



# 21st-century skills

## A Meaningful Approach for RUAS from a Student's Perspective

Rotterdam University of Applied Sciences  
Research Centre Business Innovation  
Rotterdam, June 2019

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# Preface

This research report is a result of the joint initiative of researchers and the professorship internationalisation of the Research Centre Business Innovation -KcBI, in particular Monique Abbenbroek (CMI/Communication), Tineke van der Gaast (RBS/Internationalisation), Helen de Haan-Cao (RBS/International Business), Koen van der Kooy (RBS/Graduate Department and Research Centre Business Innovation) and Leo Klienbannink (Research Centre Business Innovation). In cooperation with institutes Willem de Kooning Academy, CMI (Communicatie, Media en Informatie), RBS (Rotterdam Business School) and IBK (Bedrijfskunde) the abovementioned research group conducted research over a period of 3 years to look at 21st-century skills of 1<sup>st</sup>-year students of educational programmes within Rotterdam University of Applied Sciences. Its main aim was to answer the question how students perceive 21<sup>st</sup>-century skills. Is the university preparing students regarding 21<sup>st</sup>-century skills in such a way that it also reflects the perception of skills needed to be better equipped for future jobs and a changing labour market?

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# Introduction

We're living in dynamic and challenging times where the metropolitan region Rotterdam-The Hague is developing from a logistic hub into a knowledge and digital hub, a multicultural and superdiverse urban area where young professionals face new challenges of a developing society and an economy in transition. In particular the transition into a next economy (*Roadmap Next Economy*, MRDH, 2016) asks for graduates that create chances and possibilities for the metropolitan region and make use of the superdiverse, multicultural and multilingual environment and society. Therefore, it is essential for students to develop 21st-century skills to be able to be successful in this changing society and labour market.

A lot of research has been conducted regarding 21st-century skills, but we found it important to conduct the research from the perspective of students in higher professional education. We refer to students in universities of applied sciences as we have to understand that higher education in the Netherlands is a binary system with academic or research universities and universities of applied sciences or higher professional education. The research group aims to investigate what students in higher professional education refer to or understand by in using or applying the term *21st-century skills*. Now that the term 21<sup>st</sup>-century skills is widely known and used in primary, secondary and tertiary education, it is also interesting to see in what direction these skills are developing and evolving. From transferable skills to transversal skills, from future skills to career skills, from employability skills to European skills. This research used the input of 1<sup>st</sup>-year students of the institutes RBS, IBK, WdKA and CMI over a cohort period of two years in order to have sufficient data to make tangible conclusions.

The research group formulated the research question as follows:

Which 21st-century skills do RUAS students think they need to develop during their studies to increase their employability?

A number of sub-questions were formulated by taking into consideration a labour market that is intercultural, diverse and international. These sub-questions aim to clarify the student's perception of three elements;

- 1) the importance of 21st-century skills for future employability,
- 2) the level in which they already have acquired 21st-century skills at the beginning of their studies,
- 3) the importance of experiences with the development of 21st-century skills in an international setting.

This research encompasses the results of qualitative and quantitative research of -as indicated above- 1<sup>st</sup>-year students in higher education, in particular at a university of applied sciences. Students of the cohorts 2016-2017 and 2017-2018 have been surveyed by the research group. The research has been conducted by researchers from different institutes within the Rotterdam University of Applied Sciences in order to create a broader and diverse scope regarding 21st-century skills. In the midst of various interchangeable terms and concepts, as already mentioned, such as transferable skills, transversal skills, career skills, employability skills, future skills, our research contributes to the conceptual dialogue about 21st-century skills.

The research group would like to thank Cora Santjer (Head of Internationalisation, Willem de Kooning Academy) for her valuable remarks and contribution to the research process as well as for reviewing the report.

The research group also thanks the external reviewers Frans de Vos (business partner HighQ, business advisory board Research Centre Business Innovation), Sjaak Pappe (associate partner Hofstede Insights, business advisory board International Business Rotterdam Business School, visiting professor Mannheim Business School), who reviewed the report.

The research group is aware of the fact that this research is merely a start to discuss the importance of 21st-century skills in higher vocational education as well as to relate the outcomes to professional profiles,

curricula and the professional field. Also, the outcome of this research is interesting enough to present and discuss in (inter)national platforms like Nuffic and EAIE or advisory boards of educational programmes as well as SME networks.

