and dreams. It is certainly true that handling the simulation environment by youth care professionals, trainers and behavioral experts is still complicated and laborious. It is possible to develop simple templates and exemplified models that can be used as examples and roadmaps, so that users might design their own tailor made simulations. We can use simulation models that are properly tested and approved, to support experimenting and for the adaptation to the needs in other programs, which in fact is already being done in higher education. Examples and prefab

models can serve as guides to learn to work with the application. A step further is to develop a simulation world, which is appropriate for the kind of exchange as in this research, and which is exclusively devoted to youth care services and participants. This option is feasible and has even been practiced in certain experiments in Cyberdam. In view of the enormous interests that are at stake in youth care services, and the potential of online simulation gaming for intervention enhancement, network strengthening and professional proficiency, further research & development seems a logical choice.

7.5 Conclusions and answering the research questions

From the foregoing, it may be evident that it is impossible to give an unequivocal answer to the main research question:

What are the design and implementation requirements of online simulation gaming for youth care network exchange and how do youth care professionals value online simulation gaming for network deliberations about complex problem situations?

And yet, we have found an answer that applies to the specific conditions and the group of respondents and users of online simulation gaming in the context of this research. In short, we can answer that we have constructed an apprehensive set of design and implementation requirements that appeared to be useful for the intended professional context and the results show that the users appreciate online simulation gaming as a suitable tool for youth care knowledge exchange. In this paragraph, we briefly elaborate the reply to the main research question, by answering the empirical sub-questions.

To obtain answers to the main research question, we had to find out the right criteria for model development and model appreciation. For model development we formulated six empirical sub-questions, which has been addressed in chapters 2 to 5:

1. *How can we define online simulation gaming and which features are of importance for youth care services? (chapter 2)*
2. *What are the prospects of simulation gaming in youth care practices in the opinion of the practitioners? (chapter 3)*
3. *How can we match the needs of youth care networks with the functionalities of online simulation games? (chapter 3 and chapter 5)*
4. *What are the design fundamentals that are appropriate for simulation gaming in youth care network exchange? (chapter 3)*
5. *What would be a suitable implementation method and strategy for simulation gaming in youth care practice? (chapter 4)*

6. *How can we bridge the positions of practitioner and observer in an analytical tool that supports the analysis of processes and results of sessions of simulation games? (chapter 5)*

We defined the online simulation game in this research as a computer-assisted, role-playing, principle-based game, in which the actors address complex practice problems, while the computer keeps track of the flow of data and interaction. This type of game enables free-form play, time and place independent participation, anonymous role assignment and aims at the unfolding of narratives, scenarios and the elicitation and sharing of expert knowledge and content expertise. The prospects of simulation gaming as a 'game changer' in youth care networks, are multifaceted. The main arguments to start experimenting concentrate on effectiveness of network cooperation and coordination about complex youth care issues. We developed a comprehensive set of design fundamentals and implementation strategies, that was challenged in a multiple case study. Despite much enthusiasm and curiosity about the potential of simulation gaming for network exchange, it appeared impossible to engage youth care organizations in the effectuation of the multiple case study. The causes of this barrier have to do with the extreme workload and the high pressures of current changes in youth care. The recruitment of professionals, outside institutional control, produced genuine and authentic user-experiences as to the relevance, usability and usefulness of online simulation gaming in youth care networks.

With the empirical sub-questions below, we aimed at investigating the appreciation of the artifact and at obtaining data about the user-experiences and professional views on the value and significance of online simulation gaming for network exchange in youth care practice.

7. *How do youth care professionals value the relevance of online simulation gaming for the exploration of multi-problem situations? (case level)*
8. *How do youth care professionals judge the accessibility, practicality and usability of simulation gaming to strengthen network exchange? (session level)*
9. *What are the experiences of youth care professionals as to the usefulness of online simulation gaming for the enhancing of professional proficiency? (task level)*

It is not possible to give an unambiguous and generally valid opinion about the right method of developing models for knowledge exchange and about the appreciation of online simulation gaming in youth care networks. There are many faces to the design and use of online simulation gaming for knowledge exchange and we need a larger variety of research methods and results to learn more about the potentials and effects in youth care networks. We focused on relevance, usability and usefulness of a particular game model that has been effected in four session rounds with eleven teams. Relevance refers to situa-

tional cognition, discourse participation and reflection on intervention. Usability indicates the quality of the utility for network exchange. Usability refers to features of the tool for learning and the enhancement of network competences. We have seen that the relevance of the design and the practice problem was affirmed by the participants. Although the case was qualified as difficult and complex, the respondents asserted that online simulation gaming should be deployed in particular for this type of tough and wicked cases and dilemmas. The online setting is perceived as suitable to explore multi-problem, multi-actor and multi-reality situations. Time investment was high and the participants acknowledged that their interaction could probably be improved. They often dwelled upon issues that were not on the agenda and strayed easily away from the topic of discussion. We consider this assertion as a prime example that simulation gaming helps to gain insight in effectiveness and cooperation. On individual level, the session interaction and performance provided many cues for the review of personal and team competences in this particular constellation. The professionals confirmed that this way of exchange can be used as an appropriate tool for learning and for the improvement of network capabilities. The relevance of the artifact for network practices can also be valued by considering the session production of future scenarios, strategy agreements and normative ground rules for intervention. The actors liked creating future scenarios in particular. The scenarios were realistic and rich in content. In contrast to that, the experienced and qualified youth care professionals had much more difficulty in finding appropriate network strategies and defining ethics and values in this case. They found it hard to link the specific features of the situation and of the network constellation to strategy arrangements. Furthermore, they stated that more exercise and experience is needed to identify moral standards in problem situations and to learn to argue about choices and decisions in multi-disciplinary networks.

Confronted with the session output, one feels tempted to conclude that online simulation gaming is a fruitful method to generate practical know-how about complex problem situations. Yet, we have to distinguish between two claims: there is the assertion that the sessions led to the creation of situational knowledge, strategies and options of intervention and the participants confirmed the relevance and utility of the artifact. On the other hand, the claim of effectiveness of outcomes can only be made in youth care problem situations with valid research methods and correlating lines of reasoning. One of the acknowledgements is that the participating youth care experts considered simulation gaming and roleplay as serious work. The participants were very much engaged in the problem case, in the teamwork and in optimal professional behavior. The virtual character of sessions did not negatively affect their involvement and commitment. These findings, are based on the assessment of experiences and behavior of the actors, and not so much on the valuation of

the concrete outcomes from sessions. The case study reveals that simulation gaming favors the study of recursive and inextricable cross-references of process and performance in online youth care network conferences. The main finding is that the respondents see online simulation gaming as an attractive and adequate way to exchange practical knowledge in networks, in view of efficient, effective and timely interventions. At the same time, they state that its practical use requires good instruction and a great deal of commitment. They think online simulation is relevant for really complex issues. Based on the remarks of the participants, we can assert that the interface needs further improvement as to interactive functionalities and the look, feel and touch. Furthermore, the professionals share the opinion that the application offers specific chances for job training, the development of professional skills and abilities, and for cost-effective explorations of chain-cooperation. This quality depends highly on an effective method of training, accompaniment and follow-up.

THE RELEVANCE

One of the foremost assumptions was that the relevance of online simulation gaming could be derived from statements about its contribution to the methods and tools for excavating situational information and the broadening of available options. Role-play and simulation were expected to have a positive influence on perspective change and on the evolution of the diversity of views on problems and solutions. This empirical sub-question aims at how youth care professionals consider the applicability of simulation gaming for the development of situational and network cognition and accountability in complex problem situations of youth care.

The findings show that youth care professionals value online simulation for the construction of situational cognition, the strengthening of network alliances and for the enhancement of professional proficiency. The respondents consider online simulation gaming as a suitable and practical way to get quick access to ideas, and experiences, and to work out the justification of options of intervention and network strategies in complex problem situations. They state that role-play supports perspective change and that this has value and significance for the broadening of visions on problem situations. As to the presented case, the participants acknowledged that the game structure and interaction patterns led to new views and options about situational and network responsiveness and to an increased awareness of personal abilities and competences. The professionals attribute an enhanced consciousness and perception of professional talents and skills in network interaction to their participation. They noted a progression of network knowledge and expertise, as far as this concerns the participating organizations and actors in the game. They affirm that the quality of session work depends much on the design of the model and on the input

from the participating members. The sessions show the co-creation of many interventional options and strategies, in the relative short run-time of the game. As we have seen in real practice, the problem rested unchanged and even worsened during one-and-a-half year, only to come to the conclusion that nothing worked, without further possibilities of intervention. This indicates that simulation gaming can liquefy fixed facts, positions and polemic, and may even dissolve deadlocks from practice through the co-construction of fresh views and options. If applied at an early stage this could make a difference as to downsizing costly intervention trajectories and more importantly, as to timely help. The contraindications are that the participants are not sure whether youth care practice is ready for digital exchange about complex work problems and that participation takes a considerable effort that might be difficult to realize in work practices. It is likely that there are youth care professionals that disfavor the use of computers and Internet in relation to their professional task performance. The participants asserted that the application needs further advancement and adaptation to youth care services.

Quite a number of respondents is not sure, whether it is possible to reduce complexity of serious cases in virtual environments. The question remains, whether reduced complexities and simplified representations lead to adequate and useful awareness and options that are also valuable outside the simulation. We might assess this uncertainty through replication research, in combination with effect validation. The participants affirm that online simulation gaming in general, and the game model used in particular, enable co-creation of situational cognition and know-how. The limited data in the case description have been vigorously enriched with scenarios, strategies and options for action. The simulation and its characteristics of game and play induced dialogues of experience, perception and know-how. It was obvious that the open ended description and the comparative freedom in the task performance stimulated the imagination and interaction. The compendious outline of the case led to a strong contextualization of questions and problems. The players supplemented and complemented the case context with realistic information, apparently from emphatic imagination and skilled collaborative reasoning, based on personal practice experiences.

When introducing new technology and methodology, it is not unusual that people hold high expectations. It is tempting to view simulation gaming as the panacea for all interventional problems in practices of youth care. According to our respondents, online knowledge exchange through simulation is probably not always the best option. The possibilities, chances and benefits vary from situation to situation, from problem to problem and from network to network. At this point, we do not yet know what the restrictions are

and whether or not, this mode of knowledge exchange should be reserved to a particular type of issues or situations. It seems sensible to attribute a modest role to simulation gaming and to see this type of online exchange as an extra possibility in complex problem situations, where 'normal' exchange is inadequate or insufficient. However, we have to acknowledge that this statement is closely related to the present research experiences.

We observed that the sessions provided opportunities for imagination and for the development of possible, probable and preferable scenarios. The simulation game contributed to the consciousness of patterns of expectation about the participation and performance of the characters in the case. The session interaction functioned as a method of collaborative analysis of these patterns, which can be crucial for learning to deal with unexpected developments in practice and to enrich the imagination, as well as to keep a healthy dose of skepticism about expectations. Youth care must be responsive to unexpected events and changes and needs proficiencies that make sense out of emerging patterns in complicated situations. These abilities are important to cope with and anticipate possible or probable future scenarios and to work towards preferable situational conditions; though 'managing the unexpected' requires a different mind-set than anticipating its occurrence (Weick & Sutcliffe, 2007).

THE USABILITY

Another main assumption was that simulation gaming could function as an outstanding tool for network exchange. For the endorsement of this supposition, we had to find out what the youth care professionals think of the usability in terms of practicality and accessibility and whether they confirm the supposed qualities of the reinforcement of network relationships. The relevant empirical sub-question is about the professionals' view on and judgment of the usability, practicality and accessibility of the artifact of simulation gaming to strengthen network exchange.

We observed that simulation gaming instigated a sense of cooperative responsibility by the actors. Although we did not investigate the sense of collective action and co-responsibility in a virtual team compared to other types of network collaboration, it was exciting to mark the growth of serious and responsible role-interaction, representing a reality of its own and showing a vibrant mutual commitment. The in-game interaction demonstrated an orientation toward professional values and normative standards that are comparable to real world practices. The actions were not only determined by the informative functions of exchange, they were also driven by notions of rightness, fairness, justness and legitimacy, the so-called performative functions of youth care exchange. In simulation sessions, the participants enact themselves and their views on situations. Each individual actor performs a subjective worldview, in the awareness of possible dissimilarities with

the perspectives of the other session members. In the communicative actions, in the shared world of simulation sessions, the actors evidently tried to reach a mutual understanding about the characteristics of the problem situation and about possible strategies and actions in that particular context. Through a gradually developing understanding of the systemic intersection of problems and resources, the actors establish, confirm, renew and change their active membership of the temporal community of practitioners and their awareness of identity. We believe that the communicative actions in simulation sessions entail the development and reshaping of a shared awareness of constraints and possibilities within a problem situation and of the social identities that are involved (Seur, 1992).

The sessions led to collaborative discourses that continued during face-to-face meetings afterwards, about the usability of simulation gaming, about the utility in workplaces, and about the effectiveness for complex parenting issues. The participants did notable efforts to add value to the professional logic by scrutinizing the practice problem. From a design perspective, the simulation proved to be effective in enhancing the professionals' perception-to-action repertoire. The simulation model fulfilled the promise to initiate and guide professional knowledge exchange in youth care networks. With this assertion, we may speak of a efficacious design-in-the-small (Klabbers, 2009). According to the participants the sessions led to an increased awareness of the possibilities to explore complex problem situations (case level), to develop network strategies (session level) and to enhance professional capabilities, talents and competences (task level). This shows the potential adequacy of the design-in-the-large (Klabbers, 2009).

The simulation led to shared responsibility. The network actors showed much interest in each other's expertise and encouraged individual statements about performance and commitment to the case and the network. We witnessed a gradually increasing effectiveness of self-referential skills and with that, a growing responsiveness to the system-perspective in each session. The teams realized a collaborative performance and showed a personal responsiveness to the demands that emerged from the interaction patterns. And yet, there were remarkable differences of interaction and output, comparing one session to another. In some teams, the actors had to do much work to streamline the interaction and to come to results. Other sessions reached a natural flow of interaction. These differences originated partly from personal styles and communicative talents and for another part from the session objectives. Session variants that demand a great deal of collaboration, require more structuring initiatives and session guidance. These observations have significance for the evaluation of the game model. Studying team differences was not our research objective; however, the results indicate that it is possible to use simulation games to

search for meaningful constituents, such as successful team collaboration. It is likely that not all youth care teams and networks are in favor of online simulation and digital tools for knowledge exchange. Besides that, we foresee obstacles in the implementation of this instrument in organizational contexts. Organizations may be willing to invest time and effort, when there is practice based evidence that online simulation gaming leads to cost-effectiveness and better results of network conferencing. On the other hand, without implementation, it is hard to develop the method and application and to achieve evidence practices. Collaborative projects of practice and research might be a sensible way to advance online simulations for the study of strategic network abilities and alliances.

THE USEFULNESS

The youth care experts participated on an individual level and from a personal interest in digital and online advancement of methods and tools. They invested much time and energy and showed a particular concern and awareness as to what simulation gaming could do for the consciousness and growth of personal professional skills.

The simulation game showed organic processes of knowledge construction, despite the variances between sessions. It was interesting to observe how these processes emerged and evolved during the course of a session. We noticed that some actors were particular successful in getting along with their fellow players in sessions. From this, it was nice to see how bilateral propositions evolved in team proposals and plans. Participation encourages commitment and consensus through co-creative ways of thinking together about complex issues in youth care practices. Another observation is that online knowledge exchange through simulation games seems not unimportant for the recruitment of advice and support from a wide range of situational and disciplinary experts. Although we observed convincing examples in this multiple case study as to the potential of online simulation gaming to gain quick access to expert knowledge, we do not yet know all inherent possibilities and their effects, neither do we dispose of all constraints and limits in this respect, as we explained above.

Our respondents observed that, despite the common interest of good and quick help to children and families, organizations often tend to a protectionist stabilization of their institutional interests. This is not always in line with the perceived interests of clients and workers. We may ask ourselves whether organizations are willing to open up their internal processes of knowledge to networks with potentially different disciplines and standards. Nonetheless, the new transition of youth care services to local authority and control in the Netherlands, together with the exponential growth in demand and the critical capacity in the supply of effective help will force youth care services to new ways of cooperation and collaboration. It seems that youth care professionals take forward positions as to

new tools and methods in this respect. They say that online simulation gaming contributes to transparency, efficiency and effectiveness, on the condition of a judicious implementation and proper management support.

The simulation offered a stage for pre and post action review on the case that was brought in from practice. The participants questioned the case history of professional performance and carefully analyzed each other's interpretations and proposals as to intervention. Some professionals advised to engage stakeholders from the practice situation in order to review and evaluate the session performance. A natural, non-obstructing transfer between practice and simulation might produce negative feedback loops[75] that, in time, can bridge or narrow the gap between problem situation and desired future state (Dörner, 1996; Weick & Sutcliffe, 2007, Maas, 2012). On the other hand, it should be acknowledged that an independent and free exchange in the secluded simulation world, without interference from the actual stakeholders, can be a valuable prerequisite for unconditional inter-thinking between the actors involved. An important bycatch in the results of this research is the affirmation of the participating youth care professionals that more training is needed to identify and deal with the ethics and impact of intervention on problem situations. They stated that there is too little opportunity to think about accountability and strategic network operation. The participants think that online simulation gaming helps to train competences that are vital to anticipating change patterns and to build confidence in professional responsiveness. Moreover, if could be that the particularities of simulation gaming help to increase the voicing opportunities in certain situations. Text and words are probably not the most effective transferal tools for every professional or client of youth care. Comparable research is recommended to analyze the effects of different modes of expression (languages), like sound, photo and video. The application of non-textual transfer agents and unusual communicative tools could be a next step in the development of simulation gaming for youth care practices. At this stage of development, the tool, the interface and the method are rather sophisticated and not yet fully fit for regular and common use. The anonymous role-play and the relative safety of the virtual environment evidently supported the exchange of multiple partiality, which is an ubiquitous quality of complex problems in social intervention (Hortulanus, 2011). The game helped to express ambiguities in views, perspectives, and objectives. It was fascinating to witness the evolution of the players' interpretations of their role-descriptions and the way they substantiated the interaction from the perceived standpoints of each particular role. Despite the evident variances of success in role-performance, most actors stated that participating from a different role changed their network knowledge and enriched the understanding of personal competences and behavior.

7.6 FINAL WORDS

In this last chapter, we have summarized and synthesized the research results. We described the headlines of a constituting theory of online simulation gaming for youth care network exchange. We looked back on the method of research and presented the answers to the questions. This research has been an adventurous and capricious project that showed many positive prospects of online simulation gaming for more effective help in complex youth care problem situations. In section 0 we marked some of the main constraints and challenges of future development and implementation of this new tool and method. We do not expect smooth and easy pathways in the introduction and progression of this innovative approach of exchange in practices. Yet, the yields will certainly be rewarding and inspiring. As to the success of future efforts to use online simulation gaming for the enhancement of youth care network exchange, much depends on effective ways of cooperation between fields of practice, design and research. We may forge inspiring coalitions to advance online simulation gaming, in accordance with the standards, needs and future aspirations of youth care services. The interests are substantial, and although it will certainly take some effort to start with the development of online simulation gaming in organizations and networks, and to learn to use the tool and method, the outcomes of this research show that it is worthwhile to introduce simulation gaming for the betterment of cooperation and coordination in professional networks, in view of better, timely and durable help and intervention for children and families that suffer from inadequacies and unfavorable conditions in parenting problem situations.

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Appendix

Figure 30: The Cyberdam application

Colophon

The game environment can be visited at: games.cyberdam.nl. The software is available for everybody, who wants to make use of the public games, or to create a personal game model. The legal ownership of Cyberdam is held by Stichting RechtenOnline. The user-support and development of the application is assigned to the Cyberdam User Group. The website of the user group can be found at www.cyberdam.nl. Examples, information and tutorials about the design and implementation of online simulation games can be viewed at this website. The user group is committed to share knowledge and experience among all users and to organize trainings. The Cyberdam User Group is the central gathering point for user requirements and development needs as to the application and hosting and is entitled to advice the foundation (Stichting RechtenOnline) about the further development and use of the application.

This is the appendix to the dissertation "Youth Care Knowledge Exchange through Online Simulation Gaming. Designing and appreciating simulation games to enhance youth care network exchange".

The Dutch parts in this appendix describe the original research data. They are not translated to English in order to guarantee the authenticity of statements. We hope that the English explanations and captions to the illustrations will provide enough guidance for non-Dutch readers to understand the content.

Introduction to the appendix

The appendix gives a cross-sectional overview of the simulation data in the research & development project that has been described in the dissertation *Youth Care Knowledge Exchange through Online Simulation Gaming. Designing and appreciating simulation games to enhance youth care network exchange*. The transcripts of the empirical data comprise more than 1700 pages. The total number of pages that refer directly to the multiple case study amounts to more than 950. To illustrate the iterative processes and the progressive results of research, a selection of samples is presented. The explicative texts and images refer to different sources, such as the practice inquiries (as explained in chapter 3 of the dissertation), and the simulation artifacts, game models and session results (as discussed in chapters 4 and 6). In accordance with this, the appendix covers three parts that provide information about: (1) the practice inquiries; (2) the simulation game model and artifact construction, and (3) the game session results. The content aims at delivering explanatory information about the data-collection and data-analysis processes, to support a good understanding of the chapters 3, 4 and 6. The iterative character of the design and development process of the research involved many small steps to explore practices and to test various versions of simulation games on the way to the multiple case study. We offer a clear and concise overview of the main empirical data, and concentrate on the practice interviews and on the results from the multiple case study.

This introduction guides the reader through three parts:

1. Part 1 gives information about the expert feedback on the multiple case study and on the data analysis of the practice inquiries. This part refers to chapter 3 of the dissertation;
2. Part 2 provides examples of the game model and artifact construction and exemplifies parts of the content of chapters 3, 4 and 6;
3. Part 3 refers to the session output of the multiple case study and serves as additional information to chapters 4 and 6.

The subject of online simulation gaming in youth care network practices is new and the position on the crossroads of different fields of scientific research and expertise demands to provide with relevant examples to guarantee a full understanding of the research approach and results. Although it may be difficult to explain a game, outside the sphere of participation, we believe that this appendix helps to get a good impression of the game sessions and results. Apart from this appendix, further information on game model construction can be found on the website www.cyberdam.nl. To see the city map and directory in the game environment, please go to games.cyberdam.nl.

The session models, artifacts and all session interaction and products have been made out in Dutch. We are aware of the fact that this poses a problem for non-Dutch readers. Wherever it is appropriate, we give English explanations and entitlements of the examples displayed. As we consider it important to keep the original wordings, we prefer to quote and cite statements and comments from the research data in the original (Dutch) language.

Figure 31: Impression of the game environment

PART ONE

1 *The practice inquiries (appendix)*

This part of the appendix aims at providing supplementary information about the research field. More precisely: about the members of the group of experts and about the practice inquiries that served to define the design requirements and objectives for the multiple case study. This section of the appendix relates to chapter 3 of the dissertation, insofar it concerns the practice inquiries, and to chapter 6, when we refer to the multiple case study and to the feedback from the group of experts.

We owe much to the contribution of the members of the group of experts, who reflected on the empirical parts of our research. The committee gathered 5 times in the course of the research process, to provide feedback on design choices, artifact development, implementation strategies and on preliminary outcomes from the sessions, the questionnaires and reflective dialogues. We start with the introduction of the members of this group of experts.

EXPERT FEEDBACK

The members of the group of experts played an indispensable part as a community of observers, by commenting on all choices of design and by providing critical and endorsing feedback on all intermediate, empirical results of the multiple case study. The group provided feedback on five moments, in the course of design, effectuation and analysis.

The members of the expert group are:

1. dr. V.A.M. (Vincent) Peters, senior advisor simulation gaming, SamenspraakAdvies; lecturer research methodology, HAN University of Applied Sciences, Nijmegen;
2. drs. P. (Petra) Stienstra; executive Leren & Opleiden, Expertisecentrum, William Schrikker Group, Diemen;
3. K.J.E. (Kalle) van IJzendoorn, executive urgent care, Bureau Jeugdzorg, Utrecht;
4. S.C.D. (Sandra) Klokman, advisor youth care, Dankers & Klokman, Eemnes;
5. B. (Bertus) Wiggers, executive quality management De Rading, Jeugdhulp, Utrecht;
6. P.M. (Nel) Koning, lecturer/researcher at the Knowledge Centre Social Innovation, Utrecht University of Applied Sciences

The above members represent a broad range of expertise, from fields of case management, supervision and consultancy, training programs, management and practice research in youth care. The focus in the meetings with the members of the group was on design aspects, method, process features, moderation and facilitation strategies, user-response and the interpretation of outcomes of the multiple case study. The iteration of the 5 meetings was as follows:

1. September 2010: kick-off meeting and diner;
2. December 2010: about the design of the multiple case study;
3. February 2011: the processes of the simulation game sessions;
4. May 2011: a critical reflection on the method of data-analysis;
5. December 2011: evaluation of results and end meeting.

PRACTICE INTERVIEWS

The practice inquiries refer to consultations and interviews, in which we built an understanding of the needs, bottlenecks and requirements as to methods and tools of network exchange. The outcomes helped to define design choices of the game models and implementation strategies in the preparatory stage and in the multiple case study. The examples in this part give an impression of the results of the exploration of practices through various means of data collection, such as presentations of the game environment, trial versions and test-runs of simulation games, consultations and interviews with key-persons in different work settings (please refer to chapter 3 of the dissertation).

- 10 evaluative interviews with managers and developers of curricular programs (as discussed in chapter 4 of the dissertation).
- 25 consultations of key representatives in the broader domain of social work (as explained in chapter 3);
- 25 practice interviews with managers, professionals and developers in social care services (as described in chapter 3). These interviews are the main data-source for the definition of the concepts and design and implementation requirements. On the next pages we show the initial and selective coding systems of the results from these practice interviews.

1 Actuele uitdagingen (actual challenges) [32]
2 Beroepsvaardigheden (professional competences) [5]
- Cliënt - cliënt [4]
- Interactie cliënt - beroepskracht [18]
- Intervisie en lastige vraagstukken [31]
- Kennis naar handelen, v.v. [10]

3 **Eisen en voorwaarden (requirements and conditions)** [10]
- Geld en tijd [7]
- Instrument van online simulation gaming [35]
- Werkdruk [6]

4 **Institutioneel discours (institutional discourse)** [37]
- Beroepsvernieuwing [19]
- Lerende organisatie [35]
- Maatschappelijke opdracht [12]

5 **Kennisontwikkeling (knowledge development)** [8]
- Kennisontwikkeling zonder simulaties [30]
- Over online simulation gaming wordt nagedacht [65]

6 **Praktijkonderzoek (practice research)** [11]
7 **Opbrengst en effect (outcomes and effects)** [8]
- Presentiegericht [2]
- Productgericht [11]

8 **Praktijk (practices)** [17]
9 **Situationele kennis en inleving (situational cognition)** [21]
- Taal [4]
- Perspectieven [5]

10 **Soorten simulaties (types of simulations)** [3]
- Offline en online simulaties (eigen werk) [11]
- Offline simulations (ready-made) [5]
- Online simulations (ready-made) [8]

11 **Technologische vernieuwing (the use of technology)** [17]
- Jeugd [5]
- Verslavingszorg [3]

12 **Training (training)** [15]
- Aansturing [8]
- Eigen aanbod [25]
- Functiescholing [9]
- Uitbesteding [10]

1 kennisdeling jeugdzorg (knowledge sharing) [6]
- **1a noodzaak van vernieuwing (necessity of innovation)** [11]
  - knelpunten kennisuitwisseling praktijk [17]
    - functiescholing [8]
  - discoursparticipatie [1]
    - meertalig communiceren [1]
  - reflectie op handelen [0]
    - leren van cliënten [1]
    - organisationeel leren [4]
    - dilemma's [8]
    - leren van elkaar [2]
    - successen en tegenslagen [2]
    - beroepsstavast [13]
- **1b noodzaak van digitalisering (utility of digital tools)** [7]
  - digitalisering [10]
    - cliënt-hulpgever relatie [2]
    - eisen en voorwaarden [11]
    - cliënt- cliëntcontacten [3]
    - voorbereiding en toeleiding [2]
- **1c complexe problemen (complex problems)** [1]
  - bestaande gang van zaken [11]
    - kennisvraagstukken [9]
    - netwerkverbanden [2]
    - werkbegeleiding [1]
  - kennisuitwisseling onderling [8]
  - teamvitalisering [1]
  - theorie oefenen in praktijksimulaties [1]

2 online rollenspelsimulaties (online role-play simulations) [1]
- **2a praktijken met offline rollenspelen (offline role play practices)** [9]
- **2b verwachtingen en beloftes van online simulations (expectations and prospects of online simulation gaming)** [27]
  - geschikte vraagstukken [19]
  - inbedding online simulations [2]
  - interactiviteit [3]
  - narrativiteit [4]
  - ontwerp [10]
  - perspectiefwisseling [7]
  - reflectieve dialoog [2]
  - taal en tekst [3]
  - tijd- en plaatsonafhankelijk [1]

SOME SAMPLE-STATEMENTS FROM THE PRACTICE INTERVIEWS

… "Ik denk dat de reden dat we zo weinig grip en sturing krijgen op uitkomsten is dat we zo afhankelijk zijn van die individuele werker, van de persoon van de professional. Heel gechargeerd gezegd is men dat wat gaan wantrouwen, die persoonlijke inbreng. Het moest allemaal bewezen en gereglementeerd zijn, verantwoord."