We think that the results of this research will give RUAS a better understanding of what students at the beginning of their studies think of 21st-century skills and the importance for the development of their skills set to increase their flexibility and employability in a fast-changing labour market. Therefore, the research group also made a cross-over with the research group Internationalisation of SMEs in order to make use of the data of their research. The research group have the conviction that the results and outcome of this research will contribute to the dialogue with the professional field of the different domains as well as with platforms and committees responsible for the development and design of curricula. Especially if you look what kind of role and which meaning are essential for students in that domain. The research group also think that it would be logical to do a follow-up research project with 4<sup>th</sup>-year students to benchmark the development process, as well as more in-depth research with other universities of applied sciences.

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# 1 Research Accountability

## 1.1 Reading Guide

This report was structured in a concise manner in order to enhance the readability. Beside the research accountability the research team has chosen to give a short introduction to the research theme or topic, after which a literature review follows. The research findings will be presented before a number of conclusions and recommendations will be put forward. The impact and dissemination have been incorporated into the chapter on research accountability which will be explained in subparagraph 6 of this chapter. The impact map as well as graphs and tables have been added to this report as appendices.

## 1.2 Reason

The reason for this research finds its roots in the research conducted by the professorship internationalisation in 2015. At that time managers and coordinators internationalisation of various educational programmes in different institutes were asked to define the importance of internationalisation for the programme and professional profile. In particular 21st-century skills were emphasized. This aspect of the research surfaced in many studies and papers at the time (Vereniging Hogescholen -VH/Vereniging van Universiteiten -VSNU, Nuffic, Metropoolregio Rotterdam-Den Haag -MRDH/InnovationQuarter -IQ, Ministerie Onderwijs, Cultuur en Wetenschappen, Onderwijsraad, Center for International Mobility Finland - CIMO, and others. See literature review) as well as in national committees and think-tanks and international (research) platforms. The EU defined the development of 21st-century skills or employment skills as one of the priorities for education, given the challenges the labour market is facing. The installation of a specific think-tank on behalf of Strategische Innovatie Alliantie -SIA (Studio 21st-century skills) proved to be a stimulant for the research team to be engaged with this topic. The question that arose during the discussion was to research 21st-century skills with the perspective of students in mind. Especially when students enrol in higher education with what we now call a 21st-century skills mind-set or skills set acquired at (primary and) secondary or vocational education. Therefore, the focus was on 1<sup>st</sup>-year students. To limit research and scope the research team focused on Rotterdam University of Applied Sciences as a research case and four institutes to participate in the research. In selecting the four institutes the research team chose a pragmatic approach with institutes not only within the research space but also with a sufficient diverse background (art, media and communication, business and management).

## 1.3 Objective(s) and Research Question

Despite the fact that the dialogue and communication about 21st-century skills surfaced in many articles, papers and policy documents, it remains unclear what this concept entails. Thus, the objective of this research was twofold. First, to provide a better understanding of what the concept of 21st-century skills will encompass for educational programmes. Furthermore, to indicate implications of applying this concept in curriculum development and skills development of students. The research could make these skills tangible for curriculum and programme development. Especially regarding the needs of the professional field, which requires university graduates to be able to operate in an increasingly globalised world. After a discussion within the research team, the team wanted to know how students perceive this development and framing of skills as an aspect of internationalisation. The fact that little research had been conducted regarding the perception of students (in higher education), led to the formulation of the research question: 'Which 21st-century skills do RUAS students think they need to develop during their studies to increase their employability?'

## 1.4 Research Methodology and Accountability

The study contained two stages. The first stage aimed at the selection of the most essential 21st-century skills. The 21st-century skills were gathered via an intensive literature study. The selection of and the determination of the definition including translation into Dutch (or English) was done via a Delphi-like approach within the research group with the consultation of external experts. The second stage was the survey-based approach. The questionnaire was pilot tested among a group of 2<sup>nd</sup>-year RBS students (n=90). The survey then was distributed among 1<sup>st</sup>-year students of 4 institutes at the HR (CMI, IBK, RBS, and



WdKA). This selection was based on the diversity between the education programmes and the accessibility of the target population. The questionnaires were distributed via e-mails to the student accounts in the second period of the first year (between November and February). Data was collected among the 1<sup>st</sup> year students of the study year 2016-2017 and 2017-2018.

## 1.5 Standards Framework

### 1.5.1 Planning

The planning for this research was initially a project for four years, although right from the start the research team discerned the fact that a study of such long duration would not be beneficial to the educational programmes since the development of 21st-century skills with regard to the everchanging society, a community in continuous transition and a call for skills that meets the future needs of the professional field, is an ongoing process of change. Therefore, the research was conducted over a period of two years. This period of two years and the fact that team members were facilitated in a flexible way, was a challenging and sometimes a daunting task. As we will explain in the subparagraph on limitations, the facilitation of research team members was a strain. Nevertheless, the research team met these circumstances with a personal endeavour to be responsive and creative. The research process eventually took the team 3 years to finalise. The writing process asks for commitment, initiative and discipline. Despite the fact that the research planning was confronted by challenges, the research team kept its focus on structured process planning.

### 1.5.2 Network

The distinction we have to make here is between the research network and the external network community. The research team, consisting of a group of researchers of different institutes (CMI, RBS, WdKA), also means you have to address the collaboration from a diverse professional and culture-specific context. The interaction and communication between research team members is a specific developmental and learning process that is one of the focus points of the research process and a diverse research team approach.

As far as the external network is concerned, the research team made use of the research findings of the research team Internationalisation of SMEs, the business advisory board of Kenniscentrum Business Innovation -KcBI functioned as interlocutor as well as review partner, Hofstede Insights was a review partner for the research team.

### 1.5.3 Valorisation

For the valorisation of this research many parties are involved (see above described network). The research team aims to disseminate the research findings within the HR (macro level) and to the particular educational programmes e.g. via the curriculum committees (meso level). The research aims to align the strategic choices to shape the educational programmes within the HR more with the expectation of the new students. The magnitude of this is described in the impact map. The emphasis of this research was practice based. Therefore, in every phase of the research, from design, data collection to analysis, there was an awareness of and evaluation of the knowledge collected and created.

### 1.5.4 Data management

For the online survey the program Evasys® was used, the pilot study was done manually with pen and paper, data was entered in Excel®. During the project the data and research files were stored on the Box® and later transferred to the HR account of OneDrive®. Here all raw data and code books are stored. The survey data is stored anonymously. The data analysis was done using SPSS® and all data selection, cleaning and analysis steps were recorded in syntax files.

## 1.6 Limitations, VBRI (validity, reliability, representativity, integrity), Risk-analysis

### 1.6.1 Limitations and risk-analysis

As far as limitations have influenced the process and progress of the research, the following reflections can be given: The discontinuation of one of the researchers during the research process has given the research process and composition of the research team a new dynamic profile as well as new responsibilities and tasks. Furthermore, we have to mention the limitations of the target groups of the different schools. RBS was covered sufficiently over 2 years, but WdKA, IBK and CMI did not have the response rate anticipated. Nevertheless, the response rate is representative and valid for the research findings regarding benchmark and comparison. The availability of the research members led to conflicts during educational periods as far as research time and commitment is concerned. At times, especially when the available research time was limited, there was pressure to stay focused because of time-consuming programme tasks at the different institutes. Nevertheless, the research members demonstrated an open attitude and healthy motivational approach to conduct the research, especially bearing in mind the meaningful and context-rich impact the research could achieve. A special mention is due of the sick leave of one of the research team members because of a personal situation. This affected the research process with a delay of 3/4 years. As far as the RA (risk-analysis) is concerned, as mentioned above, the response of the different institutes (IBK, CMI and WdKA) was marginal. Therefore, the research team conducted the survey over a period of two years with two first-year cohorts of an educational programme. The response rate achieved was sufficient to analyse and have a critical reflection on the research findings. The subparagraph VBRI will explore and clarify this element further.

### 1.6.2 VBRI (validity, reliability, representativity, integrity)

The operationalisation of the 21st-century skills in the questionnaire was done on a unidimensional scale, this with regard to the number of 21st-century skills selected and the time minimisation for filling in the questionnaire. A logical next step for future research will be to investigate the possible overlap or hierarchical relationship between the 21st-century skills.

The combination of the two years of data gatherings resulted in a robust data set (n=164) which, when looking at the target population (N= approx. 4900), resulted in a margin of error of 7,5% when using a 95% confidence level. In-depth analysis between the two data sets showed identical characteristics, which supported the decision to combine them as one set of first-year students, thereby increasing the reliability of the research findings.