… "Als je naar de professionals kijkt, dan zie je dat die enthousiast worden, wanneer ze over het werk kunnen vertellen, over wat ze ervaren en meemaken. De beleving en de dilemma's waarmee ze voortdurend mee wikken en wegen."…

… "Onze professionals hebben voortdurend te maken met heel lastige dilemma's. Het uithuisplaatsen van een kind is voor ouders, het kind zelf en het pleeggezin waanzinnig gecompliceerd en emotioneel lastig. In die situatie is nooit iemand gelukkig, of winnaar. Vaak zijn alle opties slecht: thuis blijven wonen (waar een kind bijvoorbeeld gevaar loopt) en uit huis geplaatst worden heeft ook heel slechte kanten. Ouders, kinderen hebben allemaal verdriet. Ze staan continu voor die keuze: wel of niet."…

…"Mensen roepen hulp in op de meest onverwachte en ongelegen momenten (vrijdagmiddag half vijf), maar je moet stand te pede reageren. Hoe leer je professionals nu om in die crisissituaties en onder stress de beste handelingsopties te kiezen?"…

… "Je komt op kantoor om je rapportage te maken, dan kom je altijd wel iemand tegen om bij de koffie even bij te praten en uit te blazen. Je kunt je verhaal kwijt. Maar als je na dat moeilijke werk gewoon thuis komt, dan is het veel moeilijker om een begrijpend oor te vinden. Jij zit in je uppie achter je computer om je rapportage te doen. Natuurlijk je manager en je collega's zeggen: je kunt me altijd bellen of e-mailen. Maar je moet er moeite voor doen; je moet de telefoon pakken en je denkt eerst na: ben ik geen zeur met dat probleem? Moet ik dat niet zelf oplossen? Ben ik geen watje als ik dat niet zelf op kan lossen. Er ontstaat een enorme stoerheidscultuur op die manier."…

… "Dus we denken zeker aan een vorm van blended learning. En we hebben het plan opgevat en daar hebben we ook geld voor begroot om het uit te voeren om kennisintensieve onderdelen anders te benaderen, zodat de kennis langer beschikbaar beklijft en beschikbaar is wanneer de beroepskracht daadwerkelijk met een onderwerp daaruit te maken heeft." …

…"Er zijn dus teamleden die in de game andere capaciteiten laten zien dan ik zie in de praktijk. Wat betekent dat? Vaak zie je dat teamleden van gewoonten en onuitgesproken verwachtingen naar elkaar uitgaan (oh, zij weet dat wel, dat doet hij wel…)."…

…"Ik vind het van belang om vanuit een helikopter te kijken en over de schuttingen heen te kijken. En dan is de brug naar de online rollenspelsimulaties snel gemaakt: in schoenen van anderen stappen, rolswitch en perspectiefwisseling, experimenteren met nieuw gedrag."…

…"Dat stukje sprak mij heel erg aan: dat je een voorstudie hebt waarin je die roldefinities maakt, vervolgens een spel, en daarna met elkaar kijken hoe het spel is verlopen. Ik heb jouw rol gehad en jij mijn rol. En zo zou ik het nooit doen en waarom."…

… "Hoe kun je zorgen dat aankomende professionals zich goed voelen, voldoende voorbereid en gemotiveerd zijn om het werk op de juiste manier te kunnen doen. Misschien idealistisch, maar je moet ook de managers betrekken bij online simulaties. Want wat gaat er mis? Ze zitten vaak in een heel eigen wereld, weten nauwelijks waar het over gaat. Op die manier leren managers kennen wat er speelt in de praktijk, want professionals komen die managers toch weer tegen in die praktijk."…

…"De toename van de bandbreedte in Nederland ondermijnt argumenten achter face-to-face communicatie ten voordele van computer mediated communication. Die ontwikkeling komt steeds dichterbij. Kijk naar de nieuwste games en naar film. Daar zijn de manipulatiemogelijkheden om levensechte zaken in beeld te brengen met technologische trucages heel groot."…

… "Het is mij gebleken dat overheden, zoals provincie en gemeenten, en koepelorganisaties erg geïnteresseerd zijn in internettoepassingen voor leren en als uitbreiding van het instrumentarium. Online dienstverlening in de sociale sector staat nog in de kinderschoenen, maar kan wellicht een belangrijke bijdrage leveren aan de sociale vernieuwing waar iedereen het over heeft." …

… "Waarnaar we op zoek zijn is een methode die in de training voor variatie in het werk kan zorgen; in subgroepen, of in rollenspelen bijvoorbeeld."…

…"Kijk, wij hebben enorme moeite om mensen vier keer bij elkaar te krijgen. Dat zou al een uitzondering zijn. Het liefst komen ze maar een of twee keer. Terwijl onze deelnemers al jaren in het vak zitten. Die hebben veel behoefte om die eigen praktijk nu eens te toetsen. De simulatie is een soort vervanging van de eigen praktijk."…

… "En die moeten dan allemaal een datum vinden waarop ze kunnen en moeten dan naar een centrale plaats in het land komen, dan zijn mensen die ver weg wonen een dag onderweg voor twee uur intervisie. We dachten: dat kan wel eens een faalfactor worden."…

…"In die zin krijgen we met een generatie te maken, die gewend is om met dit soort hulpmiddelen (internet, smartphones, apps) te werken en die snel kan wisselen tussen virtuele werelden en het echte leven. Het verschil tussen virtueel en echt is er straks misschien niet meer. Dat zou kunnen. Maar ik denk dat juist het wezenlijke onderscheid tussen virtueel en echt interessant blijft. Het ligt er maar aan hoe je naar de werkelijkheid kijkt. Mensen experimenteren met verschillende identitei-

ten en ik geloof dat virtualiteit de echte identiteitsontwikkeling niet in de weg staat, maar juist sterk kan ondersteunen. Daarover bestaan overigens wel verschillende opvattingen."…

…"We zitten in een fusie van verschillende culturen en specialismen. Ik denk dat het mogelijk is dit in te inzetten om op de hoogte te komen van de kennis die verspreid zit over alle uithoeken van de organisatie. Ik kan me voorstellen dat online simulation gaming een instrument kan zijn dat kan helpen bij de cultuuromslag en de kennisuitwisseling bij die nieuwe samenwerking. Een instrument dat uitdaagt om uit te wisselen met de vraag hoe lossen jullie dit nu op?"…

…"We worden overspoeld met vragen om aan van alles mee te doen. Allerlei pilots waar we verplicht aan mee moeten werken en wat je ziet is dat de tijdsfactor of de financiën niet meekomen. En dan merk je dat het bij een bureau als dit heel veel druk op de ketel zet. Dus we zijn daar nu heel alert en voorzichtig in. Ook omwille van heldere afspraken, want als je meedoet, moet je het ook goed doen."…

…"Het vakgebied is zo in ontwikkeling dat je zelfs binnen de eigen organisatie je best moet doen, zodat iedereen op de hoogte is en blijft. En dan heb je het nog niet over de groepen daaromheen. Ik zit ook daaraan te denken: hoe zorg je ervoor dat de linkerhand nog weet wat de rechterhand doet? Dat hoeft niet in real time te zijn. Je kunt een casus die ingewikkeld is, waarover je over drie weken een uitspraak moet doen, in een online simulatie plaatsen, en waarin je andere mensen laat meedenken."…

PART TWO

2 *The simulation games (appendix)*

This part conveys additional information about the game environment of Cyberdam. Apart from a concise impression of the interface, with some illustrations and a brief summary of the main characteristics, part 2 affords explicative details concerning the trial versions and test-runs of simulation games in the practice inquiries (chapter 3), the design experiments in curricular programs (chapter 4) and about the simulation game and the variants that has been used in the multiple case study (chapter 6). Cyberdam is the virtual city, in which the online simulation games are situated. The application can be seen at games.cyberdam.nl and examples and tutorials can be retrieved from www.cyberdam.nl. The environment enables users to construct their own game models, based on particular cases and actor networks, although people may also use already available game models and adapt them to their personal needs and to varying contextual circumstances. The environment is simple in use and appearance. This supports the central position of collaborative knowledge construction and role-play interaction and the contextualization of the application to standards of the represented professional domain. The actors add value to the game environment through authentic professional behavior. Another consideration for choosing the relative modest interface of Cyberdam is that the application affords easy access to constructing personal games and participation. Accessibility and user convenience are the prime aims of the Cyberdam environment.

To briefly explain the main functional features, we distinguish artifact construction from simulation game effectuation and transfer. Game models and artifacts are representations of realistic practices. Simulation gaming is the process of knowledge construction and interaction in game sessions and transfer applies to learning and the implication of session results for intervention in practice. In this section of the appendix we refer to the game models and sessions, as described in chapters 3, 4 and 6 of the dissertation.

The Cyberdam application consists of playgrounds, with game artifacts and game models, and practical tools to convert game models, playgrounds and artifacts to specific game sessions. Game developers have access to model construction, session administration and the registration of session members. Players (and non-participating observers) have access to game sessions. Playground control and user-administration is a central task that is assigned to the helpdesk expert.

Figure 32: The Cyberdam city map

1. **Playgrounds and directories.** A playground, or game arena, can be an interactive city map, a building, a diagram with clickable objects. A directory contains role- and object-descriptions, websites, game documents and other artifacts. The directory gives access to information that is used in a game. Artifacts are constructed for a particular game, and can be used in other game models. There are several options to make games and objects available for public or to authorize only a limited number of people to see and use them.
2. **Game models**. A game model is a template, which can be worked out with specifications of roles, phases, activities and variables. Variables are optional functions that can be attributed to a certain role, activity or game level. Game models can be copied for personal use, and game models can be adapted to own demands or particular circumstances, objectives, et cetera. This feature supports co-constructive processes, collaborative learning and the sharing of expertise.
3. **Session administration**. The various functions of session administration afford the developer to connect a certain game model to playgrounds, players and sessions. There are different options that make session administration a flexible tool to engage players in one or more playgrounds and to assign roles not only to one actor; however, also to several actors or a complete team. The game master is the person to manage session administration and actor registration. Game development and session administration are separate tasks, though in many cases they are combined in one and the same person.

4. **Playground administration** and various other general administrative tasks are done by the person, who serves the users with helpdesk functionalities.

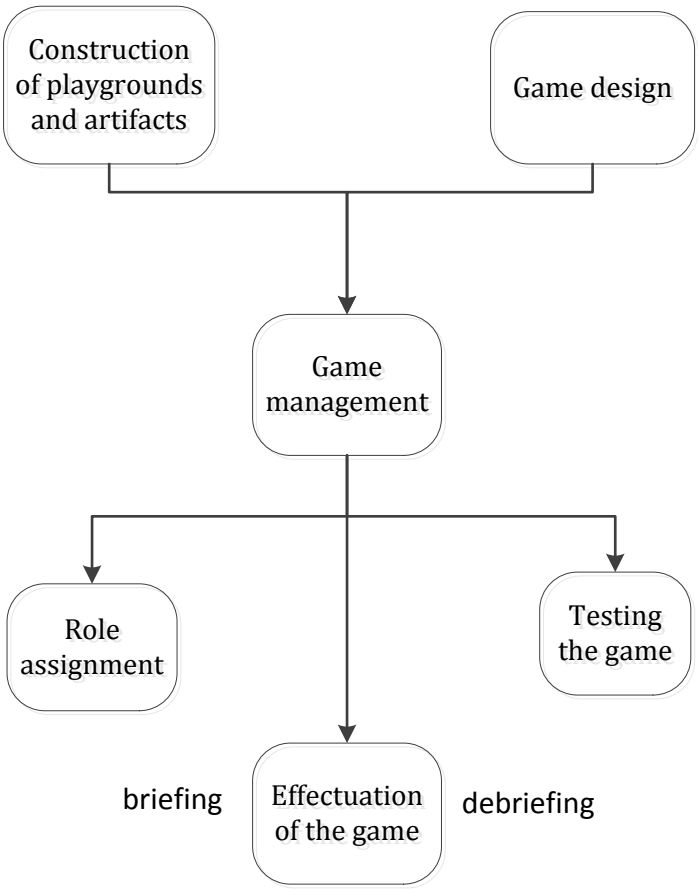

Figure 33: System overview Cyberdam

1. **Hardware en Software**. Users need access to the Internet. No special software, different from normal PC applications, is needed on the side of model developers, game masters and players. All further necessities can be found and remain stored in the simulation gaming environment.
2. **Playgrounds**. The playground, or playing field, arena, is the starting point for game sessions and may represent a certain context. The playground is connected to a directory or repository of objects and artifacts. Sessions are connected to playground and directory. It is possible for (groups of) users to design and develop a personified or contextualized game playground. This can be a city map, a graph, a photo, a scheme, etc.
3. **Directory**. The directory functions as a general repository of artifacts, as explained above. Object descriptions, role-descriptions and all other artifacts can be made visible in the directory, and with that, they become re-usable for other people. Another option, depending on the context of application and on design choices, is to hide ar-

tifacts and to use them exclusively for a certain game. A player can work out, adjust, enrich or change his/her role-description from his/her homepage in a session. This kind of changes are not automatically included in the directory and are only visible to the session members. This is an interesting option for situations with sensitive, private or 'classified' information.

4. **Sessions**. A game session is the effectuation of a game. The game master, who is the facilitator and moderator, starts and ends the game. His/her tasks can be restricted to functional guidance of players or could be more comprehensive with arbitration and active intervention in processes. Each player has a personal homepage in a session.

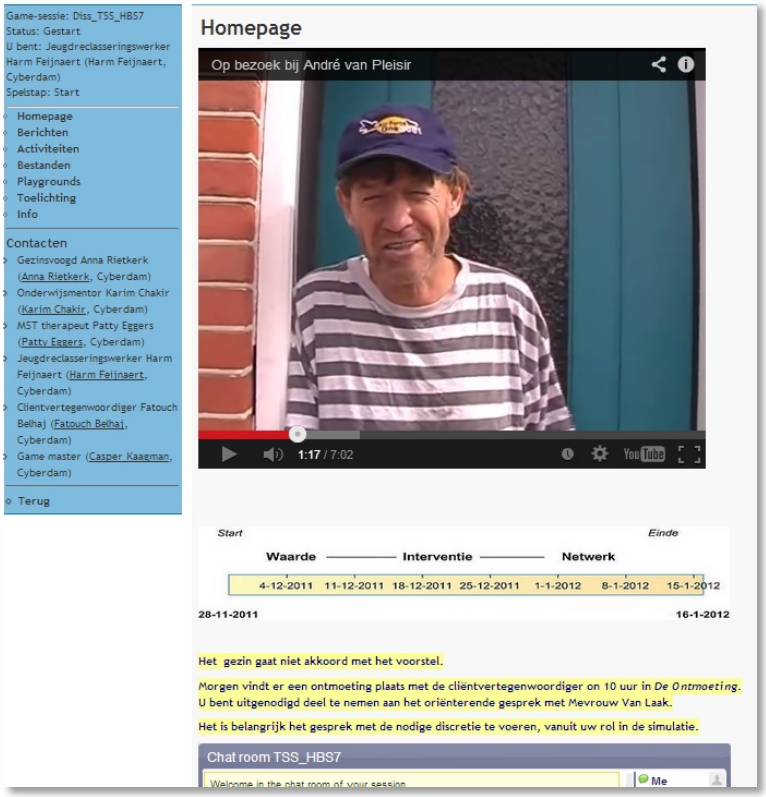

Figure 34: Illustration of a player's homepage in a session

GAMES IN THE PRACTICE EXPLORATIONS

We developed various game models in the course of research, partly to investigate the user-responses and requirements and partly to practice and experiment with choices of design and implementation. In this section, we exemplify some important steps on the way to the principle simulation game model that has been applied in the multiple case study (chapter 6 of the dissertation).

During the practice inquiries, we have developed and effected some introductory and trial versions of simulation games in the organizational contexts of three national youth care institutions. The participants were behavioral experts, youth protectors, foster care workers, juvenile probation officers, team managers, in-company trainers, managers and trainees. We developed the following games: *CyberTOUR* – introducing the environment; *Policy Participation* – building argumentation in favor of or against trials with online simulation gaming; and three simulation games *Bing*, *Hakim* and *Leo*, built on cases from in-company intervention and training programs.

In this section, we quote some interesting samples as the user-statements during debriefings in response to the trial versions and test-runs of simulation games, effected within organizational context. The quotes are given in the original language.

… "Als we het hebben over de omgeving en het maken van 'ruimte' om deel te nemen aan een spel - zoals ik dat met mijn collega besprak - heeft planning een belangrijke rol. Ik kwam er pas aan het einde van de dag toe want hier is de praktijk dat je de hele dag door gestoord wordt door telefoontjes en crisissen. Dit is een specifieke situatie waarmee je goed rekening moet houden." …

… "Dat herken ik wel, ik stelde mijn activiteit steeds uit naar de avond, want anders kwam ik er niet aan toe. Iemand van jullie zei ook dat deze werkomgeving eigenlijk vraagt om bijvoorbeeld een dagdeel bij elkaar te gaan zitten om een beetje afgeschermd met deze taak bezig te kunnen zijn. Het voordeel van de eigenschap van tijd- en plaatsonafhankelijk werken maakt dat je denkt: nou dat plan je dan gewoon op eigen momenten in. Dat betekent dat je dan zelf… - in ieder geval vond ik dat heel moeilijk - om zelf die keuzen te maken van ja, nu ga ik even een half uur hieraan werken. De beslissing om hier dan ook echt even tijd voor vrij te maken." …

… "Ik moet er even bijzeggen dat simulatiespelen vanuit mijn methodische oogpunt altijd ingebed moeten zijn in een dialoog, in contacten dus en in persoonlijke gesprekken. Het spel staat tussen de contacten in." …

… "Je zou dan eigenlijk ook een uitdagend doel moeten stellen aan een spel, Dus niet alleen een spel spelen om het spel, maar bijvoorbeeld met die verwijsindex simuleren vanuit verschillende perspectieven zodat je tot een uitkomst komt, waarin die zorg daarin ook werkelijk geïntegreerd wordt en

dat die zorg gedragen wordt door iedereen. Dat zou dan mijn gedachte zijn bij een simulatiespel en welke handvaten kan iedereen dan krijgen om zoiets bespreekbaar te maken." …

… "Alles wat je schrijft en naar buiten toe brengt moet worden goedgekeurd door de inhoudelijk manager. Het gaat daarbij om alle adviezen, plannen van aanpak, of het verloop van een OTS bijvoorbeeld, en de rapportage daarover. En ik geloof dat het ook belangrijk is voor overdracht naar collega's. En het is de bedoeling dat er echt kennisoverdracht plaatsvindt. Maar ik vind dat dit nog niet goed van de grond komt." …

… "Bij individuele werkbegeleiding wordt getracht het cyclisch denken en handelen te oefenen en te versterken. De een doet dit van nature beter dan de ander. De persoonlijke doorontwikkeling staat hierbij centraal. Het leren kijken vanuit een helikopterview; vaardigheden van planning en strategie." …

… "In de subteams leggen professionals dilemma's en praktijkproblemen aan elkaar voor. Problemen worden meestal besproken vanuit één perspectief. Er wordt in teambesprekingen veel aandacht gegeven aan perspectiefkennis. Bijvoorbeeld: hoe zou een bepaalde partij kunnen reageren op dit of dat voorstel? Is het voorstel haalbaar en uitvoerbaar voor andere partijen die erbij zijn betrokken? In de subteams wordt de ontwikkeling van deze perspectiefkennis, maar ook de training van communicatieve vaardigheden van de werkers, gestimuleerd." …

… "Je moet flink investeren in het ontdekken hoe mensen denken, waar de schoen wringt en waar het aan ligt. Soms is er een gebrek aan wil en andere keren is het onmacht. De manier waarop een gezin met problemen omgaat zegt heel veel voor de oplossingen die mogelijk zijn. De problemen die ik tegenkom zijn vaak zeer herkenbaar en niet zo anders dan wat ik zelf ken, maar hoe sommige mensen uit de doelgroep hiermee omgaan is vaak heel anders. Wij, professionals, hebben meestal een groter probleemoplossend vermogen, dan sommigen van onze cliënten." …

… "Bij de offline simulatiespelen krijg je een kaartje in je hand gedrukt en heb je niet veel voorbereidingstijd. Zo gaat dat niet in de werkelijkheid van echte probleemsituaties. In online simulaties krijg je die tijd wel: je kunt het dossier eerst eens goed doornemen en de rolbeschrijvingen lezen. Dat komt meer overeen met de realiteit in de praktijk. Ook het spelen van een bepaald type kan lastig zijn in offline simulaties (een nors type bijvoorbeeld). Het is al moeilijk genoeg om jeugdreclasseringwerker te zijn, als je dan ook nog een bepaald type persoon of een ander beroep moet spelen is dat moeilijk. Je zag dat in de offline simulatie aan de persoon die de politieagent mocht spelen. Die speelde gewoon zichzelf, want hij was vanuit die ervaring en rol uitgenodigd om die dag iets te komen vertellen en speelde in het spel zijn eigen rol. Dat kwam overtuigend over. In het online simu-

latiespel zagen we dat iedereen erg gericht was op samenwerking en afstemming, op akkoorden. Dat was anders in de offline variant, waar het meer 3 tegen 1 leek."…

GAMES OF THE SEVEN PIONEERS

The development of *The Seven Pioneers* aimed at skills and agility in designing and implementing online simulation games within organizational and programmatic contexts, as explained in chapter 4 of the dissertation. We conducted retrospective interviews with the program managers and game developers, to learn from the processes of design and implementation. One of the conclusions was that people, who are engaged in online simulation gaming in programs of learning and change, need more time to build a full understanding of the possibilities and strategies of the tool and method. The variances in success with online simulation games in educational contexts are evident, when we look at the implementation practices of *The Seven Pioneers*. In cases that a new game was embedded in repetitive cycles of effectuation, evaluation and improvement in a recurrent program, the model and strategies grew and matured. In these programs the stakeholders were much more confident about and content with the utility and success, in comparison to situations, in which the game was a one-time event. We noticed that structured and well-defined instruction and training is required to support effective design and integration of online simulation gaming in programs of learning and change. We also observed that managers, with a focus on operational logistics and planning of services, find it difficult to make room for innovation and that they had trouble in finding the right tools and approach of guidance and support for the innovators in their teams. Some managers stated that they did not liked the noise and uncertainty that came with the experimentation with online simulation gaming. The managers affirmed that they are not enough equipped to deal with the messy processes of innovation and admitted that they could afford only a minimum of help and guidance to their team members, engaged in the development of *The Seven Pioneers*. This may indicate an important failure factor of durable investments in the implementation of online simulation gaming within organizations. At the same time, the managers say that in retrospect they preferred more control over the course of the innovative processes. The interviews led to the conclusion that proper project planning and the mobilization of the right expert support and know-how are essential to successful innovation with online simulation gaming.

Figure 35: Front sides of the flyers of The Seven Pioneers

Some observations in the interviews about *The Seven Pioneers* refer to the application and further development of the software. The respondents argued that Cyberdam needs more flexible and interactive functions to enhance the level of emersion. On the other hand, it was clear that the fresh game developers were not yet experienced and skilled enough to find solutions to the interaction problems in their games. The options of flexibility and immersion depend on the choices of design of the game model and implementation strategy. It takes time and maturation in the subject of online simulation gaming to learn how to avoid or confront practical problems. Well-known problems have often to do with unbalanced workload and work pressure, resulting from assessing session products and processes. It is evident that first time game developers have difficulty in inventing the right, challenging game elements to enrich the chances of immersion.

Probably the most important remarks are about the further perspectives with online simulation gaming in programs of learning, change and intervention. The challenge is to avoid that games are developed as separate events and the managers acknowledge that new games need chances to develop their relevance, usability and usefulness in programs of learning and change. One of the respondents puts it this way: *"This is not about developing an attractive didactic tool for learning. The question is: how can we interest practices of education and social care services to invest in game-like activities, to find better and quicker ways of learning and intervention."*

THE CODE SYSTEM OF THE INTERVIEWS ABOUT THE SEVEN PIONEERS

Ervaringen met het ontwerp en implementatieproces
(experiences with the design and implementation process)

- De eisen van doorontwikkeling [20]
- Over de ontwikkeling van het eigen game model [9]
- Eisen aan techniek [7]
- De grootste moeite in het project[6]
- Over de persoonlijke motivatie om dit spel te ontwikkelen[9]
- Over de eisen aan de didactische organisatie [12]
- Ten aanzien van eisen aan implementatie [24]

Gedachten over online simulaties voor leren [9]
(reflections about online simulations for learning) [9]

- Over het begeleiden van een game [2]
- Over het proces van ontwerpen [6]
  - Spelontwerp [5]
  - Scenario [2]
- Eisen aan de virtuele leeromgeving [8]
- Multimediale mogelijkheden binnen de applicatie[4]
- Benodigde competenties voor online simulation gaming [3]
  - Competenties van spelers[5]
  - Competenties van ontwerpers[14]

GAMES IN THE MULTIPLE CASE STUDY

From a total of 10 suitable practice cases, we chose a complex multi-problem situation, featuring a 16 year old adolescent and his family. As explained in part 6.2 of the dissertation, this case complied with all selective criteria, as developed in cooperation with practice experts. The next pages display the case description (in Dutch), an overview of the participants and a schemes about the game model variants and sessions.

CASE DESCRIPTION OF THE SIMULATION GAME

WHEN NOTHING ELSE WORKS …

The case description (in Dutch) covers an unspecified period of time, although from the case description one may conclude that the youth protectors were engaged in this complex problem case over a time span of about eighteen months. In the case description, it is the family guardian, who is talking.

>> Er zijn grote opvoedproblemen met Mouad uit een gezin met een Marokkaanse achtergrond. Mouad (16 jaar), is al van een aantal scholen weggestuurd en voor hem geldt een OTS maatregel (onder toezichtstelling). Hij heeft ernstige gedragsproblemen en accepteert geen enkel gezag, niet van leraren en ook niet van de gezinsvoogd en de overige hulpverleners. Hij scheldt iedereen uit en heeft ook fysieke agressie richting leerkrachten. Het is allemaal heel extreem. Er is sprake van een heel belast verleden.

Vader is gewelddadig en heeft zijn vrouw enige jaren geleden heel erg mishandeld en heeft daarvoor vastgezeten en toen een straatverbod gekregen. Hij heeft indertijd een halfjaar lang hulpverlening gekregen van De Balans (agressiebehandeling). De Balans is het centrum voor ambulante forensische psychiatrie in Cyberdam. Best een heel ingewikkeld en zwaar traject dus.

Ik ben nu sinds een half jaar gezinsvoogd maar daarvoor zijn er andere gezinsvoogden met het gezin aan het werk geweest. Het punt is, dat wanneer je Mouad apart spreekt, je er met heel veel moeite nog wel iets kunt uit halen. Maar wanneer hij onder directe invloed van zijn vader staat, is dat heel anders. Hij staat zo onder invloed van vader, dat er van een loyaliteitsconflict sprake is. Hij doet alleen maar wat vooral de vader wil. Het gezin heeft grote schulden. Het huis is verwaarloosd. Vader is verslaafd geweest en het is onduidelijk of hij dat nog steeds is. Hij heeft geen werk. Het loopt allemaal voor geen meter. Sinds ik gezinsvoogd ben, heb ik de ouders ongeveer vijf keer, dus in een half jaar tijd, uitgenodigd per brief voor een gesprek. Hiervan, tweemaal per aangetekend schrijven, wat al ongebruikelijk is, maar die brieven werden niet opgehaald van het postkantoor. Het blijkt heel moeilijk te zijn alleen al om met hen in contact te komen.

Het is mij niet gelukt om met de ouders te spreken, behalve één keer. Toen heb ik een brief gestuurd omdat de OTS (ondertoezichtstelling) zou aflopen. Dan moet je een verzoek indienen bij de rechtbank, waarvan een kopie naar het gezin wordt gestuurd. In dat verzoek staat dat Bureau Jeugdzorg zich ernstig zorgen maakt over de situatie en over jongen. Toen heb ik de ouders weer uitgenodigd om langs te komen om hierover te praten waarop de vader wel is gekomen. Hij was die keer heel erg bedreigend naar mij toe. Hij wilde niet met mij in gesprek, behalve over de OTS-verlenging. Hij had een voorstel, dat ik zes maanden lang geen bemoeienis meer zou hebben. Hij realiseert zich waarschijnlijk niet dat er een hele organisatie achter mij staat. Hij lijkt de discussie specifiek en uitsluitend tot mij als persoon te richten. Ik moest het verzoek intrekken, want anders zou nooit meer met mij willen praten en hij was daarbij heel bedreigend: "Zo niet, dan hang je aan een boom!".