## 1.7 Information management, dissemination, impact and lessons learned

### 1.7.1 Information management

As far as information management is concerned, from the start, the research team chose to inform the team on a bi-weekly basis (memo). In this way the research team members could monitor the research process as well as the research planning. In the first year of research this proved to be an effective and efficient way to communicate to the diverse research team. From the second year on, a more flexible information road was used to communicate developments and progress. For the first year the research team met every week to discuss process and progress of the research. The second year meetings were only organised if new developments surfaced or research findings had to be analysed or discussed.

### 1.7.2 Dissemination

In October 2017 research findings were disseminated midterm at an inspirational session of the Research Centre Business Innovation, in May 2018 at the inaugural speech of Leo Klienbannink on behalf of the professorship internationalisation and at a business advisory board meeting of the Research Centre Business Innovation in 2018. During the research several informal meetings with members of educational programmes were scheduled in order to discuss preliminary results. Regarding the dissemination after the research, the following activities have been planned: 1. research report with the research findings, conclusions and recommendations for all stakeholders (educational programmes RUAS, MRDH, MKB Rotterdam-Rijnmond, Nuffic, curriculum committees RUAS, business advisory boards RUAS, Hofstede Insights, Ministry of Education, VH, Panteia Research, Gemeente Rotterdam, CoE Internationalisation and

Global Learning, Studio 21st-century skills), 2. inspirational session for educational programmes RUAS and stakeholders, 3. Infographic 21st-century skills, 4. article educational journals, 5. presentation Day of Practice-Based Research.

#### 1.7.3 Impact

The Impact Map (Figure 17, appendices) clarifies to what extent the research report wants to create impact for programmes and stakeholders, in particular curriculum committees, advisory boards and external partners like Nuffic and Studio 21st-century skills. But the results and findings do not only provide insight, but also advice to start and conduct the dialogue with stakeholders to see in which way developments should be accommodated. Especially in the dialogue with all team members of educational programmes.

#### 1.7.4 Lessons Learned

The process structure and process approach of the research team put forward the following evaluation aspects: 1. The diverse composition of the team is a positive element to bring a flexible and different perspective (multidisciplinary) to the research table. It offers a dynamic environment for discussion and creativity. 2. The structure of the research process, a group or team approach, most definitely gave structure and orientation as well as continuity and focus, critical reflection, failing forward attitude, joint commitment and responsibility. Being result oriented, but working in a team structure also means that when availability is a Risk Analysis-aspect (programme tasks, change of commitment, delivery of research products) the research process will inevitably have to cope with delay, a wait and see attitude as well as a communication backdrop. 3. The research process also functioned as a professionalisation process for researchers. The diverse professional background proved to be an effective and efficient lab to learn from joint research, reflective practice, critical and responsive skills, to enhance and develop research skills and knowledge.

## 2 21st-century skills

### 2.1 21st-century skills as a research topic

“21st-century skills” has become increasingly popular for several reasons. The foremost dominant reason is for the sustainable economic development at regional, national and even international level. These skills are needed for a high quality workforce (Facer, 2011; Biesta, 2013), but also for the reforming of higher education (WRR, 2014). According to the OECD report “Knowledge and Skills for Life” (2001), education institutions should put more effort in developing skills such as problem solving, creativity and innovative thinking.

In the Netherlands a special Skills-Platform was initiated by the Dutch Ministry of Education, Culture and Science in 2010 to support education institutions in advancing 21st-century skills, with special attention to multidisciplinary collaboration (OCW, 2016). The Dutch government actively promotes the enhancement of “21st-century skills” and grants subsidies to research projects in defining effective methods and approaches for schools. The report “how will we learn in the future?” delivered by SER (2015) viewed the “21st-century skills” as the skills for the future that are valuable and should be enhanced.