Ik kon natuurlijk niet ingaan op zijn eis, dat mag ik ook helemaal niet doen. Ik kon dit niet recht-

streeks zeggen, want dan zou ik het gesprek helemaal verbreken. Ik heb geprobeerd om eerst nog wat meer informatie te krijgen. Hij zei: er zijn helemaal geen problemen, mijn jongen is in de puberteit. Ik regel het zelf wel met hem. Ik ben een goede vader en doe niets fout. Hij voelde zich heel erg in zijn eer aangetast. Dat hebben Marokkaanse families wel vaker. Zij denken: zij vinden ons niet goed genoeg. Dus hij hield helemaal de boot af. Zo is het afgelopen half jaar gegaan.

Toen ben ik een nieuwe koers gaan varen, meer op twee sporen gaan zitten. Ik wil het individueel contact met het kind houden, naast de meer procedurele zorg voor het hele gezin als systeem en de ouders in het bijzonder. Ik moet tenslotte blijven zorgen voor het kind en ook nog contact onderhouden met de school, bijvoorbeeld.

Mouad, heeft vorig jaar een agent bedreigd, daar heeft hij een jeugdreclasseringsmaatregel voor gekregen. Dat traject heeft hij op zich redelijk goed doorlopen. Ik heb contacten gehad met de jeugdreclasseerder en die gaf aan dat de jongen best vaak op gesprek kwam. Dat is natuurlijk relatief. We verwachten heel weinig van deze jongen en als hij dan af en toe komt, dan is het al heel wat. Hij is redelijk vaak op gesprek gekomen en was behoorlijk meewerkend. Op zich heeft hij de maatregel goed afgerond en is hij niet gerecidiveerd. Dus dan heb je geen reden om het project te verlengen.

De jeugdreclasseerder bevestigde dat de ouders het probleem vormden, ook in dat traject, die kwamen gewoon niet en er was niets met hen te beginnen.

Op school is het hetzelfde verhaal met Mouad. Het gaat redelijk. Hij kan net aan meedoen, op het randje. Hij zit nu op het WIL traject (Werken Is Leren) van de Rading en de Pels (cluster IV, school voor Speciaal Onderwijs). Mouad zit dus op het WIL. Daarin mogen de leerlingen veel zelf bepalen, hebben maar zes dagdelen per week les en worden eigenlijk overal voor verontschuldigd. Dat gaat nog net. Hij kan zelf kiezen naar welke lessen hij gaat, afhankelijk van het feit of hij een leraar ziet zitten ja of nee. Hij wil alleen bij de leraren in de klas zitten die hij zelf kiest omdat hij ze leuk vindt; andere lessen, daar gaat hij gewoon niet heen. Hij wil controle houden, en wil alleen doen waar hij zelf zin in heeft. Hij wil timmerman worden en gaat dus wel met het timmerlessen, want dat vindt hij leuk. Die overige lessen doet hij gewoon niet.

Het argument van Werken Is Leren is om het kind zo lang mogelijk te binden aan het traject omdat het anders wellicht op straat verkeerde dingen gaan doen. Het Wil traject is in samenwerking met de Rading en daar zit dus ook veel zorg bij. En in het Wil traject gaat het ook vooral over gedrag. Maar daar wil Mouad al helemaal niets mee. Hij wil er niet over praten en hij kan er geen inhoud aan geven.

De conclusie is dat het dus eigenlijk heel zorgelijk is met deze jongen. We zijn best bang dat hij weer terugvalt in confrontaties met de politie. Op dit moment is dat niet aan de orde dus hebben niet genoeg aanleiding om daar nu iets mee te doen. We hebben geprobeerd de zaak even heel sec te bekijken. Op papier, even afgezien van het hele voortraject, en ons de vraag gesteld: wat kun je doen met dit gezin? Dan moet je zeker ambulante hulpverlening inzetten, op zijn minst. We hebben nu een

MST (multisysteemtherapie) aangevraagd bij De Balans. Dat is in deze situatie een zware hulpverleningsmaatregel. De Balans is echt op agressieproblematiek gericht. Men komt bij het gezin thuis wanneer jongeren met politie in aanraking zijn geweest en gezagsproblemen hebben en in gezinnen waar ouders niet echt meewerken. Maar zo extreem als dit, hebben ze het daar ook nog niet meegemaakt, zeggen ze zelf.

Ik probeer het gezin al drie maanden te bereiken over dit punt, en dat wij dit willen gaan inzetten. Want ja, ik moet iets met deze OTS, maar ik krijg ze niet te pakken. En die ene keer dat vader hier was over dat OTS-verhaal, gaf hij eigenlijk alleen maar aan dat hij niet wilde. "Nee, ze komen er niet in. Ik wil dat niet hebben". Dus ik heb het weer met de opnamecoördinator en supervisor van MST besproken. En De Balans zegt: we willen wel proberen om een intakegesprek te plannen. Maar zover zijn we nog niet eens. Ik ben bang dat het niet gaat lukken, maar we gaan proberen om dat wel te doen. En zeer waarschijnlijk ketst dat dan af, maar dan kunnen we wel zeggen: we hebben het in ieder geval geprobeerd! De andere mogelijkheid, en de volgende stap, is een uithuisplaatsing. Want we merken wel, wanneer hij onder de vleugels van zijn vader vandaan is, dat hij dan iets beter kan functioneren en wat beter naar zichzelf kan kijken en minder opstandig is. Een open plaatsing zou hij nooit accepteren, ook al is dat redelijk vrijwillig. Toch gaat zo iets wel onder sterke druk van mij als gezinsvoogd, want hij moet wel meelopen. Maar zijn vader zal dat nooit accepteren en Mouad is tenslotte al 16 en hij wil dat zelf ook niet. Hij is echt een jongen van de straat, dus dat wil hij niet. Dan heb je nog de mogelijkheid tot een gesloten plaatsing. Dat gaat dan met de politie en dan wordt hij gewoon opgesloten.

En dat is het dilemma: is het wel goed voor die jongen? Hij staat zo onder invloed van zijn ouders, dat wij ons afvragen, is het wel goed voor de jongen om hem daar weg te halen? Aan de andere kant is het misschien wel juist heel goed dat hij bij een uithuisplaatsing wat meer naar zichzelf kan leren kijken en wat zelfstandiger wordt. Maar we hebben, denk ik, niet genoeg gronden voor een gesloten plaatsing, want dan moet je eerst een open plaatsing hebben geprobeerd en dat moet zijn afgeketst. Ze gaan niet zomaar iemand een gesloten plaatsing opleggen. Daar moet een traject vooraf aan gegaan zijn. Een gesloten plaatsing, dat willen wij op dit moment eigenlijk ook niet. En we zien er zelf niet voldoende gronden voor. We denken ook niet dat het de allerbeste oplossing is op dit moment. Maar we vinden wel dat er iets moet gebeuren, dat er iets moet veranderen in de thuissituatie en dat het veiliger moet zijn daar. En dat zou dus hulpverlening moeten zijn maar dat gaat echt niet van de grond komen. Dat weten we eigenlijk wel zeker. Dus wat kunnen we nog? Helemaal niets! We hebben een OTS, maar we hebben geen enkele mogelijkheid om dit beleid uit te voeren in die richting. We weten het gewoon niet meer! <<

In this section we provide additional information about the participants in the simulation game sessions of the multiple case study (please refer to chapter 6.4.1 of the dissertation, *Research field and population*). We focus on three characteristics: age, level of education and work experience.

OVERVIEW OF PARTICIPANTS OF THE SIMULATION GAME SESSIONS IN THE MULTIPLE CASE STUDY	TOTAL

Age	n=55
20-30 years	n=14
30-40 years	n=22
40-50 years	n=11
Above 50 years	n=8

Education	n=55
Mbo (intermediate vocational education)	n=2
Hbo (higher vocational education)	n=46
Wo (university education)	n=6
Anders (otherwise)	n=1

Work experience	n=55
Less than 5 years	n=27
Between 5 and 10 years	n=12
More than 10 years.	n=16

Figure 36: Overview of participants (multiple case study)

The game model of simulation game *When nothing else works …* has been elaborated in four different variants. The design choices of the variants were based on progressive insight that emerged from the preceding sessions. In section 6.4 and Table 4 of the dissertation the different variants and session constellations are explained. For the reader's convenience, we insert the overview of variants and sessions, as explained in section 6.4 of the dissertation.

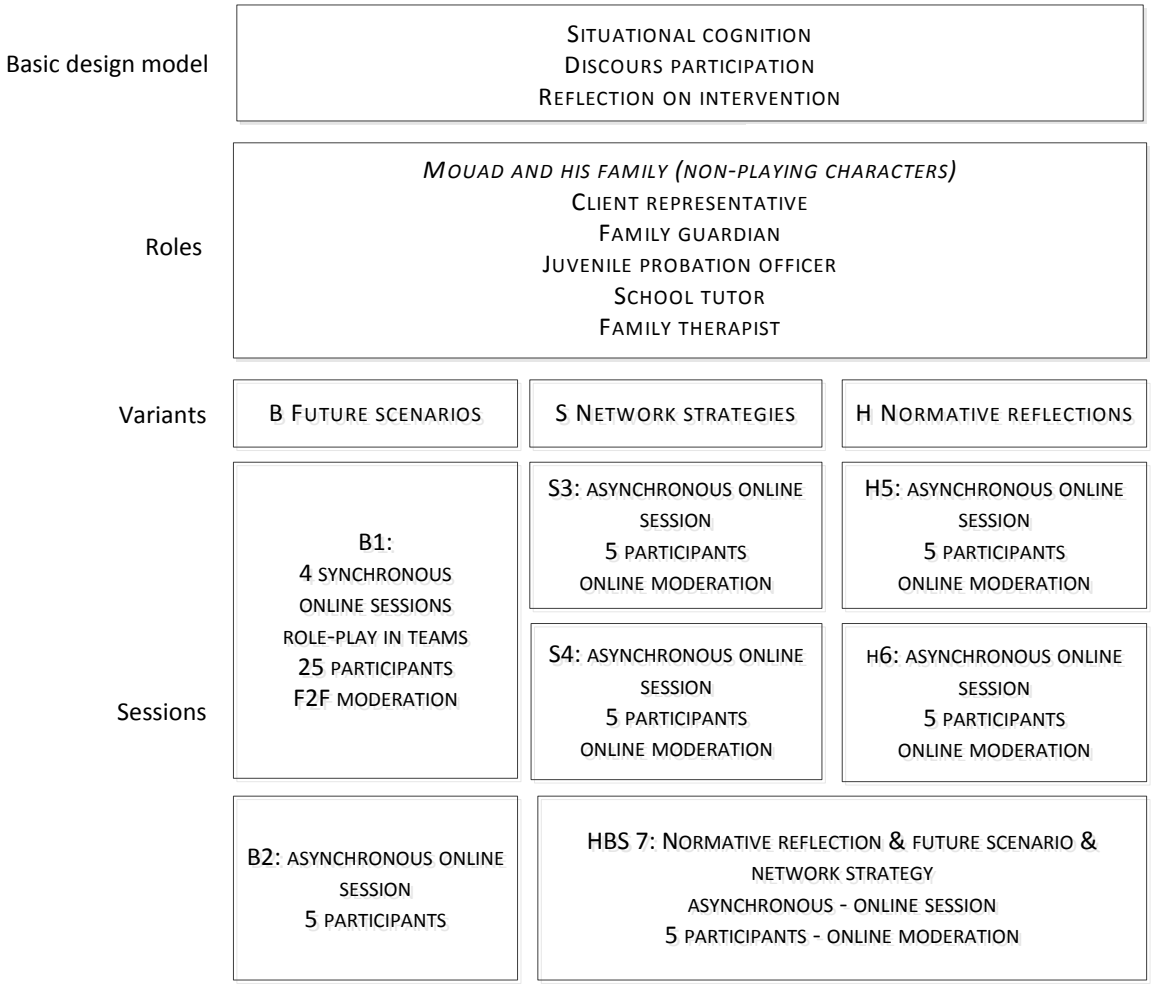

Figure 37: Overview of variants and sessions

In the schematic representation of session attributes on the next pages, the *italicized* sentences are the unique properties of a particular variant. The **bold** sentences concern the objectives and outcomes of the session variant.

Variant B1 – 25 participants, randomly divided over 4 teams of family guardians and 4 teams of network partners.

1. *Participants: 25 social workers in a training program of outreach care.*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each role is played by a team of 3 persons. 8 Teams of 3 persons play 4 family guardians and 4 network partners. Each family guardian cooperates with the 4 network partners on the same case.*
5. Every role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: broadening options and solutions.**
9. Game concept: role-play, role-performance and competition.
10. *3 Game levels: analysis / scenario construction / future prospects.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: real time and face-to-face.*
13. **End product: 8 different future reports about the situation after 18 months.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

Variant B2 – 5 participants, randomly divided over 5 roles:

1. *Participants: 5 Youth Care experts, recruited via LinkedIn (online networks of Youth Care professionals).*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each participant plays a role, connected to the case of the game.*
5. Each role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: broadening options and solutions.**
9. Game concept: role-play, role-performance and competition.
10. *3 Game levels: analysis / scenario construction / future prospects.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: online; functional support only.*
13. **End product: 5 different future reports about the situation after 18 months.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

Variant S3 – 5 participants, randomly divided over 5 roles:

1. *Participants: 5 Youth Care experts, recruited via LinkedIn (online networks of Youth Care professionals).*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each participant plays a role, connected to the case of the game.*
5. Each role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: strengthening network relationships and cooperation.**
9. Game concept: role-play, role-performance and cooperation.
10. *3 Game levels: network expectations / network commitment / strategy agreement.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: online; functional support only.*
13. **End product: start document for strategic network cooperation.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

Variant S4 – 5 participants, randomly divided over 5 roles:

1. *Participants: 5 Youth Care experts, recruited via LinkedIn (online networks of Youth Care professionals).*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each participant plays a role, connected to the case of the game.*
5. Each role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: strengthening network relationships and cooperation.**
9. Game concept: role-play, role-performance and cooperation.
10. *3 Game levels: network expectations / network commitment / strategy agreement.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: online; functional support only.*
13. **End product: start document for strategic network cooperation.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

Variant H5 – 5 participants, randomly divided over 5 roles:

1. *Participants: 5 Youth Care experts, recruited via LinkedIn (online networks of Youth Care professionals).*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each participant plays a role, connected to the case of the game.*
5. Each role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: justifying choices of intervention.**
9. Game concept: role-play, role-performance and cooperation.
10. *3 Game levels: situational values / normative guiding principles / framework of normative guiding principles.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: online; functional support only.*
13. **End product: start document for strategic network cooperation.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

Variant H6 – 5 participants, randomly divided over 5 roles:

1. *Participants: 5 Youth Care experts, recruited via LinkedIn (online networks of Youth Care professionals).*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each participant plays a role, connected to the case of the game.*
5. Each role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: justifying choices of intervention.**
9. Game concept: role-play, role-performance and cooperation.
10. *3 Game levels: situational values / normative guiding principles / framework of normative guiding principles.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: online; functional support only.*
13. **End product: start document for strategic network cooperation.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

Variant HBS7 – 5 participants, randomly divided over 5 roles

1. *Participants: 5 Youth Care experts, recruited via LinkedIn (online networks of Youth Care professionals).*
2. Instruction meeting (briefing of the game) and training of functional operations.
3. Roles: family guardian, juvenile probation officer, school tutor, family therapist, client representative.
4. *Each participant plays a role, connected to the case of the game.*
5. Each role is connected to a professional organization. Each organization has an object description in the directory and can be traced on the city map.
6. There is a role-description for each role in the city directory. The description contains particularities of the experience, competences, talents and preferences of the person in question.
7. The game comprises game instruction documents about the case, the role-play, the desired end product, feedback and session planning. These documents can be found on the player's homepage.
8. **Session objective: the determination of strategies of intervention, grounded on situational values, and on the justification of choices of intervention.**
9. Game concept: role-play, role-performance and cooperation.
10. *3 Game levels: situational values / normative guiding principles / framework of normative guiding principles.*
11. Time span: 3 weeks.
12. *Facilitation and moderation: online; functional support only.*
13. **End product: intervention plan that is grounded in situational values and based on network agreements.**
14. Directly after the session the actors respond to a questionnaire.
15. Shortly after the session there is a reflective dialogue about process and performance and about the value and significance of online simulation gaming for exchange.

PART THREE

3 *The game session results (appendix)*

In this part of the appendix, we concentrate on the main empirical data from the online simulation sessions of the multiple case study (please refer to chapter 6 of the dissertation). The results from the introductory simulations and trial runs in organizations have been used to make the proper choices of design for *The Seven Pioneers* and for the simulation game *When nothing else works ….* of the multiple case study.

In part two we gave an illustration of the developed games in curricular programs (*The Seven Pioneers*) and samples from the interviews with program managers, directly after their implementation. In these interviews we looked back on the implementation of the new games from a programmatic and organizational standpoint. The quality assurance and further development of newly developed simulation games in curricular programs appeared not only essential for their success in the longer term; however, it turned out that quality assurance and further development are hard to achieve, without a proper embedment in program and team objectives.

In the third part of the appendix we proceed with the more extensive illustrations of session results from the multiple case study. First, we give some illustrative samples from the coding of session interaction. After that, an example page from a session track record is shown.

All session information of chats, messages and documents in the multiple case study has been transcribed as text files and treated in a software program for qualitative analysis (MaxQDA). To get an impression of the coding of session chats, session messages and session products, please see the next figures.

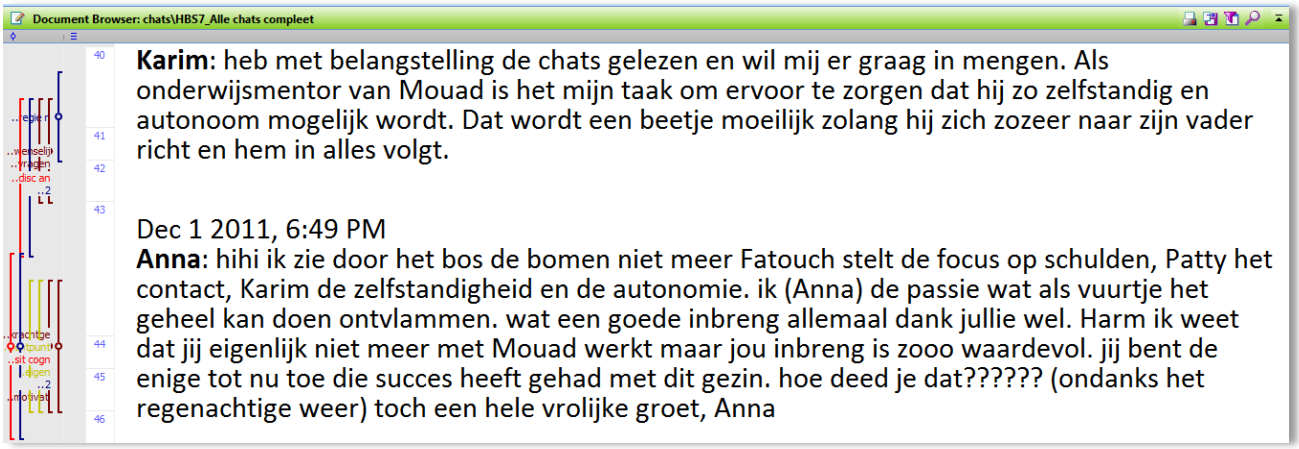

Figure 38: Illustration of coding session chats (1)

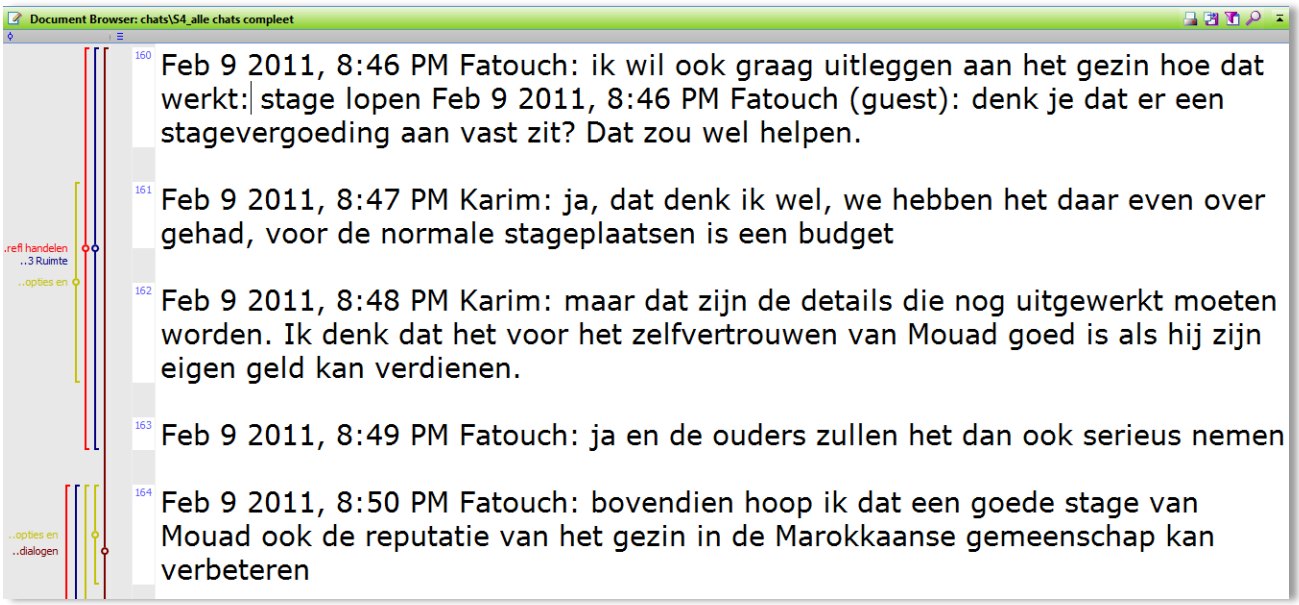

Figure 39: Illustration of coding session chats (2)

Document Browser: tss\b2_speldocs

..wat had er
..1 Rekenschap
..sit cogn
..4 Response
..achter de
..verder zoeken
..3 Ruimte
..performance

201 Wat speelt er mogelijk nog op de achtergrond?

202 Er zijn nog de nodige hypothesen te bedenken van wat er nog meer zou kunnen spelen: de moeder is mogelijk nog totaal niet geïntegreerd, het gezin zou uit schaamte bestaande contacten kunnen hebben verbroken en een geïsoleerd leven leiden, Mouad zou blijvende psychiatrische problematiek kunnen hebben, etcetera.

203 Wat is er op professioneel gebied feitelijk gedaan?

204 Er is een OTS geregeld. Vader heeft een half jaar agressiebehandeling gehad. Van de laatste gezinsvoogd weten we dat hij de ouders vijf keer via brief heeft uitgenodigd. Hierbij de vader ook één keer gesproken. Daarnaast heeft hij een MST aangevraagd. Van de gezinsvoogden daarvoor weten we niet wat er gebeurd is. Verder heeft Mouad gesprekken met de gezinsvoogd(en) gehad en met de jeugdreclasseerder. Op school is het WIL traject voor Mouad geregeld. Kortom, er is zeker aandacht besteed aan Mouad. De

Figure 40: Illustration of coding session messages (1)

Document Browser: tss\h6_speldocs

..reacties
..kijk op
..elkaar
..sit cogn
..1
..vermijde
..kritiek op
..2 Richting
..wat
..positief
..kijk op
..disc an

161 Beste Harm,

162 In uw verhaal hoor ik dat u bijzonder teleurgesteld bent in de opvoedingsrol van de vader van mouad. U ervaart tegenstand van zijn vader doordat hij volgens u geen goed voorbeeld geeft. Ik wil graag mijn visie met u delen.

163 In mijn visie (Nurida aan Harm - H6) hebben u en vader een gemeenschappelijk probleem. U heeft namelijk beiden de opdracht gekregen om het gedrag van Mouad aan te passen aan een maatschappelijke norm. De meeste mensen in onze samenleving zijn hierin opgegroeid en hebben zich deze norm min of meer ongemerkt eigen gemaakt. In de situatie van Mouad is dat niet het geval. Zijn ouders zijn met andere normen en culturele waarden opgegroeid. Zolang de kinderen nog klein zijn is dat geen probleem, maar eenmaal in de puberteit zien we dat hun kinderen ontsporen. De ouders vinden dat vreselijk en willen graag dat hun kinderen zich naar onze en hun maatschappelijk normen gaan gedragen. Dat is de reden waarom vader zo streng is. Door deze inzet te veroordelen als negatief wordt het moeilijk om contact met hem te krijgen.

164 Ik denk dat we het contact met de gezinsleden kwijt raken als we vader als geweldadig afschrijven. Mouad weet echt wel dat hij vaak te ver gaat en zijn ouders boos maakt. Als we vader afwijzen wijzen we dus ook Mouad af.

165 Ik denk dat we zijn ouders moeten erkennen voor hun inzet en ook eerlijk uitleggen dat wij hetzelfde probleem hebben. Eerlijk de kaarten op tafel. Dan krijgen we vast en zeker een ingang om met zijn ouders en uiteindelijk Mouad in gesprek te komen.

166 Vriendelijke groet

167 Nurdia Uzmen

Figure 41: Illustration of coding session messages (2)

Document Browser: tss\b2_speldocs

..interpretaties van
..4 Response
..wensen, eisen en
..interpretaties van
..feiten
..1 Rekenschap
..interpretaties
..aanvulling van
..interpretaties van

74 *We zijn nu 18 maanden verder en dit is er gebeurd:*

75 *Mouad, een jongen uit een problematisch gezin, waarvan de vader verslaafd was/is (?) en niet terugschrikt voor het dreigen en/of gebruiken van geweld. Een gezin met veel schulden en dat feit alleen kon er al op duiden dat vader nog steeds verslaafd was. Mouad toonde vaak hetzelfde gedrag als zijn vader; hij had immers "geleerd" dat je met agressie gemakkelijker je zin krijgt en kan doen wat je wil, dan met beleefd luisteren en opvolgen wat anderen tegen je zeggen. Dat merkten we ook op school, hij deed wat hij zelf wilde en omdat we hier uitgaan van het zoeken naar de echte motivatie om wat te leren, lieten we hem te vaak zijn gang gaan.*

76 *De praktijklessen bevielen Mouad overigens het allerbeste, hij wilde graag timmerman worden. De theoretische lessen hadden zijn interesse niet, hij dacht toen - nu soms nog - dat hij timmerman zou kunnen worden door in de praktijk te leren timmeren. Maar dat zal niet lukken, een timmerman moet meten en weten, daar hoort theoretische scholing en oefening bij. Met alleen praktijklessen zal hij geen volwaardig gediplomeerd timmerman kunnen worden.*

77 *Het lesprogramma was beperkt tot zes dagdelen, dat leidde er toe dat Mouad vaker thuis was dan gewenst, en de kwaliteit van de opvoedingssituatie- de woon en leefomgeving waarin hij verkeert was slecht. Die woonsituatie thuis bij zijn ouders was waarschijnlijk vreselijk voor die jongen, hij moest vader helpen bij het verwerven van geld om drugs te kunnen gebruiken. En hij was door de grote hoeveelheid vrije tijd per week, te veel en te lang op straat, misschien*

Figure 42: Illustration of coding session products (future scenarios – 1)

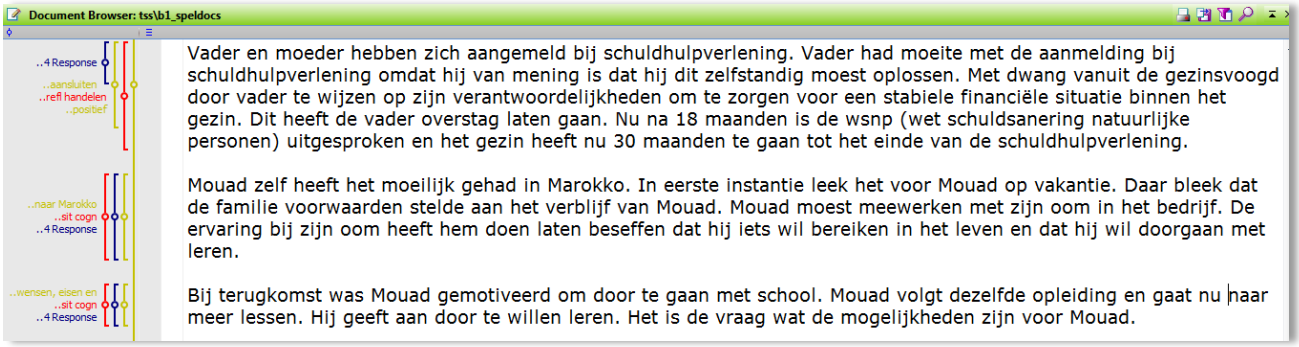

Figure 43: Illustration of coding session products (future scenarios – 2)

All interaction can be traced back in the context of the session interaction by studying the chronological track record of a session. (please refer to section 6.5 of the dissertation). Figure 44 shows a small part of an extensive session track record (to give an indication: the track record of session HBS7 consists of 15 pages). The items on the left side of the page are clickable in the game environment. By clicking on the hyperlinks in the track record and in the game environment, the items open directly on screen.

Session track records can be very extensive, as they reveal all session actions and interactions, such as uploads and messages. The track record can be retrieved from the game environment, either as print or as digital report, for study, discussion and evaluation.

--- Initiatief van deelnemer--	helen van der brug (helen hbs7)	Onderwijsmentor Karim Chakir	2011-12-08 19:30:52.0	waarde	Bericht		Onderwijsmentor Karim Chakir, MST therapeut Patty Eggers, Jeugdreclasseringswerker Harm Feijnaert, Clientvertegenwoordiger Fatouch Belhaj	Patty's reactie op voorgestelde waarden Ondersteuning en Passie
--- Initiatief van deelnemer--	heleen klinkvis (heleen hbs7)	MST therapeut Patty Eggers	2011-12-08 19:38:30.0	waarde	Bericht		Gezinsvoogd Anna Rietkerk, Onderwijsmentor Karim Chakir, MST therapeut Patty Eggers, Jeugdreclasseringswerker Harm Feijnaert, Clientvertegenwoordiger Fatouch Belhaj, Game master	Re: Re: Voorgestelde waarden Ondersteuning en Passie
--- Initiatief van deelnemer--	Keeke Gorter (Keeke)	Gezinsvoogd Anna Rietkerk	2011-12-08 20:50:25.0	waarde	Bericht		Onderwijsmentor Karim Chakir, MST therapeut Patty Eggers, Jeugdreclasseringswerker Harm Feijnaert, Clientvertegenwoordiger Fatouch Belhaj, Game master	Re: Re: Re: Voorgestelde waarden Ondersteuning en Passie

Figure 44: Part of a session track record

The actors in the sessions of online simulation game *When nothing else works …* produced different end products, depending on the game model variant (please see section 6.4; and Table 4 of the dissertation). The next pages contain some examples and illustrations of these end products with the feedback from practice experts as to feasibility and applicability of the produced output. The examples of the session end products are the results of the following task directions:

- Investigating situational information by developing future scenarios (sessions B)
- Strengthening network relations and co-constructing strategy agreements (sessions S)
- Justifying choices of intervention in frameworks of normative ground rules (sessions H)

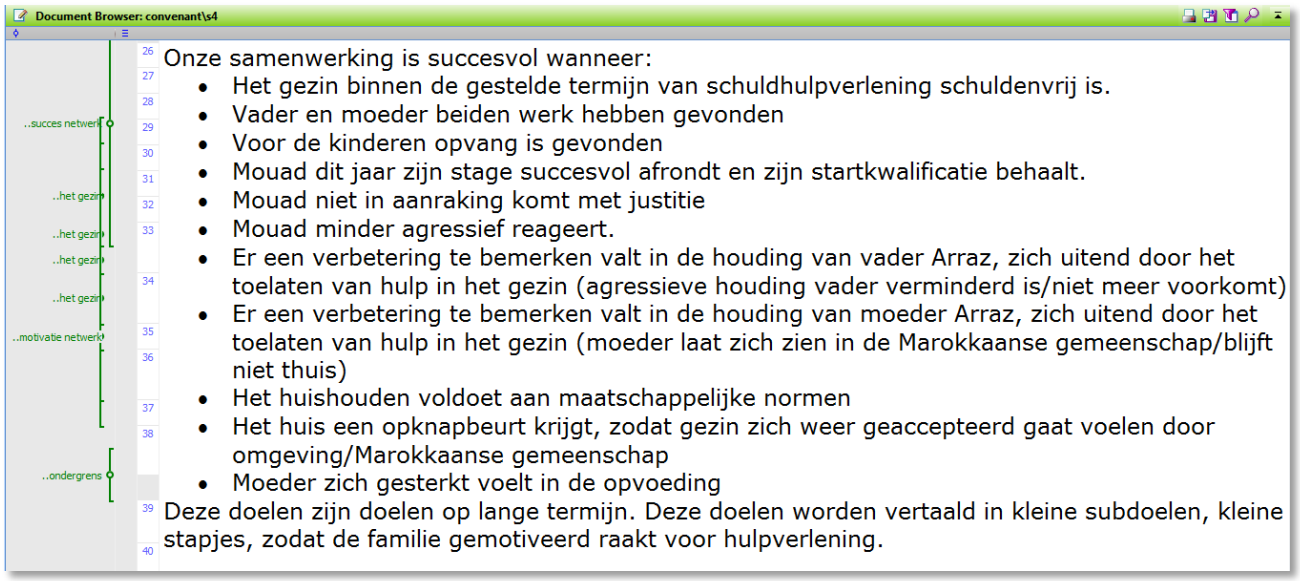

Figure 45: Session quotes about network strategy

Figure 46 and Figure 47 give an impression of the coding of the 13 future scenarios that have been developed in sessions B1 and B2. It would go beyond the scope of this appendix to show the entire text of 63 pages of scenarios.

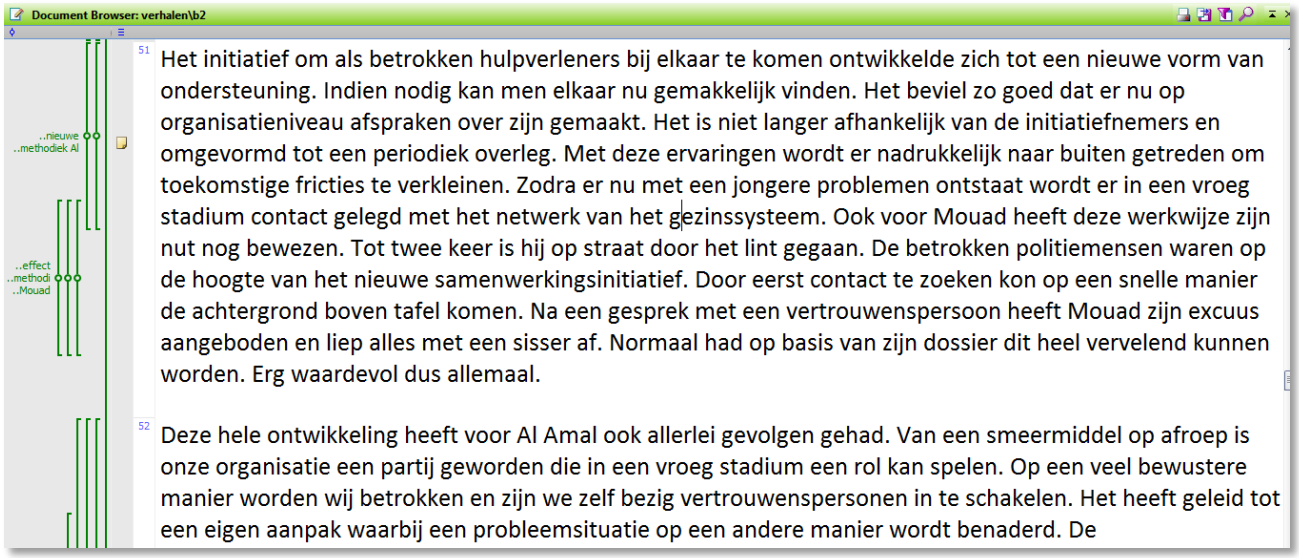

Figure 46: Session quotes about future scenarios (1)

Figure 47: Session quotes about future scenarios (2)

The summaries below illustrate some of the feedback from practice experts as to the relevance and feasibility of the produced end products of the B-sessions (situational explorations and future scenarios). Please note that the personal names in the game do not refer to real people.

SCENARIO BY:	*FEEDBACK FROM PRACTICE EXPERT:*
Patty Eggers, MST therapeute	Goed verhaal, mooi buiten kaders en outreachend! Aansluiten bij wat wel werkt.
Karim Chakir, onderwijsmentor	Betrokken verhaal van de mentor. Waren er zo maar meer onderwijsmentoren
Fatouch Belhaj, cliëntvertegenwoordiger	Helder en overzichtelijk verhaal van de gezamenlijke acties die er zijn ingezet. Mag nog iets concreter over wat wel werkt en wat niet.
Anna Rietkerk, gezinsvoogd	Leuk om vanuit de jongere het verhaal neer te zetten ik denk redelijk realistisch
Harm Feijnaert, jeugdreclasseringswerker	Herkenbaar verhaal, handen in het haar; wat moeten we doen!? Wat kunnen we doen! Er op afstappen toch en verbinden daar kom je een eind mee.

Figure 48: Feedback from a practice expert on future scenarios (1)

SCENARIO BY:	FEEDBACK FROM PRACTICE EXPERT:
Fatouch Belhaj, cliëntvertegenwoordiger	+ Zou een reële overdracht zijn voor bv een collega + Uitgebreid + Rolverdeling hulpverleners
Dirk Janz, gezinsvoogd	+ Vasthoudend zijn, praktische insteek is sterk + Reëel beeld van pathologie vader, inclusief schuld afschuiven op Mouad + Reëel beeld van weigering MST - Op het einde van het verhaal worden de rollen wat door elkaar gehaald en lijkt het geheel ineens te worden "afgeraffeld"
Patty Eggers, MST therapeute	+ Sterke oplossing met oud cliënt + Sterke casus met uit de hand gelopen ruzie, introductie MST - Korte casus, weinig gericht op multiprobleem
Anna Rietkerk, gezinsvoogd	- Weinig concreet/smart - Rol gezinsvoogd/MST (niet reëel om als gezinsvoogd wekelijks te komen, je coördineert) - Waar komt de gezinscoach ineens vandaan? + Oplossing naar Marokko bij familie is leuk gevonden en reëel + Familie beraad is goed, zeker met als argument gezag van vader niet te ondermijnen
Josefien Roodnat, gezinsvoogd	+ Familie oplossing prima, maar in deze casus is dat vast al eens de revue gepasseerd - Kostgeld is een Nederlands gebruik - Pathologie vader wordt gemakkelijk over gedacht - Grenzen lijkt niet zo'n thema?
Nurdia Uzmen, gezinsvoogd	+Plan van aanpak, puntsgewijs en concreet, methodisch + Ondanks positieve interventie, negatief verloop = reëel
Harm Feijnaert, jeugdreclasseringswerker	+ Realistische introductie hulpverlener aan gezin + Reële kijk problematiek vader/moeder - School Mouad verloopt wel erg makkelijk - Onduidelijk perspectief (Harm/Fatouch?) - Weinig op ontwikkeling Mouad gericht
Karim Chakir, onderwijsmentor	+ Perspectief is leuk + Cultureel aspect komt goed naar voren - Er lijkt sprake van milde problematiek als je alleen dit verhaal leest en niet de oorspronkelijke casus

Figure 49: Feedback from a practice expert on future scenarios (2)

The two following figures (Figure 50 and Figure 51) give an idea of the elaboration of a network strategy agreement (S-sessions).

	Dirk	Karim	Patty	Harm	Fatouch
Ontwikkeling van Mouad	Doelen stellen Doelen bereiken Stimuleren en volgen Aanspreken	Stap voor stap ondersteunen Concrete stappen zetten in onderwijstraject *Gevoel van eigenwaarde/zelfwaar-dering 'ontlokken'* *Mikken op meer dragen van eigen verantwoordelijkheid*	Aansluiting zoeken bij Mouad in zijn gezinssysteem O.a. zijn vragen in kaart brengen	Structuur bieden Mouad neemt eigen besluiten	Kleine stappen zetten Praktische insteek
Bescherming Veiligheid	Signaleren van risico's door betrokkenen Bedreiging van agressie wegnemen Check op risico vrije tijd	*Door aantrekkelijke dagbesteding voor M., gaat hiervan een preventieve werking uit; afname risico's conflicten/dreiging en agressie*	De eerste verantwoordelijkheid ligt bij het systeem. Hierbij aansluiten is essentieel.	Direct ingrijpen bij terugval in agressief gedrag en recidive Veiligheid voor Mouad ook binnen het gezin.	Door gezinsgerichte aanpak meer zicht op het gezin en het reilen en zeilen binnen het gezin.
Autonomie Zelfstandigheid	Leeftijdsadequate doelen stellen en inzet van begeleiding om Mouad hierbij te ondersteunen en te sturen	*Zelfvertrouwen a.h.w. uitlokken door het stapsgewijs geven van concrete verantwoordelijkheden. Deze geven de kans om waardering van belangrijke anderen op te ontvangen(succes-ervaringen) en stimuleren de*	Verantw'delijkheid hiervoor bij systeem leggen	Structuur bieden Dicht op de huid Positieve ervaring door individuele activiteiten	Sportschool-activiteiten vergroten waardoor Mouad meer eigenwaarde kan ontwikkelen, los van zijn vader Zo ook op stage/leerplek.

Figure 50: Overview of network strategy agreements (part 1)

		zelfwaardering en zelfstandigheid. M. dagelijkse begeleiding naar leerwerkplek wordt afgebouwd, zodat M. meer eigen verantwoordelijkheid gaat ervaren (op tijd verschijnen). Insteek kiezen:			
Gezinsgerichte aanpak	Ouders krijgen aanwijzingen van de gezinsvoogd. Inzet van therapie om ouders kind-verantwoorde-lijkheid te leren nemen Preventie risico broers en zusjes	*Vader kan/mag best trots op zijn zoon zijn wanneer M. een eerlijke dagbesteding heeft met kans op startkwalificaties via WIL- traject/leerwerkplek.*	Het hele systeem motiveren hulpvraag gezinsleden outreachend werken afstemmen op gezin	Heldere communicatie tussen gezin en netwerk jeugdzorg. Gezin stelt eigen prioriteiten en neemt eigen verantwoorde-lijkheid	Aansluiten bij gezin mannelijke MST'er Langsgaan Op langere termijn een netwerkbijeenkomst plannen
Maatschappelijke positie	Normen stellen aan gedrag	*Door uitbreiding van de verantwoordelijkheden en dagdelen op de leerwerkplek (bouwmarkt) kan M. deelcertificaten verdienen die leveren uiteindelijk de gewenste startkwalificaties (intree samenleving) op.*	Meegaan in de wij-cultuur. Als team werken en functioneren	Gezin en gezinsleden hebben meer soc. contacten in netwerk	Belang dat financiën op orde zijn Moeder onder de mensen

Figure 51: Overview of network strategy agreements (part 2)

From this point on, we show some feedback samples from practice experts on processes and products of the S-sessions (strengthening network relations and strategy agreements) and on the processes and products of the H-sessions (justifying choices of intervention and frameworks of normative ground rules).

FEEDBACK ON SESSION S3

"Ik denk dat veel overleg (ook als dit "live" plaatsvindt) op deze wijze verloopt. Niemand neemt regie, men reageert niet op elkaar, of op ander niveau van reageren. Soms tot grote frustratie van de deelnemers.

Daarnaast was er in dit proces vaak sprake van frustratie vanwege gesloten chatrooms en berichten of bijlagen die niet waren ontvangen of waarvan niet duidelijk was wie de berichten allemaal ontvangen hadden. Dat helpt natuurlijk niet, maar ook in de werkelijke praktijk worden overlegmomenten bijvoorbeeld afgezegd, of zijn mensen afwezig.

Het viel me wel op dat mensen via chat en berichtjes wel erg bezig waren met het onderhouden van contact en vooral met het proberen om toch een 'overlegmoment' te prikken. Vraag is of dit niet voorbij gaat aan de functionaliteit die de spelomgeving biedt: nl. overleggen tijd- en plaatsonafhankelijk. Dat is blijkbaar nog een stap te ver. We laten met de 'nieuwe' middelen toch nog een beetje 'oud gedrag' zien.

Tot slot zie ik dat de deelnemers hier veel tijd en aandacht aan hebben besteed, en dat gewoon naast hun gewone werk. Complimenten daarvoor!"

SUMMARY OF FEEDBACK ON SESSION S3

1. *"Mij valt op dat er veel op verschillend niveau langs elkaar heen gesproken wordt: Harm en Karim doen veel inhoudelijke voorstellen en geven duidelijk en concreet aan wat ze zelf kunnen leveren. Karim zou ook zijn vragen concreet kunnen stellen. (i.p.v. 'hoe kijken jullie er tegenaan', en: 'kun je me voor vrijdag op een A4 laten weten wat jouw bijdrage aan deze casus kan zijn?'). Maar ook als deze vraag later in het spel wel gesteld wordt, komt daar niet altijd een duidelijk antwoord op.*
2. *Fatouch en Patty reageren vooral procedureel. Fatouch geeft aan dat zij alleen door een cliënt of collega-instantie kan worden benaderd. De vraag van Patty beantwoordt zij (daarom?) niet.*
3. *Patty doet een aantal voorstellen voor randvoorwaarden en criteria voor goed overleg en geeft inhoudelijk weinig bijdrage.*
4. *Nurdia probeert aan het eind zaken samen te vatten en laat de kans op regie nemen lopen. Ze stelt een overleg voor, maar dat komt er uiteindelijk niet van.*
5. *De uiteindelijke 'oplossing' komt vooral uit de koker van Karim en Harm. Zij hebben hier het hardst aan getrokken. Anderen hebben daarin wellicht kansen voor zichzelf laten liggen. Dat wordt vooral duidelijk als iedereen vooraf voor zichzelf had aangegeven: wat wil ik dat de uitkomst van dit overleg wordt? Wat wil ik dat mijn rol hierin uiteindelijk wordt? Dan krijgt deze uitkomst pas betekenis."*

"Mijn complimenten voor dit stukje werk! Het is op zich al een hele prestatie dat de spelers die elkaar en de casus niet uit hun eigen werkpraktijk kennen, via hun inlevingsvermogen tot een dergelijk proces en eindresultaat zijn gekomen.

Het convenant is een startdocument en zo heb ik het ook gelezen. Er zijn nog belangrijke vervolgstappen te zetten, zoals de uitwerking (als vervolgstap) van de soort van samenwerking. Hoe wordt het netwerkverband getypeerd? Welke condities passen daarbij? In het convenant hoort dit misschien nog niet thuis, maar zaken als het tijdsaspect en de taaklast die het netwerk hiermee aangaat, zijn heel belangrijk om op basis van dit convenant concreet uit te werken. Is de bedoelde netwerksamenwerking haalbaar en te doen in het geschetste tijdspad, met de beschreven inzet van de partijen en gezien de doelen die daarbij gesteld worden? Hierbij horen ook duidelijke richtlijnen bij mogelijke afwijkingen van de afspraken. Wat doet het netwerk bijvoorbeeld als een bepaalde partij (en zeker de direct betrokkenen zoals de vader of overige familieleden!) niet aanwezig zijn of hun afspraken niet nakomen? Wat gebeurt er met/in het overleg als de groep niet compleet is?

Er worden erg veel doelen gesteld. Het zijn ongetwijfeld goede en constructieve doelen, maar een verdeling in enkele hoofdoelen (prioriteren!) met subdoelen of werkdoelen, ziet er overzichtelijker uit. Het is mooi dat jullie dat zelf ook aangeven, onderaan het rijtje met doelen! De meeste doelen in het convenant zijn lange termijn doelen. Maar hoe lang duurt een lange termijn doel? Het is beter om direct het tijdsaspect te kaderen. Dat geeft meer beeld en richting aan en schept ook vanzelfsprekende verplichtingen ten aanzien van de prestaties in het netwerk.

Wat ik in de praktijk vaak meemaak, is dat de verschillende 'losse' afspraken weinig verband of functie hebben naar het totaal van het beoogde eindresultaat. Hoe verhouden de onderdelen in de afspraken zich tot het totaal? Misschien komt er dan ook een betere indeling van het geheel: eerst de doelen met een heldere prioritering (eerst dit, dan dat; met heldere tijdsindicaties). Pas daarna de concretiseringen in taakafspraken en samenwerkingsafspraken. Afspraken worden in netwerkverbanden vaak nogal vrijblijvend geformuleerd.

Het beste is om afspraken zo concreet mogelijk te formuleren. Bijvoorbeeld in de zin: 'het gezin is binnen de gestelde termijn schuldenvrij', kun je ook concreet maken door die termijn daar op die plek te benoemen. Ook zou je ervoor kunnen kiezen om al in een convenant helder te maken dat er een operationalisering in tijd en ruimte gemaakt moet worden, als eerste stap na het accorderen van dit convenant.

De paragraaf over 'succesvol zijn of niet'. Je zou de voorwaarden voor succes kunnen benoemen, maar dan ook graag heel concreet. Vooral over wat die condities precies inhouden. Bij verzuim van Mouad: hoe vaak en over welke periode? Enzovoort.

Last but not least, is het interessant te zien of de rolopvattingen uit het spel op de een of andere manier zichtbaar worden in het convenant. Zien jullie die zelf terug? Ik heb te weinig zicht op het proces om daar iets over te kunnen zeggen maar daar ben ik in het kader van de testsimulatie wel benieuwd naar."

On the next pages we give an excerpt from the end product of one of the H-sessions, concerning the established framework of normative ground rules. This example is followed by the feedback from a practice expert.

KADER VAN NORMATIEVE GRONDREGELS

Dit is de samenvatting van onze gezamenlijke normen en waarden voor de hulpverlening en samenwerking met Mouad en zijn ouders en voor de samenwerking met elkaar.

Waarden voor omgang met het gezin:

Respect, eerlijkheid, de gezinsleden zijn belangrijk voor elkaar en hun omgeving. We zoeken naar verbinding met hun cultuur, helpen verbinden naar de andere cultuur en met de hulpverlening. We zijn aanwezig en transparant in ons handelen.

Normen voor omgaan met het gezin:

We benaderen de ouders van Mouad met respect voor hun rol en verantwoordelijkheid als ouders. Mouad benaderen we met respect voor zijn ouders en zijn inzet om zijn situatie te verbeteren.

We helpen met zoeken naar oplossingen voor praktische problemen, hiermee kunnen grotere problemen worden aangepakt/voorkomen. En hiermee proberen we een ingang te krijgen voor de achterliggende problemen. De achterliggende problematiek heeft hoge prioriteit maar je zult moeten investeren om daar bij te mogen komen.

We kiezen een positieve benadering, zijn stimulerend en uitdagend om nieuwe stappen in ontwikkelingen te zetten.

Erkenning gevend voor de problemen die er zijn en het leed dat dit veroorzaakt, maar ook voor de inzet die ouders en Mouad tonen om hun situatie te verbeteren.

Duidelijke doelen en heldere afspraken over grenspaaltjes. Wie die overschrijdt heeft een probleem. Geen ‘kop in het zand’ strategie. Geen wegpoetserij, geen afwijzing van persoon, maar wel van gedrag. Wel openheid en dialoog, waardoor degene die een grens overschreden heeft, zelf geactiveerd wordt om dit te herstellen.

Het uiteindelijke doel is dat Mouad over de vaardigheden beschikt waarmee hij op het rechte pad kan blijven.

Uitgaan van en gebruik maken van de krachten zowel in als rond het gezin.

Waarden voor het samenwerken met collega’s

Vakmanschap, vertrouwen, verbinden,

Respect voor elkaars positie en daaruit voortvloeiende mogelijkheden, maar ook respect voor elkaars grenzen.

Ons doel is dat Mouad en zijn ouders zelf verantwoordelijkheid voelen en dat toepassen op hun gedrag en hun omstandigheden, daar zetten wij ons met onze professionele mogelijkheden voor 100 % in.

Onze doelen, grenzen en piketpaaltjes zijn helder.

Normen voor samenwerking met collega's.

Transparant, open, geen ‘doekjes winden om’ … Duidelijke grenzen. Gedeelde probleemstelling met gedeelde prioriteiten in het plan van aanpak door zowel de betrokken gezinsleden als door de hulpverlening. Wanneer een plan is vastgesteld moet het ook consequent worden gedragen en doorgevoerd.

FEEDBACK ON SESSION H5

1. *"Om te beginnen: het is een zeer handzaam en overzichtelijk kader geworden. Ik kan me goed voorstellen dat dit praktische goed hanteerbaar is gedurende overleggen over de casus. Mooi vind ik dat per partij en rol op heldere wijze de belangrijkste waarden geformuleerd zijn. Op deze manier krijgen samenwerkingspartners een goed beeld van wat verwacht mag worden van elkaars inzet en aandachtspunten.*
2. *Het is echter de vraag of elk punt een grondregel voor morele en ethische waarden vertegenwoordigt. Veel punten zijn vooral procesgerichte en operationele doelen, waar waarschijnlijk wel morele en/of ethische doelen achter schuilgaan. Dat zal ongetwijfeld duidelijk worden met de teksten uit chat en berichten erbij. Het voordeel is echter dat de punten zeer praktisch van aard zijn. Sommige punten blijven echter ook in dit overzicht nog te abstract en vragen om concretisering (bijv. 'structuur bieden' of meer sociale contacten en aansluiten bij systeemverantwoordelijkheid).*
3. *Over de samenhang tussen de bijdragen van de verschillende netwerkpartijen kan ik niets zeggen, omdat dit niet in het schema tot uitdrukking komt. Ik denk dat – bij praktische gebruik – nog wel verbeteringen te maken zijn op dit punt. Het schema is dan een uitstekend startpunt om de abstracties aan te pakken en om de samenhang er in aan te brengen, bijvoorbeeld door er een heldere gebruiksaanwijzing bij te schrijven (hoe gaan we met het kader om?)."*

SUMMARY OF FEEDBACK H6

1. *"Het eindproduct, het kader van morele en ethische grondregels, bevat in mijn ogen geen onrealistische elementen.*
2. *Inhoudelijk kan ik me vinden in de gezamenlijke normen en waarden die geformuleerd worden.*
3. *Waar het problematisch wordt, is wanneer ik deze waarden en normen wil bezien in het licht van de casus: zijn dit wel de beste waarden en normen voor hulpverlening in deze concrete situatie? Dat zou heel goed kunnen, maar met mijn praktische kennis op dit vlak, kan ik daarover geen oordeel geven.*
4. *Het is overigens zo dat het document zelf geen duidelijkheid geeft over de afwegingen. Er wordt geen inzicht gegeven in hoe de keuzen zijn gemaakt en waartegen ze zijn afgezet. Met andere woorden: het afwegingsproces wordt in het kader zelf niet duidelijk gemaakt voor een buitenstaander als ik. Zeer waarschijnlijk worden de gedachteprocessen en keuzen achter dit kader wel duidelijk met de chats en berichten erbij."*

CODING OF SESSION DATA

In this section we display the coding structures that emerged from several rounds of coding the transcripts of all session documents. The data have been analyzed in a comparative method, using Excel, to get a deeper insight in the data and categories. It would go beyond the purpose of this appendix to show these intermediate steps of data analysis. We limit our examples to the coding strategies in MaxQDA. Subsequently, we show the coding system of the first round of initial coding and second round of selective coding of the session output analysis. The *initial codes* are clustered alphabetically.

In the 2nd round of selective coding, we attributed statements to the three action fields and three content fields of exchange, as described in sections 6.5 of the dissertation. The action fields comprise *investigating* (verbreden van situationele kennis); *strengthening* (versterken van netwerkrelaties en strategieën) and *justifying* (verhelderen, onderbouwen van interventiekeuzen). The content fields are *situational cognition* (situationele kennis); *discourse participation* (discoursparticipatie) and *reflection on intervention* (reflectie op handelen).

After the selective coding, we exerted two checks on the coded segments to effect a meta-analysis of session performance and knowledge construction. As we considered *justifying* and its sub-categories applicable to all session interaction, we decided to perform a check and to go through all session data to attribute statements to the codes of *accountability, vision, management* and *responsivity.* Besides, we conducted a check of all session data to the three content fields. The results of these checks are presented after the coding system of the 2nd round of coding.

A casus (case) [0]
- reflectie op hulpverlening [17]
- aanvullingen [26]
- afstemming en aansluiting [21]
- daadkracht [13]
- duiding en interpretatie [24]
- opties en uitwegen [23]
- prioritering [19]
- probleemdefiniëring [24]

B discoursanalyse (discourse analysis) [0]
- feitelijke prestatie netwerk [8]
  - normering van waarden [3]
  - genoemde waarden [35]
  - urgentie en prioritering [8]
  - gebruik sociale kaart [3]
  - niet alles lukt [8]
  - eigen inzet netwerkpartners [50]
  - er op af [10]
  - gebruik sociaal netwerk [39]
  - krachtgericht werken [8]
  - wenselijke inzet partijen [26]
- netwerkversterking [12]
  - visie en daadkracht [9]
    - vreemde manoeuvres [4]
    - roepen i.p.v. doen [1]
    - (niet) weten wat tot je taak behoort [1]
    - procesleiding [2]
  - vragen stellen aan elkaar [16]
    - responsiviteit [39]
    - elkaar corrigeren [17]
    - checken van posities en aannamen [10]
  - richtingsvoorstellen [14]
    - netwerk op een lijn krijgen [13]
    - duidelijkheid en grenzen [18]
    - plannen en strategieën [9]
    - drang en dwang [8]
  - buiten je boekje treden [13]
  - gebruik elkaars expertise [8]
    - expertise buiten netwerk [5]
  - aansluiten bij elkaars aanpak [12]
    - overleg en uitwisseling [10]

gender [1]
perspectiefwisseling [4]
samenwerking [0]
spelopbrengst [1]
spelproces [3]
na het spel [2]
Cyberdam applicatie [2]
verbetervoorstellen spel [1]
aanvullingsvoorstellen Cyberdam [1]
ervaren problemen [23]
omgaan met de functies [14]
chat [48]
inrichting [0]
ontwikkelwensen [0]
referentievaliditeit [5]
rollenspel en simulaties [2]
reflectieve dialogen [1]
feedback [6]
voortgang spel [13]
toepassing werkpraktijk [2]
mediavaardigheden [0]
facilitering [0]
transfer [7]
overlegcultuur [3]
beroepszekerheid [2]

D reflectie op handelen (reflection on action) [0]

aanpak [5]
doelen en criteria [2]
kritiek op insteek en aanpak [24]
gedegen en methodisch [5]
buiten de kaders handelen [4]
onderbouwing [0]
anticiperen legitimering handelen [3]
realisme [7]
verantwoording [0]
excuses [4]
het delen van verantwoordelijkheid [6]
opdracht en verantwoording [5]
verantwoordelijkheid [7]
overdracht en nazorg [8]
verheldering [0]
wat gedaan moet worden [25]
wat gedaan kan worden [15]

buiten de kaders denken [6]
eisen, grenzen en beperkingen [15]
opties en uitwegen in de situatie [0]
toekomstverhalen [8]
positief toekomstperspectief [7]
keerpunten [15]
lichtpuntjes [9]
prioriteiten [6]

We continue with the code system of the 2nd round of selective coding. The *selective* codes are grouped according to the three action fields and the three knowledge fields. After the code system of the 2nd round, we state the outcomes of two general checks on justifying and the three content fields.