This research aims to close several gaps in the current education research regarding “21st-century skills”. As Thijs, Fisser & Van der Hoeven (2014) correctly indicated, there is little known about how these skills are developed in education practice and what are the achieved learning outcomes through education, which serves as the fundamental place for students to develop these skills. To effectively tackle this problem, our research targets on the clarification of how university students have achieved the skills within and outside of their study programme, as well as in/outside of the school environment. Moreover, Biesta (2016) urged the need of including democratic and ecological aspects in the current definitions that one-sidedly focus on economics-related skills. He also emphasised the social aspect such as caring for others, predominantly people living in underdeveloped areas. Of the 19 indicators we have chosen three: Cultural & civic literacy, Environmental literacy, Social & cultural awareness, which in our view fill in the missing parts of current definitions.

### 2.2 Definitions of “21st-century skills”

The term “21st-century skills” has been defined in many different ways. For example, “Framework for 21<sup>st</sup>-century learning” (2009) defined this term by blending the specific skills, content knowledge, literacies and expertise that students must master to succeed in work and life. UNESCO (2014) took a different approach to define “skills” from a humanitarian perspective. Since students obtain skills in a context of learning and interacting with other people, there is merit in including inter- and intra-personal skills in the definition of 21st-century skills. An interesting contribution of this way of defining is that physical and psychological health has been given a significant position. In the “New vision for education” (2015) published by the World Economic Forum in collaboration with the Boston Consulting Group, “21st-century skills” is demarcated as holistic functioning in a dynamic and ever-changing environment. It means that students must not only possess strong content knowledge, but also skills such as critical thinking, problem-solving, persistence and curiosity. Their definition on “skills” emphasises the importance of developing these skills through technology.

Considering the specific context of universities of applied sciences in the Netherlands (see introduction), it is important to apply a definition in our research that takes into account the specific characteristics of the Dutch higher education sector. After a thorough study of the current literature, we organised discussion sessions among educational practitioners regarding the suitability of these definitions. We have chosen to take the 21st-century skills as defined by the World Economic Forum (2015) as the basis. This definition in our view covers the most relevant skills that we, from our educational practitioner’s perspective, considered as central for our students, not only in terms of studying successfully, but more important for their career development and life experience.

The original definition includes three categories, namely: foundational literacies, competencies and character quality. Foundational Literacies refer to how students apply core skills to everyday tasks. Competencies cover all aspects about how students approach complex challenges. Character Qualities describe how students approach their changing environment. We further elaborated on this definition and categorisation. The acquisition of skills listed in the category *Foundational Literacies* had the traditional focus of education around the world in the past 20<sup>th</sup> century. However, the awareness and urgency of environmental protection has increased tremendously; therefore, we added Environmental Literacy to this category. The importance of this skill is also confirmed by the P21 Framework Definitions.

In the category *Competencies* we included Entrepreneurship as addition to the existing definition according to the important position given to this competence at Dutch universities of applied sciences. Entrepreneurship is critical for the economic, social and cultural growth, business dynamics, innovation and employability of a young workforce (van Praag, 2006; van der Sluis, 2007). Some research results showed that the Dutch higher education lags behind in this respect, because there is a lack of entrepreneurial culture (Westhof, 2005; van Praag, 2006, quoted in Gedik et. al., 2015). This extra emphasis is in fact also in line with the general policy on stimulating entrepreneurship among university students. For example, in the P21 Framework Definitions this skill is defined as using entrepreneurial skills to enhance workplace productivity and career options (2009). We have adopted the definition of entrepreneurship as ‘the ability to explore opportunities and manage risks to create value for profit and/or social good’ (Gedik, 2015; Bam, 2016). With reference to the research we conducted, we would not only adopt the definition of entrepreneurship, but also add the distinctive element of *entrepreneurial attitude*, which seems to be more relevant in all disciplines of higher professional education. Competencies referring to entrepreneurial attitude include taking initiative, mitigating risks, customer driven thinking, etc.

We replaced the label of *Character Qualities* with *Life Skills*. The latter was found in the definition of “P21 Framework”, which covers the same content as the former labelling, but in our opinion “Life skills” describes the essence of this category better. “Character qualities” is something that is very difficult to change, while the label “life skills” implies the possibility of being shaped and developed continuously. In this category with the label “life skills” we also added Health & Psychological Awareness. This was first mentioned as an optional domain in the publication of UNESCO Asia and Pacific Regional Bureau for Education (Kim & Trzmiel, 2014). We have defined it as the ability to strive for and understand that a balanced physical and psychological condition will lead to working towards and accomplishing a task or goal. In today’s society it is essential that people take responsibility for their health, both physical as well as psychological, rather than linking the success of life only with career development and materialistic achievement. Moreover, the success of a life is also about making a good contribution to society. It is therefore preconditional to have a balance in a healthy lifestyle, healthy nourishment, physical fitness, empathy and self-respect.