2nd round of Session output analysis- Selective coding

1 verbreden (investigating) [0]
Waarneming (observation) [0]
feiten beschrijven [28]
gezin [0]
doorbreken van patronen [15]
botsing culturen [4]
sociaal isolement [4]
ingangen naar het gezin [26]
motivatie gezin voor hulp [12]
aansluiten [37]
bemiddeling [24]
positief labelen [15]
toekomst Mouad [23]
bouwmarkt [3]
kleine stappen [4]
buitenlandstage [1]
OTS [1]
van schrikbeeld naar voorbeeld [2]
de werf [6]
verder zoeken oorzaken [4]
wensen, eisen en mogelijkheden [20]
naar Marokko [4]
samenhang systeem [14]
praktische hulp [27]
eisen, grenzen en beperkingen [16]
Interpretatie (interpretation) [7]

interpretaties van feiten [41]
gemiste kansen [7]
duiding [31]
probleemdefiniëring [25]
Aanvulling (supplementation) [31]
opties en uitwegen in de situatie [1]
toekomstverhalen [8]
positief toekomstperspectief [9]
keerpunten [18]
lichtpuntjes [16]
prioriteiten [7]
wat er speelt [9]
kijk op problemen [26]
cruciale omstandigheden en feiten [13]
achter de feiten zoeken [26]
aanvulling van situationele gegevens [50]
Begrip (understanding) [0]
afstemming en aansluiting [29]
buiten de kaders denken [11]
daadkracht [17]
eigen kracht benutten [29]
normeringen [93]
opties en uitwegen [28]
prioritering [23]
reflectie op hulpverlening [33]
respect en autonomie [12]
waarden [153]

2 versterken (strengthening) [0]
Verwachting (expectation) [0]
aansluiten bij elkaars aanpak [26]
overleg en uitwisseling [11]
vragen stellen aan elkaar [21]
reacties op elkaar [47]
elkaar corrigeren [25]
checken van posities en aannamen [11]
wenselijke inzet partijen [32]
taakverkenning [25]
kritisch bevragen [22]
elkaars aanpak [22]
cultuur [7]

begripsverduidelijking [1]
wat gedaan moet worden [28]
wat gedaan kan worden [18]
vermijden en niet doen [15]
commitment [0]
excuses [4]
het delen van verantwoordelijkheid [13]
opdracht en verantwoording [7]
verantwoordelijkheid [7]
overdracht en nazorg [8]
standpunt verduidelijken [4]
anticiperen legitimering handelen [7]
realisme [13]
stemgeving [13]
transparantie [14]
voorwaarden netwerk [17]
resultaatgerichtheid [14]
kritische evaluatie [12]
bereikbaar en beschikbaar zijn [20]
instappen, terugtreden, overdragen en nazorg [14]
Regiepogingen in het netwerkoverleg (indicating directions in session exchange) [36]
sturing accountability [21]
sturing visie [27]
sturing management [27]
sturing responsiviteit [20]

3 verhelderen (justifying) [0]
Reflectie op interventie (reflection on intervention)
wat vermeden moet worden [14]
wat gedaan kan worden [15]
wat gedaan moet worden [25]
onderbouwing handelingskeuzen[0]
anticiperen legitimering handelen [3]
realisme [7]
verantwoording van aanpak [5]
doelen en criteria [2]
kritiek op insteek en aanpak [24]
gedegen en methodisch [5]
buiten de kaders handelen [4]
kader normatieve grondregels [1]
doelen en betekenis van interventie [24]

regels en structuur [4]
cultuur [2]
normeringen [93]
waarden [129]
krachtgericht werken [8]
er op af [10]
niet alles lukt [8]
urgentie en prioritering [8]
genoemde waarden [35]
normering van waarden [3]
reflectie op hulpverlening [17]

Checks of action and content fields

The four selected sub-categories of *justifying* are: 1) accountability: the justification of choices of intervention; 2) the development of a vision on the problem situation and on the network possibilities and collective responsibility; 3) paying attention to the feasibility and practical management of proposed interventions and 4) taking into account what the esteemed responsivity of all parties could be, and respecting the interests of the client, the family, the social network and the professional network partners.

Verantwoording (accountability) [279]
Visie op situatie en op interventie (vision) [274]
Organisatorisch vermogen (management) 341]
Responsiviteit (responsivity) [448]

The check of coded segments that could be ascribed to three themes of situational cognition, discourse analysis and reflection on intervention resulted in the following outcome:

Situationele kennis (situational cognition) [819]
Discoursanalyse (discourse analysis) [811]
Reflectie op interventie (reflection on intervention) [790]

THE QUESTIONNAIRE

Directly after the game ended, the participants were invited to answer an online questionnaire about the possibilities of transfer of online simulation gaming in their personal work practices. The outcomes were used to better understand the statements from the reflective dialogues. As explained in sections 6.6 and 7.3 of the dissertation, we expected that the answers to the questionnaire would be complementary to the statements from the reflective dialogues. In 0 of this appendix we integrate some of the most appealing outcomes from the questionnaire, in conjunction with quotes from the reflective dialogues.

To give an impression of the questionnaire, we list the main 45 questions below.

1. Persoonsgegevens - Geslacht
2. Persoonsgegevens - Leeftijdscategorie
3. In welke sector ligt je belangrijkste werkervaring?
4. Hoe lang ben je werkzaam in het domein Jeugd en Opvoeding?
5. Wat is je functienaam, bv. gezinsvoogd, teamleider, supervisor, adviseur
6. Wat is je hoogst afgeronde opleiding?
7. Wat is je belangrijkste expertise of professionele deskundigheid?
8. Hoe ontwikkelt zich jouw professionele deskundigheid het beste?
9. Hoe belangrijk zijn onderstaande onderwerpen voor de ontwikkeling van praktische handelingskennis in je werk?
10. Hoe ben jij bezig met de ontwikkeling van praktische handelingskennis?
11. Welke rol spelen jouw netwerkverbanden voor de ontwikkeling van je persoonlijke praktische handelingskennis?
12. Hoe effectief is de ontwikkeling van praktische handelingskennis in jouw werk?
13. Wat zou je nog toe willen voegen over de ontwikkeling van praktische handelingskennis in je werk?
14. In hoeverre werk je samen in netwerkverbanden met andere professionals?
15. Wat vind je van de resultaten van het werken in netwerkverband in jouw praktijk?
16. Wat zijn knelpunten in netwerksamenwerking in jouw werkpraktijk?
17. Wat zou je nog willen toevoegen over netwerksamenwerking in jouw werkpraktijk?
18. Welke van de volgende elektronische communicatiemiddelen gebruik je voor je werk?
19. Waarvoor gebruik je de computer bij de communicatie met medeprofessionals?
20. Hoe staat het met de multimediale vaardigheden in jouw werkpraktijk?
21. Waarvoor gebruik jij internet en sociale software in je beroepspraktijk?
22. Wat betekenen sociale media in jouw beroepspraktijk?
23. Voor welk doel gebruik je sociale media in je eigen praktijk?
24. Wat zijn motiverende factoren voor online uitwisseling van ervaring en kennis in je werkpraktijken?

25. Wat zijn voor jou belemmeringen voor online uitwisseling van ervaring en kennis in je werkpraktijken?
26. Wat zou je nog toe willen voegen over het gebruik van sociale media en multimedia voor kennisuitwisseling?
27. Welke interactieve toepassingen voor de ontwikkeling van praktische handelingskennis gebruik je zelf al?
28. In welke situaties gebruik je interactieve vormen voor de ontwikkeling van praktische handelingskennis?
29. Wat zijn je ervaringen met interactieve toepassingen voor de ontwikkeling van praktische handelingskennis?
30. Heb je nog andere ervaringen met of opmerkingen over de ontwikkeling van praktische handelingskennis?
31. Welke verhalende technieken en middelen gebruik je in je praktijk?
32. Wat is in jouw praktijk de zin van het naspelen van situaties in een rollenspel?
33. Hoe gebruik je simulatiespelen voor je werk met cliënten?
34. Hoe gebruik je simulatiespelen voor je werk met medeprofessionals?
35. Wat kunnen online rollenspelsimulaties betekenen voor de ontwikkeling van praktische handelingskennis in jouw werkpraktijk?
36. Wat kunnen online rollenspelsimulaties bijdragen aan de samenwerking in netwerkverbanden in jouw praktijk?
37. Wat zou je nog willen toevoegen over interactieve toepassingen en simulaties in je werk?
38. Wat was je motivatie om aan de online rollenspelsimulatie mee te doen?
39. In hoeverre stemt het uitgevoerde simulatiespel overeen met praktijken waar jij mee te maken hebt?
40. Wat concludeer je als je terugkijkt op je rolprestaties in het uitgevoerde spel?
41. Wat was je belangrijkste drijfveer om je deelname aan het spel vol te houden?
42. Heeft het spel je nieuwe ervaringen opgeleverd?
43. Wat vond je tegenvallen in het spel?
44. Wil je zelf nog iets toevoegen over het uitgevoerde simulatiespel?
45. Is er nog iets waar niet naar gevraagd is, maar wat je zelf wilt toevoegen?

Reflective dialogues

On the next page, some screenshots are given, from the coding of the transcripts of statements from the reflective dialogues. They were effected in debriefings in three cities: Amersfoort, in Utrecht and Roosendaal. After the screenshots, we give the code system of transcripts of statements from the reflective dialogues.

From reflective dialogues 1 (debriefing in Amersfoort)

Figure 52: Screenshot coding reflective dialogues (Amersfoort)

From reflective dialogues 2 (debriefing in Utrecht)

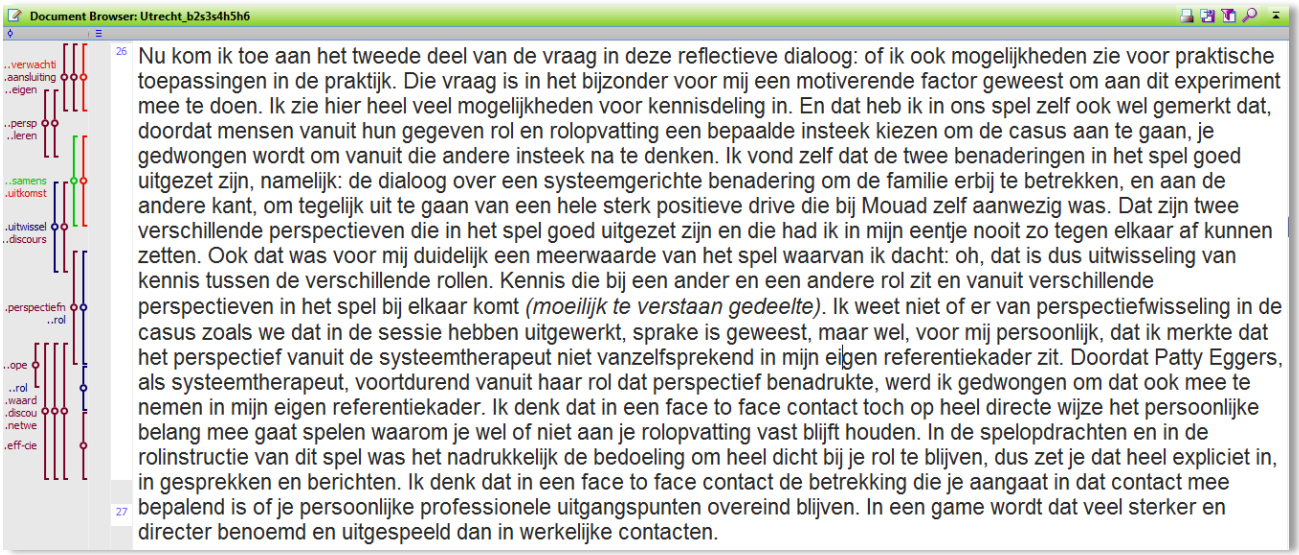

Figure 53: Screenshot coding reflective dialogues (Utrecht)

From reflective dialogues 3 (debriefing in Roosendaal)

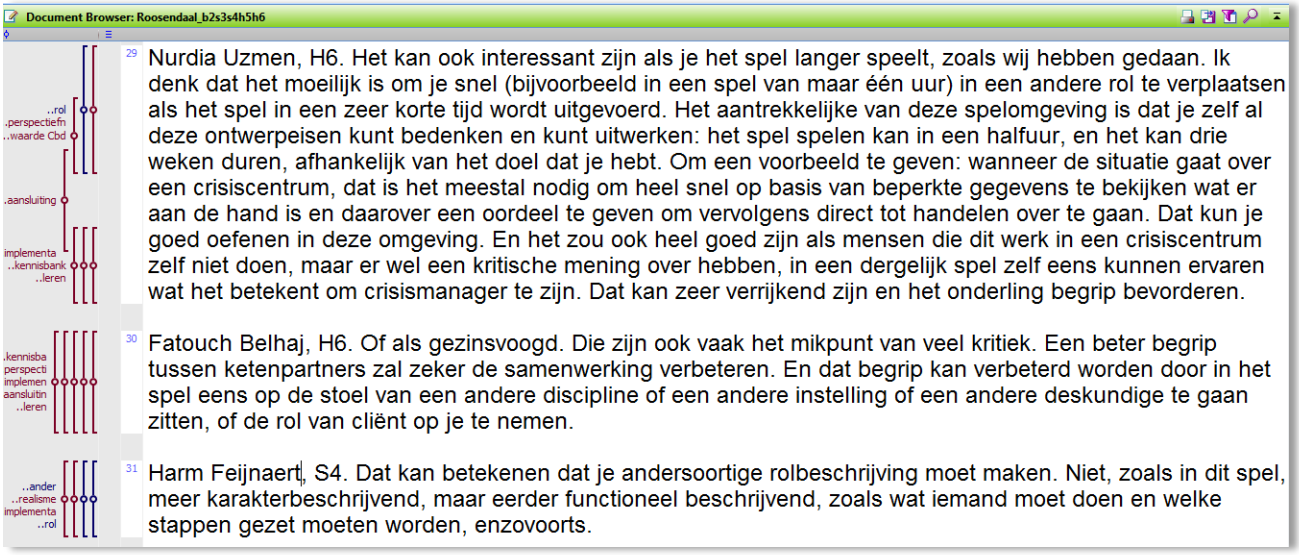

Figure 54: Screenshot coding reflective dialogues (Roosendaal)

Code system of transcripts of statements from the reflective dialogues

casus (case) [9]
- gezin [3]
- Mouad [6]
- systeem [5]

online kennisontwikkeling (knowledge development)[3]
- bereik [2]
- efficiency en effectiviteit [23]
  - discours [30]
    - begrijpen [1]
    - regie pakken [7]
  - reflectie op handelen [16]
  - situationele exploratie [5]
- feedback [7]
- kennisbank [5]
- modern [4]
- openheid en veiligheid [4]
- perspectiefname [23]
- tekst [5]
- tijd- en plaatsonafhankelijkheid [4]
- waarde Cyberdam [19]
  - aansluiting bij werkomgeving [24]
  - eigen praktijk [19]
  - implementatie [15]
  - leren [33]

- netwerkkader [9]
- realisme [14]

spelconcept (game concept) [13]

- ander spelconcept [17]
- factor tijd [9]
- feedback score [9]
- rol [28]
  - gender [5]
- spelomgeving [7]
  - benutting info [7]
  - looks & feel [5]
  - techniek [14]
- spelspanning [3]
- uitwisseling [9]

spelproces (session process) [13]

- bij de opdracht blijven [11]
- creativiteit [3]
- interactie [31]
  - chatroom [18]
  - deelname en inzet [21]
- narrativiteit [5]
- plezier [16]
- uitkomsten [22]
- verwachtingen [22]
  - vergelijking met b1 [2]
  - voorbereiding op spel [7]

spelproduct (session product) [3]

- assessment [4]
- effect interventie [4]
- samenspel [17]
- verhaal [3]

Despite the clarifying efforts of the various coding and code comparison techniques that we applied, an overview of quotes from the reflective dialogues may give a richer impression of how the respondents think about the possibilities and constraints of this way of network exchange. We produced an extensive document with 'text boxes', containing the most noteworthy statements as to the user-experiences of the youth care professionals in the sessions and from the online questionnaire that was presented right after ending the game. These text boxes served to afford insight in the outcomes by the group of experts, that provided feedback in different stages of the multiple case study. In the following section, we shall illustrate the reflective dialogues with a selection from these text boxes of user-experiences and insights from the reflective dialogues and questionnaire.

EXTRACTS FROM THE REFLECTIVE DIALOGUES

The next pages contain statements and views concerning some themes of the reflective dialogues and questionnaires. It is a relative small selection from a package that cover 38 themes of assertions. The total has been discussed with the group of experts (see section 0 of this appendix).

The texts in this part are taken out of an extensive report on the processes and results of the online simulation gaming sessions of the game *When nothing else works ….* More precisely, they are taken from the questionnaire, which was presented at the end of the session to the participants, and from the outcomes of the reflective dialogues. The *italicized* sentences are verbatim quotes from respondents during the reflective dialogues. On several occasions we give samples of outcomes from the questionnaire. Whenever we quote data from this questionnaire, this is indicated at the end of that particular section All other statements and comments refer to the reflective dialogues. The quotes are in the original language and so are the explicative comments. For the convenience of the non-Dutch readers, the titles of the paragraphs have been translated in English.

COMPARING GAME EXPERIENCE AND WORK PRACTICE

De casusinhoud is herkenbaar voor de respondenten. Ruim 70% zegt soortgelijke situaties in eigen praktijk tegen te komen en ook de opbouw van het spelscenario komt herkenbaar en relevant over. Nog meer respondenten (ruim 80%) zeggen de rolnabootsing zinvol te vinden voor inleving en perspectiefwisseling. *(questionnaire)*

CONTENT OF KNOWLEDGE EXCHANGE

In de opdrachten ging het om het grondig verkennen van de situatie, het maken van een analyse en het vaststellen van een gezamenlijke strategie en reflecteren op interventies. De grootste valkuil was dat spelers soms erg snel en veel te vroeg overschakelden op de hulpmodus en allerlei concrete acties voorstelden.

Sommigen hadden dat goed in de gaten. "*Het viel me op dat de overige spelers al bezig waren met vragen als hoe moeder benaderd zou moeten worden, terwijl dat niet de opdracht was*." Anderen bleven tot het laatste moment een soort 'eigen agenda' volgen, door voortdurend concrete interventies en hulp voor te stellen, terwijl dat niet de opdracht was. Het was niet voor iedereen evident dat eerst de situatie goed in beeld moet zijn, vervolgens het netwerk en de strategie en dat het formuleren van concrete activiteiten gebaseerd moet zijn op bewuste normatieve kaders. Hoewel dit in ondersteunende documenten expliciet wordt beschreven en de opdrachten daarin duidelijk zijn, bleek het volgen van deze logische stappen een cruciale moeilijkheid te zijn. Het leek erop dat mensen met een achtergrond van projectmanagement of onderwijs hier beter mee uit de voeten konden dan anderen. In

sommige sessies werd gezamenlijk met wisselend succes nagedacht over dit probleem. "*We waren met elkaar heel erg aan het zoeken: wat is nu precies de bedoeling? Wat moet nu precies? Iedereen ging heel erg meteen de inhoud in om er van allerlei dingen bij te halen.*"

Spelers geven aan dat ze verwachten nog meer effect te bereiken wanneer simulatiegames rondom een bepaald thema cyclisch worden ingezet en er met regelmaat op eerder resultaat en gemaakte keuzen kan worden doorgewerkt. Men denkt dat deze manier van werken leerzaam is voor methodisch en systeemgericht werken en voor casemanagement, naast het nut voor de onderbouwing van keuzen van bijvoorbeeld outreachende benaderingen. "*Het effect is dat je betere inschattingen leert maken van de consequenties van gekozen interventies en van een gevolgde aanpak.*"

Een respondent zegt: "*Ik denk dat een digitale spelomgeving als Cyberdam heel geschikt kan zijn bij multiprobleemsituaties, omdat je snel de verschillende visies van hulpverleners kunt zien. Ik denk dat dit in de eerste plaats alleen al veel meer goodwill schept bij jezelf, omdat je ziet waarom hulpverleners bepaalde keuzes maken en je gestructureerd samen kunt kijken naar wat werkt en wat niet werkt. En ook dat je samen kunt kiezen waar je voor gaat en waar je achter staat. Ik denk dat, wanneer je elkaars visie hebt leren kennen, je ook veel beter de verschillende visies kunt analyseren en bespreken, zeker bij ingewikkelde probleemsituaties.*"

Gebleken is dat de deelnemers succesvol waren in het bedenken van scenario's, en dus in het virtueel uitpluizen van de situatie en de mogelijke ontwikkelingen daarin. In vergelijking tussen de uitkomsten in de drie actievelden van verbreding van opties en uitwegen, versterking van het netwerkverband en de verheldering van interventiekeuzen, is er op het situationele vlak de grootste productiviteit gerealiseerd. Verhalen ontwikkelen is een creatieve daad waar veel mensen wel raad mee weten. "*In deze spelomgeving kun je een verhaal over iemand ontwikkelen, waarbij je er gaandeweg het spel nog van alles aan kunt toevoegen. En dat vind ik eigenlijk ook wel leuk*". Op het onderdeel van netwerkaansturing, afstemming en projectstrategie is in kwantitatief opzicht minder tot stand gebracht. Bij dit onderdeel waren de spelers sterk afhankelijk van het denken in het netwerkverband, en dat is lastiger. Feit is dat netwerkversterking minder opleverde dan de verbreding van situationele mogelijkheden. Het knelpunt zat voornamelijk in het samenbrengen van alle intenties van inzet en expertise in een gezamenlijk document met een praktische, operationele waarde die van toepassing is op deze complexe zaak en dit specifieke netwerk. Het derde veld, dat van ethische, morele en professionele verantwoording, bleek eveneens moeilijk, maar hier vanuit de inhoud en niet vanuit de aanpak, zoals bij de netwerkversterking. Het was te merken dat de spelers minder vaak oefenen met reflectie op interventies en dat het langer

duurde voor de spelers in een sessie op één lijn kwamen. De abstractie van begrippen als 'waarden' en 'normatieve grondregels' maakte het voor verschillende spelers moeilijk. Toch zijn er vooral in deze sessie heel belangrijke verhelderingen tot stand gebracht ten aanzien van wat het netwerk belangrijk acht en waarmee verder gewerkt kon worden aan een richtsnoer voor het handelen. Bij de reflectieve dialogen werd door verschillende spelers gezegd dat het gezamenlijk nadenken over waarden en over normatieve kaders heel belangrijk is voor de praktijk en dat dit instrument zich hier goed voor leent. "*In mijn dagelijks werk kom je dilemma's tegen die ook in het spel aan de orde kwamen. In de praktijk loop je vaak aan dergelijke dilemma's voorbij, maar in deze spelomgeving moest je er werkelijk goed bij stilstaan. We moesten in onze sessie erg zoeken naar een visie waarmee we met dit gezin verder konden komen*."

Uit een andere uitspraak kan worden opgemaakt dat de respondenten beseffen hoe moeilijk het is om erg expliciet te zijn in de formulering van waarden en dat hij/zij erkent dat dit in de sessie zelf nog niet voldoende zuiver is gedaan. "*Het kan zijn dat er achter de keuzen in het kader wel waarden schuilgaan vanuit ieders aparte rol, maar deze worden niet zo expliciet benoemd. Ik weet niet precies wat het moment zou kunnen zijn geweest, waarop we dat anders hadden kunnen doen. Maar het normatieve kader bleek toch een vrij praktische uitwerking van strategieën te zijn geworden, weliswaar vanuit waarden, maar waarbij de waarden zelf niet worden benoemd in het kader*."

Het zou kunnen dat, wanneer in een spelontwerp de opdrachten meer in gezamenlijkheid met de directe actoren worden voorbereid, er voor gezorgd kan worden dat de uitwerking dichter bij het denken en bij de praktijkwereld van de actoren blijft. Een goed spelontwerp kan veel nieuwe elementen bevatten die de grenzen van de praktische handelingskennis van de participanten verruimen.

TEMPO, FOCUS AND CONTROL IN SESSIONS

Er was veel betrokkenheid van spelers bij hun eigen sessiegroep, terwijl de spelers elkaar persoonlijk niet kenden van werkrelaties in de echte praktijk. "*Ondanks dat het virtueel was, hadden we een goed contact en voelde het spel als 'echt contact hebben'. Aan de andere kant wist je natuurlijk ook, dat als je niet mee deed, dat het spel dan stagneerde. Dus het had wel een tempo*." Inhoudelijk zat niet iedereen op dezelfde lijn en bij de spelregie ontstond in sommige sessies de indruk dat men niet goed in de gaten hield met welke opdracht men exact bezig moest zijn. Een speler verwoordt dit zo: "*Ik dacht dat we een samenwerkingsconvenant gingen opleveren met afspraken over hoe we zouden gaan samenwerken. Vooral dat laatste, over hoe we zouden moeten samenwerken, daar werd eigenlijk niet over gesproken*." Dit zijn leerzame aangrijppunten voor een follow-up.

Als je de interactie wat losser kunt zien van de spelopdrachten, kun je ook anders oordelen, zoals blijkt uit het volgende: "*Het was heel leuk om te zien wat je samen kunt bereiken als het gaat om wat werkelijk belangrijk is in een multiprobleemcasus, en over manieren waarop je contact kunt krijgen met een dergelijk gezin. Dat heeft mij dus wel een heleboel opgeleverd*." Hieruit blijkt dat de betrokkenheid groot is bij het netwerk en bij de casus, maar dat het wellicht lastiger is om volgens een methodische lijn te blijven werken. Een kenmerk van jeugdzorgproblematiek is dat zo ongeveer alles belangrijk is, maar niet alles heeft prioriteit en niet elke betrokkenheid leidt tot verandering of ontwikkeling. Een metaperspectief is dan nodig om inzicht te krijgen in eigen gedachte- en interventiepatronen. Iemand zegt: "*Het lastige voor mijn gevoel was dat de gedachtegang van iemand in het spel zulke onverwachte sprongen kan maken. Van de ene gedachte zonder meer overschakelen naar de volgende gedachte, en dan een derde gedachte... en dan wist ik ook niet altijd of ik het kon volgen. Dat maakte dat ik geregeld terugging naar de vraag: ja maar dat was nu eigenlijk precies de opdracht? Heb ik het nou goed begrepen? Soms had ik het idee dat het zo een nieuwe kant op zeilde en dat maakte dat ik regelmatig terug naar de opdracht keerde*." Deze speler heeft een belangrijk punt te pakken: wie neemt de leiding en wanneer. In het spelontwerp van de 1e en 2e ronde sessies is gekozen voor het openlaten van een regulerende, regie voerende taak, maar in een latere 3e uitvoeringsvariant van hetzelfde spel, is er expliciet en per spelfase een taak voor één van de spelers gemaakt om de regie ter hand te nemen. Niet alle spelers zijn daar even effectief en doortastend in geweest. Iemand die deze taak wel op zich had genomen, reflecteert hierop aldus: "*Dus ik zei: jongens, die interventies zijn al bedacht en daar gaat het niet om in deze sessie. Volgens mij moeten we nu kiezen en precies afspreken wat we gaan doen. Ik vond het heel lastig om hierin te sturen en het voortouw te nemen. Welke rol mag ik nu pakken? Hoe moet ik nu in godsnaam omgaan met deze situatie!?*" Regie nemen wordt door iedereen als een noodzaak gezien in een dergelijke overleg, maar wat gebeurt er wanneer daarover geen expliciete afspraken zijn gemaakt of als de verwachte regie niet voldoet? De respondenten zeggen dat dit een heel herkenbaar en vaak terugkerend verschijnsel is.

In de 10 verschillende sessies werd dit probleem steeds op een andere manier opgelost. Soms heel succesvol en soms verliep dan minder geslaagd. "*Ik vond het wel heel leuk om te zien dat er iemand was die ons vanuit een visie voorhield waar we naartoe moesten. Dat was heel prettig. In mijn geval had ik die sturing ook wel een beetje nodig.*" En een ander zegt: "*En wat ik daarvan in de echte praktijk terug zie is de vraag 'wie heeft de regie?'. Dat is één ding. Niet dat we daar strijd over hadden, maar er waren wel verschillende mensen die een regierol hadden*." Een ander heeft een tegengestelde ervaring: "*We hadden op een gegeven moment in onze sessie een gezinsvoogd die niet de leiding nam, maar dat deed Harm, de jeugdreclasseringswerker. Maar eigenlijk was hij (Harm) in de casus al lang uit beeld! Dus ik dacht: het is heel fijn dat iemand nog*

verantwoordelijkheid neemt in deze situatie, maar het is eigenlijk te zot voor woorden dat een gezinsvoogd niet de taak op zich neemt om te zeggen: die kant gaan we uit!" Is het (ongevraagd) nemen van regie in netwerken zoveel anders in de echte praktijk? Iemand zei geleerd te hebben dat het toch vooral gaat over hoe je een dergelijk proces zelf kan helpen sturen. En hoe je dat zo kunt doen. dat het de overigespelers niet tegen de borst stuit.

De keuze om de game master zo weinig mogelijk sturing te laten geven was verstandig, omdat interne processen in een netwerk moeten worden ervaren en zo nodig zelfstandig moeten worden opgelost. Een sessie moet zo autonoom verlopen, zodat er authentieke ervaringen worden opgedaan. Er worden opmerkingen geplaatst over het effect van kleine bijsturingen van de game master tijdens de uitvoering. "D*e game master zei: 'jullie gaan te hard en teveel allerlei kanten op.' Toen is er een kleine stilte in de interventies van mijn kant ontstaan. Dat kwam voort uit het aftasten van elkaars bedoelingen en de onzekerheid daaromheen*". De deelnemers aan de testsimulaties hadden, in dit spelconcept, weinig zicht op wat de medespelers precies aan opdrachten binnen kregen. "*Ik wist natuurlijk ook niet wat precies de opdrachten zouden zijn van de andere spelers. Maar dit kon je, zag ik in de derde week pas, wel teruglezen in de documenten. Als er gerichte, verschillende opdrachten aan spelers werden gegeven, die meer sturing gaven aan het spelverloop, zoals een regierol voor een van de spelers, zeker bij ons, dan was het waarschijnlijk minder vrijblijvend geweest*."

PERCEPTION OF GAME INTERACTION

Sommigen missen het gezicht van de ander bij de interactie. Technisch is het mogelijk om rolspelers op de homepagina in beeld te brengen. Ook kan het in bepaalde situaties wenselijk zijn om tussentijds feedbackmomenten in te lassen of reflectieve dialogen te organiseren over de inhoud en het proces, waarbij de spelers elkaar ontmoeten, eventueel zonder bekendmaking van de koppeling van personen aan rollen. In één van *The Seven Pioneers* (de game *Visie*) zijn dergelijke feedback bijeenkomsten gehouden, waarbij wel alle rollen 'aanwezig' waren, maar deze kwamen niet uit dezelfde sessie. Het is niet onderzocht wat dergelijke besprekingen doen met het proces, de kwaliteit en de inhoud van de kennisuitwisseling. Op de wijze zoals gedaan bij het *Visie* spel, maken face-to-face bijeenkomsten het mogelijk om grondig te spreken over het spel en de rolperformance, zonder iets af te doen aan de kracht van anoniem rollenspel. We hebben gezien dat anonimiteit een toegevoegde waarde heeft ten opzichte van de face-to-face overlegvormen, vooral ten aanzien van de extra dimensie die rolwisseling voor de spelers biedt (man/vrouw; allochtoon/autochtoon; enz.).

Het is belangrijk om de kracht van een bepaalde toepassing in de spelomgeving, zoals de chatfunctie, zuiver te houden en optimaal te benutten. De chatroom is overigens een goed middel gebleken om de beeldvorming over elkaar in een sessie te ondersteunen. "*De inter-*

actie in de chatroom vond ik heel leuk en heel intensief, maar dat zorgde ook voor een verbinding." Over een sessie waarin de spelers zeer intensief gebruikmaakten van de chatroom, zegt een speler dat het voor hem/haar als een druk werd ervaren om goed in de chat mee te doen, omdat anders het gevaar zou ontstaan de draad te gaan missen of veel discussies later na te moeten lezen.

Iemand vertelt over een achterstand die maar moeilijk in te halen was. "*Het was in het begin moeilijk voor mij om in het spel te komen en ik ben degene die bijna afhaakte, want ik kwam pas vier dagen na de start boven water en toen was het spel al vier dagen verder. Er zijn dan al zoveel stappen gedaan door de anderen dat je eigenlijk gevoelsmatig achterloopt en er niet meer goed inkomt*." Met deze speler is dat gelukkig nog helemaal goed gekomen. Ze zegt: "*Maar goed, ik ben doorgegaan en heb keurig mijn rol vervuld en vond het uiteindelijk erg leuk. Dus op het moment dat je invloed krijgt op het spel wordt dat ook leuker. Er volgde toen een periode dat ik er meer inzat een beter kon reageren en toen ging alles veel beter*."

Een ander laat zien wat er in het begin van de sessie eigenlijk allemaal gevraagd werd van de spelers. "*Ik heb het eerste deel van het spel ervaren als multitasking. Ik moest op meerdere 'borden' tegelijk spelen. Voor mij gold dat er een 'bord' was van het chatten, 'never done before...'; de anderen leren kennen; en het spel leren kennen en leren omgaan met de knoppen en de functies in de spelomgeving. En de vaardigheid om met elkaar in een online omgeving samen te werken. Plus het goed leren kennen en verkennen van de casus*."

In sommige sessies ging men over op het afspreken van vaste momenten voor overleg. Dat werkte niet voor alle deelnemers even goed. Het doet ook geen recht aan het karakter van de flexibiliteit van tijd en plaats. Dit is een voorbeeld van een door de spelers in een sessie onderling gemaakte spelregel die niet paste bij de briefing en spelinstructie. Bij het ontwerp en de voorbereiding moet rekening gehouden worden met deze autonoom verlopende procesingrepen door spelers zelf. Wil je dat toestaan of wil je daarop bijsturen? Een uitgebreidere instructiebijeenkomst kan ook overwogen worden, waarin de online samenwerking goed wordt voorbereid, met een proefsessie bijvoorbeeld. In de constellaties binnen dit onderzoek was dat praktisch gezien bezwaarlijk, omdat het teveel beslag op de beschikbare tijdsinvestering zou leggen. Sommigen werden hierdoor wel wat 'overvallen' door de gang van zaken in de sessie en het was vooral voor mensen met een drukke agenda moeilijk om hiermee om te gaan. Soms liepen er zaken mis in een sessie, ten aanzien van de participatie van een actor, die bijvoorbeeld enige tijd te weinig actief was. Dit werd in de sessie, en in de nabespreking, gezien als een overeenkomst met de echte praktijk, waar ook sprake kan zijn van een minder goed presterende partij. Sommigen vroegen zich

bij de reflectieve dialogen hardop af of een minder presterende netwerkpartij wellicht bewust in het spelconcept was ingebouwd.

Sommigen gaven aan dat de interactie in het spel hen zo in beslag nam dat men min of meer losgezongen werd van de casus: "*Ten aanzien van de inhoud van de casus viel mij op dat wij Mouad een beetje uit het oog verloren en dat was wel een openbaring voor mij*." Een ander kijkt terug op zijn/haar eigen rolprestaties en vraagt zich af: "*Ik had in mijn rol wel een paar keer de vraag of ik niet teveel en te snel oplossingsgericht bezig was. Want als je kijkt naar de casus vond ik hem niet zo.... Het was in de casus: einde verhaal. 'We zitten met de handen in het haar'. Ik vond de situatie helemaal niet zo moeilijk, dat soort 'ettertjes', als Mouad, die zie je wel vaker. En als je een beetje goed luistert en kijkt, kom je er achter wat voor verhaal er achter zit. En daar moet je dan mee aan de slag*."

Op andere momenten in de reflectieve dialogen wordt het duidelijk dat het uitwisselen van tegengestelde meningen vanuit verschillende rollen en disciplines goed werkt voor het vormen van een eigen kijk op de zaak. "*Dat zijn twee verschillende perspectieven die in het spel goed uitgezet zijn en die had ik in mijn eentje nooit zo tegen elkaar af kunnen zetten. Ook dat was voor mij duidelijk een meerwaarde van het spel waarvan ik dacht: oh dat is dus uitwisseling van kennis tussen de verschillende rollen. Kennis die bij een ander en een andere rol zit en vanuit verschillende perspectieven in het spel bij elkaar kom*." Tijdens de reflectieve dialogen blijkt dat er ook een grote betrokkenheid is op elkaars reacties. Die betrokkenheid wortelt in de gedeelde ervaring van het spel. Men luistert nauwkeurig naar elkaars opmerkingen over de casus, de rolprestaties en indrukken uit het spel en men laat elkaar uitspreken. In verschillende ronden reageert men ook op elkaars uitspraken. "*Ik wil nog even reageren op die eerdere opmerking dat dit spel niet zal passen binnen een outreachende benadering. Ik denk juist van wel omdat je in een outreachende aanpak vooral veel moet doen met het netwerk om een cliënt heen. Ik denk daar anders over dan jij*."

PERCEPTION OF PERSONAL ROLE PERFORMANCE

Of meer de persoonlijke professionele uitgangspunten dan wel die van de rolbeschrijving zijn gebruikt, daarover twijfelt een groot deel (65%) en een deel (22-40%) denkt niet dat persoonlijke opvattingen en meningen vanuit de gespeelde rol door elkaar liepen. Een vast deel van 13% heeft de opvatting dat eigen meningen en die van de rol vermengd zijn in het spel. Bij de vraag of persoonlijke professionele opvattingen losgelaten konden worden ten gunste van vrije experimenten met denkbeelden vanuit de rolbeschrijving, kan niemand volmondig met ja antwoorden. Een groot deel (65%) twijfelt en zegt dat dit ten dele gelukt is, terwijl 35% hier duidelijk niet in is geslaagd. Over de 360◦ feedback op rolprestaties zijn de meningen verdeeld. Hoewel de meesten (65%) hierover positief oordelen, zijn

er toch nog veel (35%) die de feedback niet als een stimulans hebben ervaren. *(questionnaire)*

Motivation to maintain full participation in the game

Bij de vraag naar de belangrijkste drijfveer om deelname aan het spel vol te houden, terwijl het niet gemakkelijk was en veel tijd vroeg, geven de meeste spelers aan dat ze een betrouwbare speler wilden zijn voor de medespelers. Ook waren veel spelers benieuwd of ze nieuwe inzichten op konden doen en keek men uit naar het resultaat uit het spel. Anderen vonden het 'gewoon leuk om mee te doen'. Een enkeling zegt hiertoe te zijn aangespoord door de spelregie. Een deel zegt 'de onderlinge interactie bleef mij in het spel trekken'. *(questionnaire)*

Learning experiences in the game

"*Wat ik van de sessie heb geleerd, is dat Cyberdam geschikt is voor het inleven vanuit een ander perspectief, in de huid kruipen van een ander. Daardoor zie je gemakkelijker andere mogelijkheden*." Sommige spelers denken hierbij vanuit het netwerk: "*Wat ik leerzaam vond is dat je een situatie vanuit verschillende professionals kunt bekijken en daardoor soms op een ander spoor gebracht wordt. Dat geeft veel nieuwe informatie*." Het spelen van een rol werd als zeer aantrekkelijk ervaren en leverde nieuwe ervaringen over en inzichten in zichzelf op. "*Zodra ik de computer inschakelde, werd ik Fatouch! En ging ik ook vanuit haar visie te werk. Gelukkig lag die visie ook heel dicht bij wat ik zelf belangrijk vind. Ik vraag me af hoe het zou zijn wanneer ik een rol had moeten spelen die veel verder van mij af staat. Ik kon mij dus heel goed vinden in de rolbeschrijving van Fatouch. Maar ik ging daar wel heel erg bewust vanuit reageren en dat was voor mezelf ontzettend leerzaam*." Een speler merkt op dat er veel manieren zijn om rolbeschrijvingen een zodanige inhoud te geven dat daarmee een zekere sturing aan het spelverloop wordt. "*Dat kan betekenen dat je andersoortige rolbeschrijving moet maken. Niet, zoals in dit spel, het beschrijven van karakters en taakopvattingen, maar eerder functioneel beschrijvend, zoals wat iemand moet doen en welke stappen gezet moeten worden.*" Heel terecht refereert een ander aan het belang van voldoende speeltijd voor een sessie: "*Het aannemen van een rol wordt interessanter als je het spel langer speelt, zoals wij hebben gedaan. Ik denk dat het moeilijk is om je snel in een andere rol te verplaatsen, wanneer het spel in een zeer korte tijd (b.v. in slechts één uur) wordt uitgevoerd*." Het aantrekkelijke van de gebruikte spelomgeving Cyberdam is dat je al deze ontwerpeisen kunt bedenken en kunt uitwerken. In de randactiviteiten van het onderzoek, zoals presentaties op congressen, is gebleken dat er spelvarianten mogelijk zijn met een ultra korte speelduur van drie kwartier. In dat geval krijg je niet de diepgang die de temporisering van de reflectie op handelen in een speelduur van drie of vier weken oproept, zoals in de multiple case study.

Bij de terugblik op de rolprestaties tijdens de reflectieve dialogen is men openhartig naar elkaar en toont men dat ervan geleerd kan worden. "*Ik vond dat de spelers heel erg lekker met elkaar samenwerkten*." Maar er is ook opbouwende kritiek en de professionals laten zien welke verwachtingen ze hadden in het spel. "*De gezinsvoogd deed in het begin niet mee, dat is waarschijnlijk een realistisch gegeven, en die gezinsvoogd is in de eerste week vervangen. Van een gezinsvoogd verwacht je een regierol en dat zo iemand enige samenhang in het geheel aanbrengt. Een gezinsvoogd kan een voorzittersrol vervullen en sturing geven en dat misten wij in het begin. Later stelde de gezinsvoogd voor om bij elkaar in de Chat te komen op een bepaald tijdstip, maar was ze er zelf niet op dat moment*." Een ander zegt: "*In mijn sessie werden veel complimenten uitgedeeld. Dat vond ik een heel erg constructieve manier om met zo'n casus om te gaan, waarbij je toch ook wel echt verschillende opdrachten hebt*." Iemand vertelt dat het voor haar/hem makkelijker was om vrij te communiceren: "*Omdat er geen lading op zit zoals je in een persoonlijk contact nog wel eens tegenkomt: 'ja maar die casus, die oplossing, dat standpunt is van míj.' Vooral wanneer je op elkaars terrein komt. Bijvoorbeeld: ja, maar ik ben hier de gezinsvoogd en ik weet dit het beste. Dat had je in dit spel niet. Het was zonder lading en kon je toch vanuit diverse kanten in zoomen. Je kon verschillende invliegroutes hebben en daarin werd één en één wel drie, vond ik. Dus ja, dat vond ik er leuk aan*."

NEW EXPERIENCES IN THE GAME

Gedrag: Voor 52% van de spelers gold dat het gedrag in het spel niet afweek van het gedrag in de normale praktijk en daar komt nog ruim een kwart bij voor wie dit een beetje opging. Dus een ruime meerderheid merkt dat het gedrag in het spel niet veel of niet afwijkt van het bekende gedrag en dat wordt bevestigd door de antwoorden op een vraag waarin feitelijk het tegenovergestelde wordt onderzocht, namelijk of de speler zich in het spel anders gedroeg en de speler tot andere uitspraken kwam dan in het echte beroepsleven. Voor 70% ging dat niet op, voor 22 een beetje en voor 9% was dat wel zo. *(questionnaire)*

Situationele verkenning. Een gemengd beeld doemt op bij de vraag of het spel hielp om een situatie grondig te verkennen. Een deel (43%) zegt van niet en een gelijk deel (43%) zegt een beetje, maar 13% zegt dat dit sterk het geval was. *(questionnaire)*

Netwerkdynamiek. Bij de vraag naar verschillen in de ervaren netwerkdynamiek in het spel ten opzichte van de echte werkpraktijk gaat het tegenovergestelde beeld op: men ervoer in meerderheid (57% gedeeltelijk en 9% sterk) een andere dynamiek dan in de echte praktijk. Daar staat tegenover dat dit voor toch nog 35% niet opging. Voor een grote groep (35%) betekende het spel een stimulans om de eigen stem te laten horen. Voor een riant deel van 39% ging dat gedeeltelijk op en 26% had niet die ervaring. *(questionnaire)*

Reflectie op interventie. Bijna iedereen is het eens met de stelling dat het spel hielp om na te denken over de persoonlijke interventievoorstellen en om deze te verantwoorden. Voor 65% gaat dat sterk op, voor 30% gedeeltelijk en slechts 4% (één speler) is dit niet het geval geweest. *(questionnaire)*

VIEWS ON THE UTILITY OF SIMULATION GAMING

Een slotopmerking bij de nabespreking: "*Ik vind het heel erg leuk om dit allemaal zo te horen. Ik ga er eigenlijk steeds meer over nadenken en merk nu dat ik zie dat dit op mijn werk ook heel goed gebruikt zou kunnen worden*." Er zijn ook mensen die niet direct zien hoe deze manier van kennisdeling in de eigen praktijk ingezet kan worden. Structuren moeten daarop aangepast worden, werkpatronen moeten die nieuwe manier van kennisuitwisseling toelaten. Kortom: er is ondersteuning van het management nodig voor een effectief gebruik van online kennisuitwisseling. Ook de aansturing vraagt om aparte aandacht: "*Ik zie wel een probleem wat betreft tijd. Er gaat al zo veel emailverkeer heen en weer en hoe krijg je iedereen erachter? Er moet wel tijd zijn om al die visies te lezen. Dat is wel een vraag bij hoe je Cyberdam wilt inzetten*."

Als instrument om kennis op te frissen en bij te spijkeren, zouden online rollenspelsimulaties volgens de respondenten goed kunnen voldoen. "*Als je aan het werk bent, ben je vooral heel erg bezig met praktische zaken en niet meer zoveel met theorie. Juist dan kun je in deze omgeving weer eens flink met nieuwe theorieën en methodieken stoeien. Zodat je even terug kunt gaan naar de basis en weer helemaal goed moet nadenken*." Ook denkt men dat de omgeving geschikt is om iemand sneller in te werken. "*…omdat je in Cyberdam in korte tijd heel snel kunt leren wat je in bepaalde situaties moet doen*."

Nadenken is een rustiger proces in een online omgeving, maar zodra de chatroom daarvoor wordt gebruikt kan dat voordeel teniet gedaan worden door de snelle interactie. "*Wat ik fijn vind aan het virtuele, is dat je even goed kunt nadenken voordat je iets gaat zeggen. Het risico van het gebruik van de chatroom was soms wel de snelheid. Wanneer ik aan het reageren was op een opmerking van iemand in de chat en aan het nadenken was (typen, typen, typen,...) dan hadden drie anderen al gereageerd en dan kwam ik er als 'een spuit 11' nog eens achteraan. Dan waren de anderen alweer een stap verder*."

Reflecteren op interventies is lang niet overal een expliciete bezigheid. "*..over die waarden en normen denk je niet altijd na bij casuïstiekbesprekingen. Daarom ging het in dit spel allemaal ook wel een heel stuk dieper. Dat vond ik heel boeiend.*" Iemand die niet in het primaire proces van jeugdzorg werkt, viel het op dat "*…de anderen de situatie heel erg gingen uitdiepen, zoals: hoe gaat het met die moeder, wat is er precies aan de hand in het gezin?*" Een ander laat zien dat

stilstaan bij dilemma's nog te weinig plaatsvindt: "*In mijn dagelijks werk kom je dilemma's tegen die ook in het spel aan de orde kwamen. In de praktijk, is mijn ervaring, loop je vaak aan dergelijke dilemma's voorbij, maar in deze spelomgeving moest je er werkelijk goed bij stilstaan. We moesten in onze sessie erg zoeken naar een visie waarmee we met dit gezin verder konden komen.*" Dat er nieuwe gezichtspunten zijn ontwikkeld wordt bevestigd. "*Dat heeft weldegelijk geleid tot een nieuwe visie. Hierdoor ben ik ervan overtuigd dat deze omgeving heel geschikt is voor intervisie. En dan niet alleen binnen de eigen organisatie maar ook met ketenpartners.*" Het feit dat je samen na kunt denken levert meer op dan in je eentje een multiprobleemsituatie overdenken. "*Ik denk dat de applicatie een heel geschikt middel is om met elkaar aan het werk te gaan, en voor visieontwikkeling, of om na te denken over ingewikkelde probleemsituaties waar je normaal gesproken in je eentje maar moeilijk uitkomt.*"

Een gezinsvoogd in een van de sessies merkt op: "*We waren wel heel veel bezig met elkaar over cliënten, zonder dat zij daar zelf bij betrokken waren. Dus: praten over cliënten maar minder met cliënten. Ik denk dat het een enorme aanvulling zal zijn wanneer deze ouders ook hadden meegespeeld, en ons zouden kunnen doen voelen wat de consequenties van onze interventies zouden zijn.*"

Iemand zegt dat het voor 'kritische omstanders' heel goed zou zijn om zelf eens een spelsessie mee te maken, rondom een lastig dilemma. "*Dat kan zeer verrijkend zijn en het onderlinge begrip bevorderen.*" Een ander voegt toe dat deze reflectieoefening heel goed is voor een netwerk, vooral wanneer een van de partijen vaak het mikpunt is van kritiek, zoals de gezinsvoogd, die vaak onder vuur ligt. "*Een beter begrip tussen ketenpartners zal zeker de samenwerking verbeteren. En dat begrip kan verbeterd worden door in het spel de zaak eens vanuit een andere discipline of een andere instelling te bezien of om eens op de stoel van een andere deskundige te gaan zitten, of de rol van cliënt op je te nemen.*"

Eigenlijk ziet iedereen veel voordelen van de inzet van online kennisdeling, vanwege het vrije karakter van experimenteren en uitwisselen. "*Ik zie gewoon heel veel nut van deze manier van werken en dit spel. Zeker voor opleidingen, natuurlijk bij trainingen en opleidingscentra, maar ook voor leren in bedrijven en organisaties, waarbij je een virtuele wereld inzet, waarin je ongestraft kunt oefenen met interventies die je bedenkt, of hoe je kunt gaan samenwerken en kunt leren onderhandelen met samenwerkingspartners.*"

Dat het spel geen eindpunt is, maar een startpunt voor betere resultaten in netwerkverbanden, wordt door de spelers ook echt zo ervaren, getuige de volgende uitspraak. "*Ik denk dat we uit onze sessie als product een goed overzicht hebben gemaakt waarin ook heel duidelijk de waarden zijn genoemd, naar mijn idee. Ik denk dat de discussie over welke waarden gehanteerd worden en hoe deze worden genormeerd, niet in de dagelijkse praktijk van de jeugdzorg gevoerd*

wordt. Ik vond het wel interessant om te kijken hoe dat hier in zijn werk ging. Het resultaat liet zien dat ons eindproduct nog maar een aanzet is tot... en dat dit een andere invalshoek is om waarden in grondregels te formuleren."

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Summary

YOUTH CARE KNOWLEDGE EXCHANGE THROUGH ONLINE SIMULATION GAMING

DESIGNING AND APPRECIATING ONLINE SIMULATION GAMES TO ENHANCE YOUTH CARE NETWORK EXCHANGE

This study investigates whether it is possible, desirable and feasible to apply online simulation gaming for knowledge exchange among youth care workers and what the design and implementation requirements are for an effective use as an additional tool for the exploration of complex cases. We examined the user-perception as to relevance, usability and utility of online simulation gaming for youth care network exchange. The outcomes of this research are briefly summarized in seven points:

1. Online simulation gaming enables deep exploration of complex issues and has significance in youth care practices as an addition to normal face-to-face exchange;
2. The dynamic and knowledge-intense practices of youth care ask for a type of games that is based on a limited set of guidelines in an open structure (*principle-based games*).
3. The chief requirements of model design have to do with a realistic representation of problem issues and interaction patterns and refer to an actor-centered, constructionist approach;
4. Online simulation games have to be firmly embedded in larger programs of intervention support and professionalization. This places high demands on the monitoring of the entire process, from problem definition, model and artifact design, implementation and evaluation of results, up to and including the follow-up in practice;
5. Online simulation gaming supports the main network tasks of informing, reflecting and decision making and can be used to broaden situational cognition, strengthen networks and to reflect on intervention;
6. Practitioners consider online simulation gaming as a convenient way to jointly learn and to prepare for intervention. The time, pace and place independent participation favors deep reflection on interaction and contributions. The actors consider game elements and the possibility of anonymous role-play as strengths to experiment with strategies and behavior.

7. Online simulation gaming encourages perspective change, which is valued as enriching for the development of individual network capabilities and professional competences.

This summary starts with a short overview of the chapters of the dissertation. After that, we introduce the research context, the conceptual foundation, the empirical framework and the results, conclusion and discussion.

SHORT OVERVIEW OF THE CHAPTERS

This research is about the design and appreciation of online simulation gaming for youth care multidisciplinary network exchange. Chapter 1 and 7 summarize and describe the research outline and results. In the first part the rationale of the study is explained as the need to enhance insights in youth care network exchange, in favor of more efficient and effective child and family services. Chapters 2, 3 and 4 deal with *model development*, while 5 and 6 have their emphasis on *model appraisal* by the intended users. Chapter 2 underpins the choice of online simulation gaming for the examination of network exchange, from the consideration that narratives and scenario development are at the heart of both youth care and simulation gaming. In chapter 3 we discuss the expectations from practice regarding the potential of online simulation gaming and we give an overview of the points of attention, conditions and potential barriers to the use of online simulation games in youth care. Chapters 2 and 3 provide the basis for the architecture of the multiple case study of chapter 6. Chapter 4 links design choices to the requirements in programs of learning, change or intervention. We describe how a newly developed series of games in curricular programs led to a coherent set of design fundamentals that is applicable to online role-playing simulation games in youth care contexts. In chapter 5 we connect design choices of online simulation gaming to scientific theories about game design and analysis. We present a tool to structure the torrent of session data from simulation games. This structuring of session data intends to support the debriefing and reflective dialogues after the games and the transfer of findings to practice. Chapter 6 describes the case study, including the theoretical and empirical basis. Chapter 7 presents the findings that lead to a constituted theory of online simulation gaming for youth care network exchange, with a reflection on the research method and on the significance of the outcomes. Further, we make some recommendations for the implementation and for additional research. Finally, the answers to the research questions are drawn up along the lines of relevance, usability and usefulness of online simulation gaming in youth care network practice.

The dissertation describes a qualitative design research about model development and the appreciation of online simulation gaming for professional exchange in view of intervention in complex parenting and child rearing situations. The interaction in a gaming environment on the Internet involves the exploration of problem situations, network possibilities and reflection on strategies and interventions. The game is a systemic representation of a real world problem situation that is taken as resource for the design of game concept and artifacts. The actors are assigned to roles that may differ from their normal life. The participants engage in realistic interaction and are responsible to find solutions and to enhance the problem situation. The research has a central, design-based and problem solving proposition that online simulation gaming contributes to the renewal of methods and instruments of youth care network exchange, in view of more timely and better interventions. The meticulous exploration, the preparation of strategies and the reflection on choices and approaches in simulation games may provide teams and network partners with a compressed and powerful impetus to participation and commitment in complex problem situations. The research challenge is to find out what youth care professionals think of these alleged potentials of online knowledge exchange in simulation games. In a multiple case study, a broad range of practice experts played roles in a series of sessions and worked out future scenarios, strategy agreements and normative frameworks for intervention, based on a complex deadlock situation from practice. The session actors gave their substantiated opinions in reflective dialogues and questionnaires about the perceived value and significance of online simulation gaming for network exchange.

The research aims at design and utility, which implies the study of design requirements and implementation conditions and entails the examination of user-experiences and views of youth care professionals as to online simulation gaming for network exchange. The main research question has been formulated as follows:

What are the design and implementation requirements of online simulation gaming for youth care network exchange and how do youth care professionals value online simulation gaming for network deliberation about complex problem situations?

The empirical research questions concern the practices of network exchange and the value and significance of online simulation gaming as a method and tool. The empirical research questions concern the content and conceptual design criteria, as well as the experiences and opinions of youth care network partners about the functionality of the model and the environment. As we shall see, the respondents are convinced that online simulation games can be employed to understand, predict and analyze behavior, developments and effects in youth care problem situations. Youth care professionals believe that online simulation

gaming may be beneficial for knowledge exchange in multidisciplinary networks. On the other hand, they foresee practical obstructions to the implementation. Youth care practices impose particular demands on the design, the effectuation and moderation and the evaluation and transfer of results to practices. These requirements are explained in chapter 3, 6 en 7 and concern process accompaniment and technical and organizational support. The theoretical significance of this research is the enrichment of knowledge about youth care network exchange and the advance of design and game theory for learning and change. The scientific validation of this claim asks for different research methods, compared to the explorative design approach of this research.