We acknowledge the fact that the concept “21st-century skills” is a container concept composing diverse definitions. We also recognise the critics that this concept has been “propagated” and too much focused on skills instead of knowledge (Meester, Bergsen & Kirschner, 2017), too generic (Tricot and Sweller, 2014). Instead of praising the “21st-century skills” as THE skills we have tried to integrate both knowledge and skills, both generic and specific terms into our 19 indicators.

In short, we have merged various definitions that were developed by international well-known institutions, while in line with the specific characteristics of universities of applied sciences as a sub-sector of the Dutch higher education sector. This adaptation is necessary before pursuing this research further with staff and students.

## Framework 21st-century skills

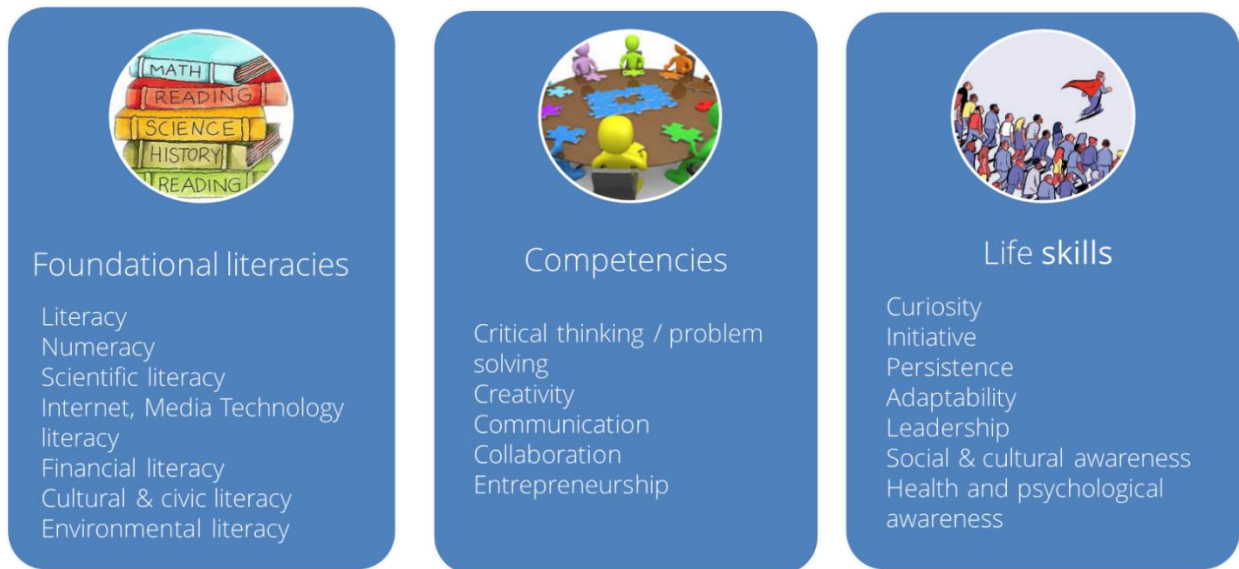


Figure 1 – Overview of 21st-century skills

### 3 Research findings ‘Which 21st-century skills do RUAS students think they need to develop during their studies to increase their employability?’

#### 3.1 Pilot study

As part of the pre-research a pilot study was conducted with 2<sup>nd</sup>-Year students of the business administration programme IBMS. Main reason to conduct this pilot study was to see whether students could reflect on the 21st-century skills framework.