We may distinguish two strands of research in this project. The first regards *model development* and the question, whether it is possible to effectively represent systems elements of complex youth care problem situations in the design of virtual artefacts and role-playing simulation games. The second strand concerns *model appreciation* by youth care professionals, referring to online simulation gaming for the enhancement of the effectiveness and efficiency of network exchange. Besides literature search and practice inquiries about youth care knowledge exchange and game and simulation theory, various trial runs and tests simulations have been carried out in organizations. The main research data come from a series of online simulation games in a multiple case study. We applied a balanced interchange between positions of practitioners and observers (Klabbers, 2009) as a key-element of the method of online simulation gaming for youth care knowledge exchange. We may conclude with the assertion that online simulation gaming can be employed to compare and study systems characteristics from practice (*practice world*) with patterns of systems relations in virtual network exchange (*game world*), in view of dialogues about probable, possible and preferable development (*future world*).

THE CONTEXT OF RESEARCH

We witness an tremendous increase of rapidly evolving social media for contact, learning and the sharing of information and opinions. Online simulation gaming is an example of these new modes of social interaction. Social media change the way people learn and behave and influence professional social practices. Virtuality, mixed reality experiences and adaptation play a major part in working and learning in modern society. It appears that the game-based approach and the perspective change in online simulation games strongly appeal to collaborative knowledge construction and strategy creation. The narrative and metaphorical impact of jointly developed stories and scenarios in online simulation games may lead to the discovery of ways out of deadlock situations or to new behavior. This assertion seemed relevant to youth care practices and led to the question whether online

simulation gaming could be an relevant, useful and utile extension to the repertoire of methods and instruments for network exchange about multi-problem, multi-actor and multi-reality situations. The multiple biases of clients and social professionals require to emphasize and deal with varieties of interests, positions and perspectives in problem situations. As perspective change is a purposeful option in online role-play simulation gaming, our assumption was that this way of exchange and learning could be conducive to gain new experiences and insights.

The quality of network exchange among youth care workers is vital for successful intervention. Positive cooperation and effective coordination depend on the way strategic strengths and network competences are used, stimulated and improved. And yet, only little research has been done on processes of youth care network exchange. We simply do not know precisely how network actors explore situational information and how they coordinate their interventions, or how they justify their choices of intervention. Network-consultation is a self-regulating, interactive thinking and reasoning process and studying the exchange may lead to a better comprehension of the professional rationality of reflection-in/on-action. The lack of practice-based insight may lead to different problems. Without a reasonable understanding of the nature and content of network exchange, it is hard to reflect on the relation between systems elements and intervention in problem situations and constellations of cooperation. It is very difficult to guide the enhancement of network competences and strategies if we do not know what the active substances are for effective network interaction. Deploying online simulation games may support the study of the network performance, provided that we are able to construct valid systems representations of problem situations (*model development*) and that we can realize active participation of all parties involved (*model appreciation*). The outcome of our research shows that it is possible to model knowledge exchange processes in youth care networks for online simulation gaming and that the analysis of outcomes leads to understanding processes and performances of network exchange.

THE CONCEPTUAL FOUNDATION

In chapter 2 we study the theoretical concepts of role-play simulation gaming in connection to the narrative and scenario-developing characteristics of youth care, in view of application in professional practice. We relate online simulation gaming in youth care practice to a certain class of games from the game methodology, *principle-based games*, to guarantee openness and enough discretional opportunities for a free flow of exchange and knowledge construction. Chapter 3 presents the main aspects of network exchange, as derived from the practice inquiries. According to our respondents, network exchange comes down to sharing situational information, mutual reflection and strategy development and

taking accountable decisions about intervention. We framed this as network functions of *informing*, *reflecting* and *decision making*. From the field explorations and literature search, three conceptual themes emerged that have been used to compose a theory on online simulation gaming for network sharing in youth care practices. The three themes are linked to what practitioners see as overarching content areas of knowledge exchange. The first is *situational knowledge* and covers facts, the detection of missing bits of information, perceptions, interpretations, and trying to achieve the best possible understanding of what is at stake in the problem situation. The second subject concerns *discourse participation* and includes the search for the best possible strategies for optimum commitment and performance by all network and situational actors. The third and last theme is about *normative reflection* on situational values, shared and conflicted interests and positions, relationships of power and dependency and on human dignity and autonomy. Youth care intervention can deeply affect the lives of children and families. It is obvious that care workers need to carefully consider and discuss their ethical and normative standards in view of the accountability of choices of intervention and strategy.

Besides an inventory of network behavior and conceptual themes, the practice inquiries delivered an outline of prospects and expectations of youth care professionals about online simulation gaming for network exchange. Online simulation gaming is an intense form of knowledge exchange and practice workers think that its use is appropriate for the exploration of complex problems and dilemmas. These are issues that cannot be resolved easily with everyday tools and resources and that ask for an 'extended mind', involving other experts and different interaction methods. Online simulation gaming basically offers an unlimited expansion of knowledge and experience to investigate complicated cases time, pace and place independently. The tool and method can also be used for job training and to test patterns of knowledge-to-action and action-to-knowledge. In practice, the enhancement of professional skills and attitudes is challenging and not easy and yet, the 'corporate knowledge and skills' are considered as the key to successful networks and teams. A better understanding of the professional rationality may support the improvement of network skills. Another challenge is to find new ways of sharing corporate expertise and to provide a stage for experienced workers to transfer their knowledge to younger or less experienced colleagues. Organizations find it hard to keep skilled and qualified staff engaged in long-term employment. Many quit their jobs due to little career chances and because of emotional and mental exhaustion. Youth care practices confront the resilience and coping strategies of individual care workers. Managers hope that tools and methods like online simulation gaming help to express and share successes and frustrations from practice.

Yet, the respondents anticipate obstacles to the development and implementation of simulation games in organizations. Digitalization and computerization are not exactly the focal point of attention in youth care practice. Current work practices are under great pressure and are still inadequately prepared for online simulation gaming. Innovation in youth care organizations appears to be a defiance. Despite all the initial enthusiasm and positive expectations and prospects within organizations, it was hard to proceed with actual implementation. Based on these practical constraints, we prepared an overview of general factors that may positively influence implementation and experimentation with online simulation gaming on the levels of professional, organization and practice research. The practice inquiries led to the proposition that the elaboration of environment, game concept, artefacts and method should be done in close cooperation with practice experts in order to create commitment and to meet practical requirements and conditions. This is the reason that we developed a collaborative and cyclic approach for the multiple case study (chapter 6). This approach describes an alternation of 'the narrative space' (practice) and 'the dialogical space' (meaning) through three stages of design, effectuation and evaluation. The collaborative study and elaboration of the problem case, artefacts and game model takes place in the narrative space (investigating the practice world). The dialogical space concerns game effectuation (sensemaking in the game world) and reflective dialogues on processes and performance (future scenarios of intervention and development).

The fundamentals of design and implementation of the multiple case study are developed from the outcomes of the practice inquiries and from seven online simulation games in curricular programs for the training of social professionals (chapter 4). These seven games afforded us the chance to test the theory of Klabbers (2009) about the relation of game model (design-in-the-small) and program objectives (design-in-the-large). Our choice to emphasize the mutual dependency of program and model had to do with the research questions and is connected to Hevner's theory (2004) about the position of design science between practice requirements (*model development*) and scientific rigor (*model appreciation*). In chapter 5, the design approach is related to the design research framework of March & Smith (1995). We adapted their scheme of design activities and design outputs by adding a dimension of categories for design analysis. This resulted in the construction of an analysis tool to structure the data flow from sessions of online simulation games. The analysis tool helps to map session performance to the conceptual themes of *situational cognition*; *discourse participation*; *reflection on intervention* and to the action fields of *investigating the situation*; *strengthening the network* and *justifying the choices of intervention*.

The practice inquires, the trial runs and test simulations made clear that the empirical part had to be done in a step-by-step approach in cooperation with practice experts. We chose youth care as research field and decided to recruit youth care professionals from a broad array of expertise, outside the organizational structures, to guarantee a maximum of motivation, responsibility and rich input in the case study. Model development (game design and artifacts) was mainly achieved in discussion with and through feedback from staff members of three large organizations and one institute of higher education. Model appreciation (effectuation and evaluation) was examined through the participation of a representative number of individual participants, who took part voluntarily and for own account and responsibility. We decided to apply a multiple case study strategy in view of the situational complexity of youth care problems and to be able to compare in-game behavior and interaction of actors in different sessions. We asked a group of experts to supervise the design and effectuation of the multiple case study and to provide feedback on the design, the method and approach and on all results. The game has been effected in 4 variants, 10 sessions and with 55 youth care professionals. A step-by-step approach would enable to improve the design on the basis of intermediate results in three rounds of sessions and with the feedback from the observing experts. Chapter 6 describes the results of the multiple case study and its theoretical and empirical foundation. In line with the research questions, the game model has been assessed on three levels: the relevance of online simulation gaming for the collaborative study of complex practice problems (case level); the usability in youth care networks (session level) and the usefulness for personal effectiveness (task level). We applied a 3 level structure of configuration, construction and evaluation, in which practice and observation took turns. The 1st level was dedicated to the design of the game model and artifacts. The 2nd level was about the construction of the game and the effectuation in sessions. To gain a better impression of the respondents' views on the practical possibilities of this tool and method in their own professional practices, we presented a questionnaire at the end of each session. On the 3rd level the actors participated in reflective dialogues on processes and results and on the perceived value and significance of online simulation gaming for youth care practices. The actors shared their opinion, not only about the tangible products of future scenarios, network agreements en normative frameworks; however, also about the relevance, usability and utility of the tool and method. The results from the reflective dialogues have been compared to an analysis of session data. The structuring of session data supported our interpretation and understanding of the statements of the participants.

RESULTS, CONCLUSION AND DISCUSSION

The teams of actors, who were brought together randomly, produced many serious options for intervention and change in the problem situation. These outcomes show that the model leads to a fruitful and meaningful exchange. The session products are interesting, though not the prime focus of research. We aimed at finding out whether model representation of a youth care problem situation would be possible and what the design and implementation requirements would be. The second part of research was directed towards the appreciation of this way of knowledge sharing by the intended users. Validation research of the positive impacts of online simulation gaming on network efficacy and problem situations requires different methods and technics, compared to the explorative design approach in this research. The results show that youth care professionals believe in the potentials of online simulation gaming for network exchange. They affirm that the method and tools are relevant, usable and useful for the study of complex issues from practice. On the other hand, they admit that the process of design, effectuation and evaluation asks a lot of time and a strong commitment to change and learning. It remains unsure, whether youth care professionals and organizations in general are prepared to invest enough time and energy in the implementation and advancement of online methods and tools for network exchange. In this regard, the session participants might be different from the average youth care professional. They may have shown a higher level of interest in innovation and in the use of social and digital media for network exchange and for the improvement of personal skills. This, however, has not been proven.

The ultimate goal of online role-playing simulations in youth care networks is timely, effective and durable intervention. The results from this research show that knowledge exchange through online simulation gaming supports the exploration of complexity in multi-problem, multi-actor and multi-reality situations in a compact, fast and effective way. The use of the corresponding method and tools may help to shorten costly and lengthy intervention trajectories. It is likely that these intensive, collaborative explorations in online simulation games may lead to better help, although this has not yet been confirmed. An effective investigation of the unique features of systems conditions and network constellations requires optimal conditions for learning. It seems that the environment and method are suitable and we argue for comparative effectiveness research in this regard. Additional research is also needed for the impact assessment of online simulation gaming as an intervention tool. The first field of results shows that online simulation gaming is relevant for network sharing. We have found that intricate youth care problems can be the starting point for a systemic representation in artifacts and that it is worthwhile to address complexity through online simulation gaming. The second field of results is about the strengthening of discourses, participation and skills that are vital for adequate network

operation. The actors affirmed an increase of discipline knowledge and a progress of skills of effective network interaction. At the same time, it became clear that the participants had difficulties with the discernment and strategic utilization of the practicalities and specificities of this particular network and problem situation. Tactical handling of potentials and coping with restraints and limitations in situations and networks can be trained and online simulation gaming offers a convenient arena for this. The third field of results concerns the usefulness of the online method and tools for the development of competences, personal talents and network abilities. The actors appreciated the game concept and anonymous role-play for perspective change and for the training of new attitudes, tactics and communication. They consider online simulation gaming as a meaningful resource for networking and workplace learning. The respondents point at thresholds to the implementation of online simulation gaming in organizations. Although a majority is positive about the prospects, it is noted that current work practices are insufficiently adapted to digital exchange. It is clear that organizations need to develop game expertise in view of a successful integration in work practices. As we are concerned with effective network exchange and intervention, it seems obvious to team up with research institutes and with game design specialists. At the same time, it seems wise to continue improving the application, in particular for the incorporation of new apps and social software for the sharing of information. An option is to develop an environment that is exclusively devoted to youth care.

Youth care needs appropriate, attractive and timesaving tools and methods to track down and engage the right expertise, also from outside the realms of knowledge and experience in local teams and networks. The work dynamics require that organizations and professionals incessantly build new alliances and the increasing demand for help asks to grasp all chances to enhance effectiveness and efficiency of practices. Studying processes of inter-thinking and joint reasoning about complex problems leads to a better comprehension of the sagacity of social professionals and networks en reinforces intervention theory.

Nederlandse samenvatting

KENNISUITWISSELING IN JEUGDZORG DOOR ONLINE SIMULATIE GAMING

Het ontwerpen en waarderen van online simulatie games voor kennisuitwisseling in jeugdzorgnetwerken

Onderzocht is in hoeverre netwerkuitwisseling in jeugdzorg kan worden gemodelleerd in online rollenspel simulatiegames en wat de ontwerpvereisten zijn om deze geschikt te maken voor informatie-uitwisseling en strategiebepaling in multiprobleemsituaties. Daarnaast is gekeken naar het oordeel van jeugdzorgwerkers over de relevantie, de bruikbaarheid en het nut voor kennisdeling, kennisontwikkeling en netwerkeffectiviteit. De uitkomsten worden kort samengevat in zeven punten:

1. Online simulatiegaming maakt kennisuitwisseling over complexe vraagstukken mogelijk en heeft betekenis voor de jeugdzorgpraktijk als aanvulling op face-to-face overleg;
2. De dynamische en kennisintensieve praktijken van jeugdzorg vragen om een type game, dat gefundeerd is op een beperkt aantal richtlijnen en op een open vormstructuur (*principle-based simulation games)*;
3. De belangrijkste eisen aan het modelontwerp hebben betrekking op een realistische representatie van casuïstiek, netwerkinteracties en een actor-gecentreerde en constructionistische aanpak;
4. Online simulatiegames vragen een stevige inbedding in bredere programma's van deskundigheidsbevordering of interventieondersteuning. Dit stelt hoge eisen aan de begeleiding van het hele proces van probleemdefiniëring, ontwerpen van modellen en artefacten, uitvoering en resultaatbespreking, met follow-up naar de praktijk;
5. Online simulatiegames ondersteunen de belangrijkste netwerkfuncties van informeren, reflecteren en beslissingen nemen en dienen ter verbreding van situationele cognitie, ter versterking van netwerken en voor de reflectie op interventie;
6. Praktijkwerkers vinden online simulatie gaming een geschikte manier voor gezamenlijk leren en het voorbereiden van interventies. De tijd-, tempo- en plaatsonafhankelijke deelname en de daarmee samenhangende mogelijkheid om van stap tot stap diep na te denken over de interactie en bijdragen, de game elementen en de optie om anoniem deel te nemen aan het rollenspel worden als sterke punten ervaren voor het experimenteren met strategie en gedrag;

7. Online rollenspelsimulaties maken perspectiefwisseling mogelijk, hetgeen als verrijkend wordt ervaren voor de ontwikkeling van de individuele netwerkkennis en professionele vaardigheden.

Deze samenvatting begint met een kort overzicht van de hoofdstukken van de dissertatie. Daarna wordt het onderzoek beschreven naar context, conceptuele basis, empirisch raamwerk en resultaten, conclusie en discussie.

KORT OVERZICHT VAN DE HOOFDSTUKKEN

Het onderzoek gaat over het ontwerp en de appreciatie van online simulatiegames voor kennisdeling in multidisciplinaire netwerken van jeugdzorg. Hoofdstuk 1 en 7 zijn resumerend en beschrijven de onderzoeksvragen en uitkomsten. In het eerste deel wordt uiteengezet dat het onderzoek voortkomt uit de nood om het inzicht te vergroten in netwerkuitwisseling in de kennisintensieve praktijken van jeugdzorg, ten behoeve van efficiënte en effectieve jeugd- en gezinshulp. De hoofdstukken 2, 3 en 4 gaan over de modelontwikkeling van online rollenspelsimulaties voor netwerkuitwisseling (*model design*), terwijl in 5 en 6 het accent ligt op modelwaardering (*model appreciation*). In hoofdstuk 2 wordt de keuze voor het onderzoek van netwerkuitwisseling en online simulatiegaming onderbouwd vanuit beweegredenen rondom scenario-ontwikkeling en het werken met narratieven en praktijkverhalen in de ondersteuning van opvoeden en opgroeien. In hoofdstuk 3 bespreken we de verwachtingen die er in de beroepspraktijk leven ten aanzien van de kracht van online simulatie gaming, en geven we een overzicht van aandachtspunten, voorwaarden en mogelijke belemmeringen bij de implementatie van online simulatiegames. Hoofdstuk 2 en 3 vormen de basis voor de configuratie van artefacten in de meervoudige casestudie van hoofdstuk 6. Hoofdstuk 4 gaat over de koppeling van ontwerpkeuzen aan eisen die gesteld worden in programma's van leren en ontwikkeling. We beschrijven hoe een serie nieuwe online simulatie games voor de training van toekomstige sociale professionals heeft geleid tot een samenhangend fundament van ontwerpkeuzen dat toepasbaar is op online rollenspelsimulaties voor kennisuitwisseling in jeugdzorgnetwerken. In hoofdstuk 5 worden ontwerpkeuzen aan design- en analysetheorieën gerelateerd en wordt een instrument gepresenteerd waarmee de datastromen uit gamesessies in kaart gebracht kunnen worden. Het structureren van sessieuitkomsten ondersteunt de leergesprekken na afloop van de games en de transfer van bevindingen naar de praktijk. Hoofdstuk 6 beschrijft de casestudie, inclusief de theoretische en empirische basis. In hoofdstuk 7 leiden de bevindingen tot een samengestelde theorie over online simulatie gaming in jeugdzorgpraktijken, met een terugblik op de onderzoeksmethode en op de betekenis van de uitkomsten voor de jeugdzorgpraktijk Ook worden aanbevelingen voor

implementatie en verder onderzoek gegeven. Ten slotte worden de antwoorden op de hoofdvraag en deelvragen geformuleerd langs de hooflijnen van relevantie, bruikbaarheid en nut van online simulatie gaming voor kennisuitwisseling in jeugdzorg.

INTRODUCTIE

De dissertatie beschrijft een kwalitatief ontwerponderzoek voor de modelontwikkeling en de waardering van online rollenspelsimulaties over complexe netwerkvraagstukken in jeugdzorg. Het gaat om simulatiegames, waarin jeugdzorgwerkers anoniem rollen spelen in een virtuele beroepsomgeving op het internet en dilemma's exploreren en analyseren om interventieopties en strategieën te bespreken en te legitimeren. Centraal in het onderzoek staat de ontwerp-gebaseerde en probleemoplossende aanname dat online simulatie gaming bijdraagt aan de vernieuwing van methoden en instrumenten van netwerkuitwisseling voor snellere en betere interventies. De voorbereiding op het handelen en de onderbouwing van interventiekeuzen en netwerkstrategieën in online role-playing simulation games kan netwerken hiertoe een gecomprimeerde, krachtige impuls geven. De ervaringen, inzichten en uitkomsten die opgedaan worden in spelsessies kunnen van groot belang zijn voor succesvolle en tijdige interventies. De vraag is of jeugdzorgprofessionals er ook zo over denken. In een meervoudige casestudie heeft een breed samengestelde groep praktijkexperts, als actoren in een serie online simulatiegames, toekomstscenario's, normatieve kaders, interventieopties en netwerkstrategieën ontwikkeld voor een gegeven probleemsituatie die in de echte praktijk volledig was vastgelopen. Op basis van de sessieervaringen hebben de respondenten in reflectieve dialogen en enquêtes nagedacht over de vraag of online simulatie gaming waardevol en betekenisvol is voor netwerkuitwisseling.

Het onderzoek gaat uit naar het ontwerpvraagstuk en het utiliteitsvraagstuk, hetgeen inhoudt dat gekeken wordt naar de ontwerp- en implementatievereisten en naar hoe jeugdzorgprofessionals online rollenspelsimulaties waarderen. De hoofdvraag is als volgt geformuleerd:

Wat zijn de ontwerp- en implementatievereisten voor online simulatie gaming ten behoeve van netwerkuitwisseling in jeugdzorg en hoe waarderen jeugdzorgprofessionals online simulatie gaming voor netwerkoverleg over complexe probleemsituaties?

De empirische deelvragen betreffen de praktijken van netwerkuitwisseling en in hoeverre online simulatiegaming een plaats verdient in het geheel van methoden en instrumenten. De empirische vragen gaan over de selectiecriteria voor inhouden en gameconcepten, en over de ervaringen en meningen van netwerkactoren over de functionaliteit van het gamemodel en de virtuele omgeving. Zoals we zullen zien, zijn de respondenten ervan overtuigd dat online rollenspelsimulaties ingezet kunnen worden om gedrag, ontwikkelingen

en effecten in probleemsituaties en netwerken daaromheen te exploreren, te analyseren en zo mogelijk te verklaren en te voorspellen. De jeugdzorgwerkers zien voordelen in online simulatie gaming voor uitwisseling in multidisciplinaire netwerken, maar verwachten ook belemmeringen bij de praktische implementatie in jeugdzorgpraktijken. Jeugdzorg stelt specifieke eisen aan het design, de implementatie en de nabesprekingen en de transfer van resultaten naar praktijken. Deze eisen worden in hoofdstuk 3, 6 en 7 beschreven en betreffen de procesbegeleiding en de technische en organisatorische ondersteuning. Het theoretische belang dit onderzoek is de verrijking van kennis over netwerkuitwisseling in jeugdzorg en de verdieping van de ontwerp- en gametheorie voor leren en veranderen. De wetenschappelijke validering van deze claim vraagt om andere onderzoeksmethoden dan de ontwerpende en explorerende aanpak in het huidige onderzoek.

Er zijn twee onderzoekslijnen gevolgd. De eerste betreft *modelontwikkeling* en de vraag of het mogelijk is systeemaspecten van complexe probleemsituaties zinvol te representeren in het ontwerp van virtuele artefacten en online rollenspelsimulaties. De tweede lijn betreft de *waardering* door jeugdzorgprofessionals van online simulatie gaming voor een mogelijke verbetering van de effectiviteit en efficiency van netwerkuitwisseling. Naast verkenningen van theorieën en praktijken van kennisdeling in jeugdzorgnetwerken en simulatiegaming, zijn tests en proefversies gedaan bij praktijkinstellingen, nieuwe games in opleidingsprogramma' ontwikkeld en is een serie simulatiegames uitgevoerd met jeugdzorgprofessionals. We hebben een evenwichtige afwisseling toegepast van de posities van handelen en observeren. De uitwisseling tussen *praktiseren* en *theoretiseren* is van belang voor het ontwerp, maar ook voor de interactie in sessies, en bij de evaluatie van processen, uitkomsten en transfer van opbrengsten naar praktijken (Klabbers, 2009). Online simulatie gaming kan worden ingezet om systeemkenmerken van een probleemsituatie uit de praktijkwereld (*practice world*) te vergelijken met systeemrelaties in een virtueel netwerkoverleg (*game world*), met het oog op dialogen over waarschijnlijke, mogelijke of gewenste ontwikkelingen (*future world*).

De onderzoekscontext

Er is een enorme groei aan snel evoluerende sociale media voor contact, leren en informatie-uitwisseling. Online simulation gaming is een voorbeeld van deze nieuwe modi van sociale interactie. Nieuwe sociale media nestelen zich in manieren waarop mensen contact maken, leren en zich ontwikkelen en beïnvloeden de beroepspraktijken. Virtualiteit, andere werkelijkheidsbelevingen en adaptatie spelen een grote rol in het moderne werken en leren. Dit heeft betekenis voor jeugdzorgwerkers en hun cliënten. Gebleken is dat de spelmatige aanpak en de perspectiefwisseling in online simulatiegames een sterk appel

doen op leren en dat deze manier goed aansluit op nieuwe vormen van contact en uitwisseling. De narratieve en metaforische impact van gezamenlijk opgestelde verhalen en scenario's in online rollenspelsimulaties kunnen leiden tot ander gedrag of tot het ontdekken van nieuwe uitwegen in situaties die vastgelopen zijn. Dit leek ons relevant voor de jeugdzorgpraktijk. Hieruit is de vraag voortgekomen in hoeverre online simulatie gaming een geschikte en wenselijke, maar ook een nuttige en bruikbare aanvulling zou kunnen zijn op het repertoire van sociale professionals voor multidisciplinaire overlegvormen. Een kenmerk van multiprobleemsituaties is de veelzijdigheid van oorzaken, actoren, invloeden, perspectieven en belangen. De meervoudige partijdigheid van sociale professionals vraagt om zich te kunnen inleven in de verschillende posities, niet alleen van cliënten, maar van alle partijen in probleemsituaties rond opvoeden en opgroeien. Online rollenspelsimulaties bieden de praktische optie om van perspectief te wisselen door een andere dan de gebruikelijk rol aan te nemen en vanuit die rol nieuwe inzichten te ontwikkelen. De aanname in het empirische deel van het onderzoek was dat perspectiefwisseling bevorderlijk zou zijn voor het opdoen van andere ervaringen en inzichten en dat hieruit mogelijk nieuwe opties van handelen voortkomen.

De kwaliteit van de kennisdeling onder jeugdzorgprofessionals is cruciaal voor succesvolle interventie. Positieve samenwerking is afhankelijk van de strategische kracht in een netwerk, en van de ontwikkeling en ontplooiing van netwerkcompetenties. Toch blijkt er weinig onderzoek gedaan naar de werkzame factoren van succesvolle uitwisseling. We weten niet goed hoe netwerkactoren situationele informatie onderzoeken, strategieën op elkaar afstemmen en hoe keuzen van hulp en interventie worden gelegitimeerd. Hierdoor ontstaan grofweg twee probleemvelden. Het is zonder een redelijk inzicht in de aard en inhoud van kennisuitwisseling moeilijk om te reflecteren op de situationele kennis en het praktische handelen in specifieke probleemsituaties en samenwerkingsconstellaties. Daarnaast is een effectieve sturing in de ondersteuning en ontwikkeling van netwerkcompetenties zeer moeilijk bij gebrek aan indicaties van wat effectieve netwerkinteractie feitelijk is. De inzet van online simulatie gaming kan inzicht geven in de performance van netwerken, mits we in staat zijn om goede systemische representaties te maken van probleemsituaties (*modelontwikkeling*) en actieve participatie van alle betrokkenen kunnen realiseren (*modelwaardering*). Uit ons onderzoek blijkt dat het mogelijk is om kennisdelingsprocessen in jeugdzorgnetwerken te modelleren in een ontwerp voor online simulatie gaming en dat de analyse van sessieuitkomsten, in combinatie met intensieve reflectieve dialogen met de actoren, inzicht genereert in processen van interactie en performance in de netwerkuitwisseling.

In hoofdstuk 2 wordt het begrip online rollenspelsimulaties theoretisch uitgediept en wordt een vergelijking getroffen tussen karakteristieken van jeugdzorgpraktijken en de inzet van online simulatiegaming. Narratieve benaderingen en scenario-ontwikkeling worden in verband gebracht met een doelgerichte keuze uit de game methodologie voor *principle-based games*, omdat de relatieve openheid van deze klasse van games goed past bij de exploratieve kennisontwikkeling in jeugdzorgnetwerken. In hoofdstuk 3 bespreken we de belangrijkste aspecten van netwerkuitwisseling in jeugdzorg, welke voortkomen uit praktijkexploraties. Volgens de respondenten komt netwerkuitwisseling neer op het uitwisselen van situationele informatie, het gezamenlijk nadenken over strategieën en het nemen van beslissingen over interventies. Wij omschrijven dit als netwerkfuncties van *informeren*, *reflecteren* en *beslissen*. Uit de literatuurstudie en praktijkverkenningen kwamen drie conceptuele thema's naar voren die zijn gebruikt voor een samengestelde theorie over online simulatiegaming voor netwerkuitwisseling in jeugdzorgpraktijken. De drie thema's zijn verbonden aan wat de praktijkwerkers zien als overkoepelende inhoudsgebieden van kennisuitwisseling. Het eerste concept betreft *situationele cognitie* en duidt op feiten, belevingen, interpretaties, aanvullingen op ontbrekende informatie en op een zo goed mogelijk begrip van wat er speelt in probleemsituaties, inclusief de geschiedenissen, achtergronden, systemische verbanden en de kijk op ontwikkelingskansen. Het tweede thema is *discoursparticipatie* en betreft de opties en strategieën om tot optimale commitment en performance van alle actoren te komen, en om de situationele en netwerkcapaciteiten maximaal en doelgericht te benutten. Het laatste thema is *normatieve reflectie* op situationele waarden, gedeelde en tegengestelde belangen, relaties van macht en afhankelijkheid en het beschermen van primaire menselijke waardigheid en autonomie. Interventies van jeugdzorg kunnen diep ingrijpen in het leven van kinderen en gezinnen en het spreekt vanzelf dat het belangrijk is dat netwerkpartners de keuzen van interventies en strategieën zorgvuldig afwegen tegen ethisch-normatieve kaders van waarden en grondregels.

Naast het inventariseren van gedragsvormen en conceptuele thema's van netwerkuitwisseling, is in de praktijkexploraties een beeld van de ideeën en verwachtingen ontwikkeld over online simulatiegaming in jeugdzorgpraktijken. Online simulatie gaming is een intensieve werkvorm en praktijkwerkers denken dat deze het beste ingezet kan worden voor de verkenning van complexe praktijkproblemen en dilemma's. Kwesties, waar men niet gemakkelijk uitkomt met de dagelijkse instrumenten en methoden en welke vragen om een uitbreiding van het denkvermogen met specifieke ervaringsdeskundigheid van buiten de eigen kring en om andere manieren van interactie. Online simulatie gaming biedt in fei-

te een ongelimiteerde uitbreiding van kennis en ervaring en de gelegenheid om complexe vraagstukken tijd-, tempo- en plaatsonafhankelijk te onderzoeken. Online simulatie gaming kan ook worden ingezet als hulpmiddel bij functiescholing en voor het oefenen van patronen en strategieën van kennis naar handelen en andersom. De versterking van deskundigheid is een lastige uitdaging in werkpraktijken en de deskundigheid in teams en netwerken is de sleutel tot succesvolle interventies. Meer begrip van de professionele rationaliteit kan leiden tot een beter inzicht in hoe de benodigde netwerkcompetenties kunnen worden versterkt. Jeugdzorg zoekt naar nieuwe manieren om team- en netwerkkennis te delen en om werknemers erkenning en een podium te geven voor hun persoonlijke expertise. Het verloop onder jeugdbeschermers is groot als gevolg van een gemis aan loopbaanperspectief en door vormen van mentale en emotionele uitputting die na verloop van jaren praktijkuitvoering kunnen optreden. Het delen van successen en frustraties komt te weinig aan bod, zeggen managers. De verwachting is dat online simulatiegaming aan deze punten in bepaalde mate kan bijdragen.

De respondenten uit de exploratieve fase van het onderzoek zien ook drempels voor de ontwikkeling en implementatie van simulatiegames. Digitalisering in het primaire proces heeft geen prioriteit. De lopende werkpraktijken staan onder grote druk en zijn nog onvoldoende ingesteld op online simulatiegaming. Innovatie van werkpraktijken blijkt een lastige opgave in jeugdzorg. Ondanks al het initiële enthousiasme en de positieve verwachtingen was het binnen de onderzochte organisaties zeer moeilijk om tot werkelijke uitvoering over te gaan. Met deze weerstand in gedachten hebben we, op basis van de verkenningen, een overzicht opgesteld van succes- en faalfactoren die van invloed zijn op de implementatie, gezien vanuit de niveaus van de professional, de organisatie en van praktijkonderzoek. De praktijkverkenningen leidden eveneens tot het conclusie dat de omgeving en de gameconcepten in samenwerking met professionals moeten worden ingevuld, ten einde commitment te krijgen en om tegemoet te komen aan de eisen die jeugdzorgpraktijken stellen. Daarom hebben we een collaboratieve aanpak ontwikkeld als een cyclus van uitwisselingen tussen de praktijk, het spel en de programmadoelen. De methode beschrijft de afwisseling tussen 'de narratieve ruimte' (praktijk) en 'de dialogische ruimte' (betekenis). De gezamenlijke studie en formulering van systeemkenmerken in de casus en het ontwerpen van artefacten en gamemodel spelen zich af in de narratieve ruimte (het onderzoeken van de praktijkwereld). In de dialogische ruimte vindt de uitvoering van de online rollenspelsimulatie plaats (kennisontwikkeling in de gamewereld) en worden processen en resultaten intensief nabesproken met het oog op transfer naar de praktijk (toekomstscenario's voor interventies en ontwikkelingen).

De grondslagen voor design en implementatie van de meervoudige casestudie zijn ontwikkeld uit de resultaten van de praktijkverkenning en uit zeven online simulatiegames in opleidingsprogramma's voor sociale beroepen (hoofdstuk 4). Deze nieuwe games gaven ons de gelegenheid om de theorie van Klabbers (2009) over de samenhang tussen ontwerpen-in-het-klein (gamemodel) en ontwerpen-in-het-groot (toepassing in programma's) te testen. De keuze om ontwerp en toepassing goed op elkaar aan te laten sluiten hield tevens verband met de onderzoeksvragen en met de theorie van Hevner (2004) over de positie van design tussen praktijk (*model development*) en wetenschappelijke precisie (*model appreciation*). In hoofdstuk 5 wordt de ontwerpaanpak theoretisch verbonden met het design research raamwerk van March & Smith (1995). Aan dit schema van activiteiten en uitkomsten hebben wij een dimensie van analysecategorieën toegevoegd. Dit heeft geleid tot een analyse-instrument, waarmee de grote hoeveelheden data uit sessies van online simulatiegames kunnen worden gestructureerd. Het analyse-instrument structureert de sessieperformance over de conceptuele thema's (*situational cognition*; *discourse participation; reflection on intervention*) en de actievelden (*investigating situations*; *strengthening networks; justifying choices of intervention*).

HET EMPIRISCH RAAMWERK

De praktijkverkenningen en proefsimulaties maakten duidelijk dat het empirische deel stap-voor-stap samen met de praktijk moest worden opgezet. Gekozen is voor jeugdzorg en voor het rekruteren van respondenten uit een breed spectrum van jeugdzorgexpertise. Voor de casestudie hebben we respondenten buiten organisationele verbanden geworven. De modelontwikkeling (gameontwerp en artefacten) is uitgevoerd in samenwerking met drie landelijke jeugdzorgorganisaties en een instituut voor hoger onderwijs. De modelwaardering (uitvoering en evaluatie) is onderzocht met een representatief aantal individuele professionals, die vrijwillig en voor eigen rekening en verantwoordelijkheid deelnamen. We kozen voor de strategie van een meervoudige casestudie, vanwege de kenmerken van situationele complexiteit en om het gedrag en de interactie van actoren in sessies te kunnen vergelijken met uitspraken van de jeugdzorgprofessionals over processen, effecten en uitkomsten. We vroegen een expertgroep van jeugdzorgdeskundigen om feedback te leveren op alle stappen in de casestudie, dat wil zeggen: op het ontwerp, de methode, de uitvoering en resultaten. De ontwikkelde game is uitgevoerd in 4 varianten, in 10 sessies, en met 55 jeugdzorgexperts. De stap-voor-stap benadering maakte het mogelijk om het ontwerp steeds te verbeteren op basis van de uitkomsten uit de drie uitvoeringsronden en de verkregen feedback van de observerende experts. Hoofdstuk 6 beschrijft de uitkomst van de casestudie, inclusief de kentheoretische en empirische basis.

Het gamemodel is overeenkomstig de onderzoeksvragen op drie levels onderzocht: de *relevantie* van online simulatie gaming voor complexe probleemsituaties (case level), de *bruikbaarheid* in netwerken (session level) en het *nut* voor persoonlijke netwerkcompetenties (task level). We pasten een 3 fasestructuur toe, van *configuratie*, *constructie* en *evaluatie*, waarin praktiseren en observeren zich afwisselden. In de 1e fase werden de game artefacten ontworpen. In de 2e fase vond de constructie en uitvoering van de online simulatiegame plaats. Om inzicht te krijgen in hoe de respondenten denken over de praktische mogelijkheden van deze manier van kennisdeling in eigen beroepspraktijken, hebben we aan het einde van elke sessie een enquête voorgelegd. Aansluitend werden in de 3e fase de reflectieve dialogen uitgevoerd, waarin werd ingegaan op persoonlijke ervaringen en inzichten op basis van de processen en uitkomsten van de sessies en waarin werd nagedacht over de betekenis en praktische mogelijkheden van online simulatie gaming voor kennisdeling in netwerken van jeugdzorg. De participanten deelden hun mening, niet alleen over de concrete opbrengsten, zoals toekomstscenario's, netwerkstrategieën en normatieve kaders voor het handelen, maar ook over de relevantie, bruikbaarheid en het nut van online simulatiegaming. De uitkomsten van de reflectieve dialogen zijn vergeleken met een analyse van de sessiegegevens. De structurering van sessiedata hielp ons om uitspraken van de deelnemers beter te begrijpen.

RESULTATEN, CONCLUSIE EN DISCUSSIE

De teams, van willekeurig bij elkaar gebrachte actoren in deze casestudie, produceerden veel nieuwe handelingsopties, strategieën en normatieve overwegingen voor interventie in de gegeven casus. Deze opbrengsten tonen aan dat het model tot een zinvolle en vruchtbare uitwisseling kan leiden. De producten van de gamesessies zijn interessant, maar niet de primaire focus van dit onderzoek. Een effectstudie ten aanzien van de positieve impact van online simulatiegaming op netwerken en situaties vraagt om andere onderzoeksmethoden en instrumenten dan de hier toegepaste ontwerpaanpak. In onze studie ging het om de vraag of probleemsituaties kunnen worden gerepresenteerd in game modellen en artefacten en of deze manier van kennisdeling in de beleving van jeugdzorgwerkers zinvol en waardevol is. Uit de resultaten blijkt dat jeugdzorgprofessionals geloven in de potentie van online simulatiegaming voor netwerkoverleg over complexe problemen. Het instrument en de methode zijn geschikt voor het bestuderen van ingewikkelde situaties, hoewel het ontwerpen en het uitvoeren en nabespreken veel tijd en een grote betrokkenheid vragen. Niet zeker is of die tijd en betrokkenheid in elk netwerkverband en door alle werkers opgebracht kunnen worden. In dit opzicht waren de respondenten in ons onderzoek mogelijk niet representatief voor de gemiddelde professional. De deelnemers aan de sessies hebben wellicht een bovengemiddelde belangstelling voor innovatie en voor de inzet van

digitale media voor kennisuitwisseling en deskundigheidsbevordering, hoewel dit niet is onderzocht.

Het uiteindelijke doel van online rollenspelsimulaties in jeugdzorgpraktijken is tijdige, effectieve en duurzame interventie. Online simulatie gaming helpt om complexiteit in multiprobleem, multiactor en multirealiteit situaties op een compacte, snelle en effectieve manier te exploreren en om strategieën te ontwikkelen en te onderbouwen. Het is op basis van de uitkomsten uit de casestudie aannemelijk dat interventietrajecten, dankzij een intensieve kennisuitwisseling in online simulatiegames, in belangrijke mate bekort kunnen worden en dat effectieve hulp daardoor tijdiger tot stand komt. Dit zou verder onderzocht moeten worden. Een effectieve exploratie van de unieke systeemkenmerken van situaties en netwerkconstellaties vraagt om optimale condities voor leren. Het lijkt erop dat de omgeving en de methode hiervoor geschikt zijn en we pleiten voor vergelijkend effectonderzoek in dit opzicht. Ook voor de inzet als interventie-instrument is aanvullend onderzoek nodig. Het eerste resultaatveld laat zien dat online simulatie gaming relevant is voor netwerkuitwisseling. Het is gebleken dat complexe probleemsituaties startpunt kunnen zijn voor een systemische representatie in artefacten en dat het waardevol is om op deze wijze de complexiteit te adresseren. Het tweede resultaatgebied betreft het versterken van discoursparticipatie en competenties die voor adequaat netwerken van belang zijn. De respondenten gaven aan veel geleerd te hebben van de uitwisseling van disciplinekennis en van het effectief opereren in netwerkverband. Tegelijk werd duidelijk dat de actoren moeite hadden met het strategisch inzetten van de specificiteit van het beschikbare netwerk voor juist deze probleemsituatie. Tactisch opereren met netwerkkenmerken en situationele potenties kan geoefend worden en online simulatiegaming biedt hiertoe volop gelegenheid. Het derde resultaatgebied betreft het nut voor de ontwikkeling van netwerkcapaciteiten en competenties. De actoren waarderen de spelvormen en het anonieme rollenspel voor perspectiefwisseling en voor het trainen van nieuwe attitudes, tactieken en communicatievaardigheden. De professionals beschouwen online simulatie gaming als een zinvolle uitbreiding van het repertoire voor netwerken en praktijkleren. De respondenten wijzen op mogelijke moeilijkheden bij de invoering van online simulatie gaming in jeugdzorgpraktijken. Hoewel zij in meerderheid positief oordelen over het gebruik van online simulatiegames, wijzen zij erop dat werkpraktijken nog te weinig zijn ingesteld op digitale vormen van uitwisseling. Het is duidelijk dat organisaties game expertise moeten ontwikkelen. Omdat het uiteindelijk gaat om kennisontwikkeling over effectieve netwerkuitwisseling en interventie, ligt samenwerking met onderzoeksinstellingen en game designers hierbij voor de hand. Tegelijk zou gewerkt kunnen worden aan op de sector afgestemde doorontwikkeling van de applicatie, zodat die zo nauw mogelijk aansluit op de eisen uit

specifieke praktijken en op de steeds verdergaande ontwikkelingen van sociale media en apps voor kennisdeling.

Jeugdzorg heeft grote behoefte aan geschikte instrumenten en methoden voor het opsporen van de juiste expertise, ook buiten het eigen, lokale netwerk. De werkdynamiek vraagt dat organisaties en professionals voortdurend nieuwe allianties smeden en de toenemende hulpvraag vereist dat alle kansen worden aangegrepen om de effectiviteit en efficiency op een hoger plan te krijgen. De bestudering van de zelfregulatieve en interactieve denk- en argumentatieprocessen in gamesessies kan het begrip van de koppeling tussen denken en handelen versterken en kan leiden tot meer inzicht in de beroepsmatige rationaliteit in netwerkoverleg over lastige praktijkkwesties, met als doel optimale ondersteuning van interventiepraktijken en theorieontwikkeling.

About the author

Kees JM van Haaster (1950) is an expert in creative arts methodology for learning and social problem solving and a pioneering specialist of simulation gaming in virtual environments. He works at the Utrecht University of Applied Sciences as a lecturer at the Faculty of Society and Law and as a researcher at the Research Centre for Social Innovation. He started a career in export sales management (1970-1975); however, as a dedicated musician and performer, he changed his path to study music and music education at the Rotterdam Conservatory. Soon after his graduation and working as a music teacher in secondary education, he was appointed in higher vocational education for social professions (since 1981). In the 1980s, he also held a position as lecturer of music methodology at the Maastricht Conservatory. In the 1990s he was engaged as project leader in several European Leonardo and Erasmus post-graduate exchange programs for social professions. During that decade he spent a year in Latin America, did an 8 months internship and research at the Roy Hart International Arts Centre in France and received a master certificate at the Nijmegen Institute for Eclectic Psychology. As from the turn of the millennium, he is engaged in social intervention research, in narrative and creative arts methodology and in the design and development of virtual environments for role-play simulation gaming in curricular and training programs. He is the author of various books on methodology, music and multimedia. In recent years, he obtained a MSc degree in the social sciences. Kees JM van Haaster is a board member of Saganet (Simulation and Gaming Association in the Netherlands).

[1] *Cyberdam* is the virtual environment that is used in this research. Please see games.cyberdam.nl

[2] Simulation gaming refers to interaction, role-playing and experimenting in playful, as-if situations. The concept of simulation gaming is explained in chapter 2 and further.

[3] An artifact (from Latin: *arte factum*) is an object, designed and constructed by people, which serves a particular use. In Game theory, the word 'artifact' refers to the objects that constitute or enable the game and play. Virtual artifacts are digital models, or prototypes and interfaces, such as maps or websites, images, animations, video, descriptions, digital books, et cetera.

[4] Synchronous and asynchronous refer to the time-dependency of interaction and communication. Phone calls and face-to-face contact occur at the same time (synchronous communication). In computer programs, asynchronous operation refers to processes that run, independently of other processes. In computer mediated simulations there can be a time, place and space difference between action and reaction. A player may post a remark or conclude an action to which other players may respond hours or days later.

[5] Knowledge-to-action is a concept to indicate processes of relating knowledge creating to intervention or action. The concept comprises the idea of "funneling" and synthesizing knowledge in action cycles that lead to products and tools in a particular situation.

[6] Section 3.7 goes deeper into the issue of the changing positions of designer, facilitator and observer.

[7] The design research model of March & Smith (1995) is explained in chapter 5, table 3.

[8] The triad of relevance, usability and usefulness is explained in section 3.4 and refers to case level (systems representation), utility for network deliberation (network level) and practicality on individual level (task level).

[9] With 1st order research objectives, we refer to the development of tools and methods of simulation gaming for youth care exchange. 2nd Order objectives are about the utilization of simulation games to effect complex change, transforming practices and that require continuously evolving knowledge and skills (Weick & Quinn, 1999)

[10] Double loop learning refers to the response of human agents in their search for alternative ways to reach certain ends and at the same time to examine the appropriateness and propriety of those alternative methods and results. In contrast, single loop learning is an action theory in which agents aim at the same results by using different means. Double loop learning incorporates deliberate reflection on values and norms in the context of action or intervention.

[11] A multiple case study design offers a proven tool for the deep understanding of the information processing behavior of a certain user group. Despite scientific criticism as to the rigor of the approach, numerous studies have shown that the multiple case study strategy

can be used successfully to deeply investigate situations and processes (Yin, 1994; Zack, 2006).

[12] A grounded theory is a systematic method of the construction of a theory through the analysis of research data. Grounded theory is closely linked to the coding of qualitative data in social sciences. Data are coded and categorized in concepts that are the foundation of an hypothesis or theory.

[13] Network knowledge should be understood as gaining information and insight in disciplinary approaches, standpoints, perspectives and priorities.

[14] Online role-playing simulation games can be based on realistic scenarios that start off with an event, a story, or a question. A simulation game contains relevant information in objects and game documents or instructions and engages persons, organizations and situations in an orchestration of interactions, assignments and collaboration to achieve an envisaged end result.

[15] Narrative is a complex concept that may have different significances in various fields of the humanities, such as literary, arts, religion, philosophy, language, history, and game design. In the context of this research, we refer to narratives as accounts, stories, observations, experiences and life histories.

[16] *The future positive*, a concept that is used by different authors like De Bono (1979) and Edwards (2012), refers to interconnectedness and unlocking optimistic thinking and creativity

[17] Multimodal refers to the condition of having and applying more than one mode or modality of communication. Text, sound, images are modes of communication and expression. Using a variety of modes in social practices is supposed to support different orientations or preferences in communication, expression and learning.

[18] Digital devices involve mobile communication appliances, such as tablets, smart phones, and computers. Home automation (digital tools and appliances in household and home care) is expanding rapidly and changes all professions that are connected to people's personal lives.

[19] Other varieties are computer-directed and computer-supported simulation gaming (see Klabbers, 2009, preview xiv and xv). In computer-directed games the narrative is built in by the designer. Computer-supported games have built-in game mechanics that are essential to run the game. In computer-assisted games, the players define the locus of control and the computer only monitors the process.

[20] Turn, as a move from one way of thinking to another (Pinnegar & Daynes in Clandinin, 2007)

[21] Rf: Lyotard's The Postmodern Condition. A Report on Knowledge (1979).

[22] Sociaal Verhaal (Social Story), Kannegieter (ed.) (2007); Kleine Verhalen (Small Stories); Van Haaster (2006); Virtual City District (Virtuele Wijk), Van Nispen tot Pannerden (ed.) (2006); Learning in a Virtual World, Warmelink & Mayer (ed.) (2009).
[23] Data mining refers to extraction of information through the analysis of patterns in larger data sets and to transform the outcome in understandable structures for further use.
[24] Lyotard, 1984
[25] With expertise we mean the foundation of professional credibility and aptness on which a person is perceived as knowledgeable in a certain area or topic, thanks to experience, study or achievements. Expertise in complex social problem situations concerns knowing how to investigate the interconnectedness of symptoms, conditions, circumstances and actors, and how to interpret in view of good understanding.
[26] Tangential thinking refers to a thinking disorder in schizophrenia, however here, Jones associates the word with thinking processes that apparently are not associated with the subject of discourse. Thoughts that have a tendency to digress from the original topic of conversation.
[27] Transliterate means to transpose thoughts in words or texts into a different 'language', like images, music, dance, film.
[28] Please refer to section 1.2 for an explanation of synchronous and asynchronous interaction.
[29] Distributed simulation refers to the use of computers in a network. The client environment (the 'front-end') runs on common pc's and mobile devices and the server computer (the 'back-end') must be suitably equipped with specialized hardware to process mass data from simulation sessions.
[30] The project "Schome, the education system for the learning age" (schome.ac.uk).
[31] A session is a period of time that is devoted to assignments and interaction by a selected group of participants in the effectuation of a simulation game.
[32] There are many connotations to the words of play and game. In this research play refers to interaction (living reality) and game is form or structure (the artifact).
[33] With avatars we mean digital alter egos or graphical representation of the characters in de game.
[34] This is a major issue in this research, to which we shall return, when we describe the processes of co-construction of design and implementation strategy in chapters 4 and 6 and when we explain the meaning of dialogue and analysis of processes and results in chapter 5 and 6. In chapter 7 we look back on the theoretical impact of this research from a synthesizing level.
[35] University of Strathclyde, UK
[36] Stichting RechtenOnline, NL; the application can be found at games.cyberdam.nl and all further information about Cyberdam can be found on www.cyberdam.nl.

[37] Cyberdam is a Virtual Learning Environment as well as a virtual city for online role playing games in the context of a 2D virtual city, or any other graphical representation.
[38] Project Learning in a Virtual World, part of the action program "*Maatschappelijke Sectoren & ICT*" (Care, Education, Mobility and Safety), an initiative of the Ministry of Economic Affairs in the Netherlands, in collaboration with several institutes of higher education.
[39] The term 'suspension of disbelief' is first used by the philosopher Samuel Taylor Coleridge in 1817 as a concept from literature to infuse a 'human interest and a semblance of truth' into a story. In the late 20th century the concept changed towards the willingness of the audience to overlook the limitations as to reality in a certain medium (film, virtual environment), in order to avoid interferences with the acceptance of the premises of the medium. These premises may also accommodate the engagement of the players in order to relate thoughts, ideas and theories to the fictional character of the scenario.
[40] Apart from the 55 participants in the multiple case study.
[41] Please see the appendix, Figure 36.
[42] MaxQda software for qualitative data analysis
[43] *The Dividing Line* (a metaphysical diagram by Plato in *Republic*, as explained in Palmer, 2002), consists of a comparison between different dimensions of epistemology and ontology, and of the intelligible and visible world. In the table below, we borrow this idea to compare the epistemological and ontological aspects of behavior and thoughts, to what we perceive and how we understand. When applied to simulation gaming, this model helps to comparatively analyze in-game behavior and opinions, know-how, perspectives, propositions. Although there is discussion as to the interpretation of the theory of *The Dividing Line*, we propose to keep to the concept of Palmer (2002), which we adapted for the purpose of our research.

Thoughts		Behavior	
Knowledge	Understanding	Higher forms	The intelligible world
	Thoughts	Science	
Opinion	Beliefs	Perceptions	The visible world
	Imaginations	Representations	
Epistemology		Ontology	

The rationalist conceptions that guide perception, ideas and behavior are higher forms with an independent reality, superior to the material world, and can only be understood by transcending that world (Palmer, 2002). In empirical epistemology (Aristotle's criticism on rationalism), reality is everything your senses can observe. The human mind builds abstractions of reality by means of imagination in text, language, picture, sound, and in sensory perceptions, and through the discovery of commonalities or differences in phenomena, experiences and situations. These abstractions form understanding in dialoguing on perceptions, conceptions and actions in simulation gaming. To understand concepts in simulation gaming, we can use Locke's dissection of primary and secondary properties in every object and phenomenon. Primary properties are materials (being) and secondary properties are meanings (sense). Primary properties are concrete and objective, and inextricably linked to playground objects, roles and characters behavior in games. Secondary properties are abstract and subjective perceptions, narratives and imaginations that can be separated from real objects and behavior.

[44] With e-discourses we mean dialogical deliberations through the facilities that are provided by the Internet, such as online simulation games.

[45] Please refer to the appendix for more information about these trial versions and test-runs.

[46] The composition of the members of the committee of experts is explained in the appendix.

[47] To get an impression of the contents of these seven games, please refer to www.cyberdam.nl and see box '*In the picture*'

[48] Please see 4.3 for an explanation of principle-based games

[49] The effects of *The Seven Pioneers* have been analyzed and commented in Warmelink & Mayer (eds.), 2009.

[50] The Vision game was tested eight times with an average number of 200 students, divided over 10-15 sessions per period.

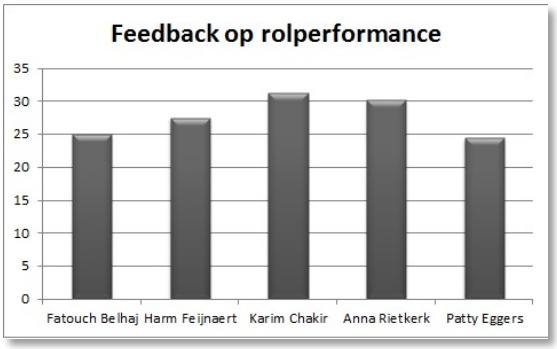
[51] Please see the appendix and www.cyberdam.nl for more information on *The Seven Pioneers.*

[52] Please see www.cyberdam.nl for information about the construction of a game activity grid.

[53] The model contained four variants and was played in 10 sessions in the *Cyberdam* application (games.cyberdam.nl). Every single player was engaged in one session only.

[54] Act, behave, perform are unclear concepts and refer to 'do' or to the process of 'doing'. The word 'act', when used in combination with a noun or object, can refer to 'acting as' or 'behaving as', like in acting a role. This means doing and behaving 'as if' and representing a fictitious or situational character.

[55] The 55 participants of the multiple case study consist of 10 men and 45 women of different ages, education and work experiences. For an overview of all participants, please refer to the appendix.
[56] A-synchronous participation refers to time, pace and place independent part taking, within the limits of the planning of the game. Please note that this has been effected only in the second and third round of implementation.
[57] For a complete overview, please see appendix 2, Figure 37
[58] Please see chapter 4; the Paidia-Ludus continuum of interlinked game activities (Caillois, 1958)
[59] A score chart on role performance may could look like this:



[60] The final version of the simulation game has been made available for training or for network exchange in the Cyberdam application. The model might be used in its original set-up or might be adapted to the needs and circumstances of practice organizations, educational institutes and networks. In the meantime, the game model is being used in curriculum programs of youth care higher vocational education.
[61] Please see the appendix for an impression of the feedback from practice experts.
[62] A Rain Maker is a musical instrument that imitates the sound of rain.
[63] MaxQDA. We used MaxQDA and Excel to produce the diagrams from the analysis tool.
[64] Please see the appendix for a sample from a session track record.
[65] The percentual proportions in chapter 6 and 7 refer to data taken from the questionnaire.
[66] In chapter 6, the quotes are translated in English, though the original statements are in Dutch. In contrast, the quotes from the research data in the appendix are in Dutch.
[67] Sessions B1 and B2 produced 13 future scenarios. Please refer to the appendix for some quotes from these future scenarios.
[68] In the questionnaire, we asked the respondents to rate a small list of preferred subjects of practical knowledge development for youth care. After their session experiences, we invited the actors to share their ideas about the comparative importance in practice of a selection of items of knowledge development through simulation gaming,. The table in this endnote (please see below) shows the ranking. Knowledge items of the quality of interven-

tion, strengthening network relationships and exploring multi-problem situations, are seen as most important. We asked how, when and where the participants think that their professional proficiency gets the most chances for positive development. A big majority (78%) say that the advancement of competences takes place in practical workplace situations. A smaller part (39%) argue that study and theory are important to enhance skills. A minority of 9% consider the development of professional skills not that important. The respondents declare that they learn a lot from colleagues in networks and in other processes of collaboration. For a big part (57%), this learning is unintentional, implicit and unplanned. An equal number states the opposite. To them workplace learning and professional development are deliberate processes of continuous and conscious engagement.

The comparative importance of knowledge development subjects	*Not so important*	*Important*	*Very important*
Methods	0%	42%	58%
Evidence based practices	9%	43%	48%
General know-how and expertise	12%	30%	58%
Quality of intervention	0%	27%	73%
Strengthening network relations	0%	35%	65%
Exploring multi-problem situations	9%	31%	60%
Study of moral and ethical issues	0%	42%	58%
Handling dilemmas	4%	48%	48%

[69] Sharing information and messages to specific or to all participants is a selective option in the game environment. In the design of a game model, the interaction can be prepared in line what is necessary in a certain situation.
[70] For the dimensions of *systems information design* and *user-experience analysis* please see chapter 1; section 1.3; Figure 1.
[71] The levels of relevancy, usability and usefulness, as described in chapter 3; section 3.5; Figure 8.
[72] Following Klabbers (2009) in the discernment of design-in-the-small and design-in-the-large.
[73] Please see chapter 4.3, the four categories of game strategy.
[74] With *ecological validity* in this research, we mean the approximation of artifacts, methods and settings of game-world, compared to real-world.
[75] Negative feedback loops tend to stabilize systems and are about normalizing reactions in the system that is influenced. Negative feedback might apply to the life-world, as well as to the game-world and future-world.