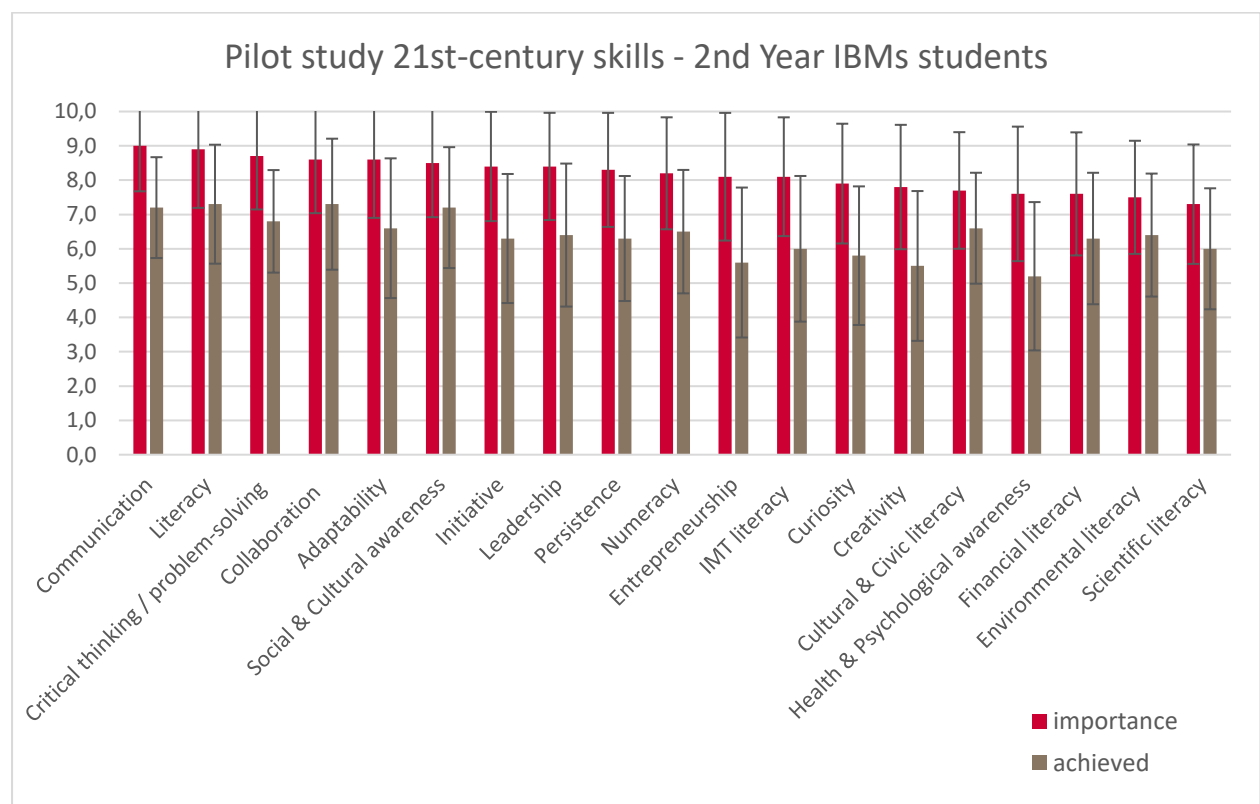


Figure 2 – Result of the pilot study Difference between importance and achieved 21st-century skills

#### 3.2 Description research population

In total 164 first-year students from 4 different schools responded. To be able to make valid statements, we combined the responses of 2016 (N=78) and 2017 (N=86). They were asked to reflect on the term ‘21st-century skills’ as well as on the skills set. Only a bit less than one quarter of the students (23,2%) replied positively to the question whether they had ever heard of ‘21st-century skills’. 49 students (29,9%) had their education outside the Netherlands.

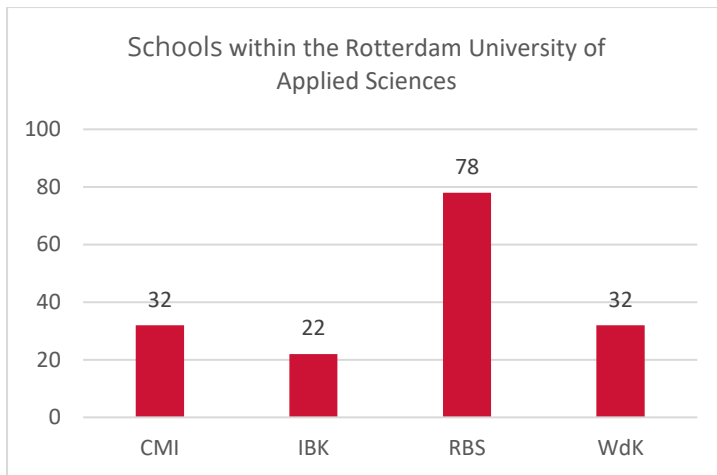


Figure 3 – Response rate per school

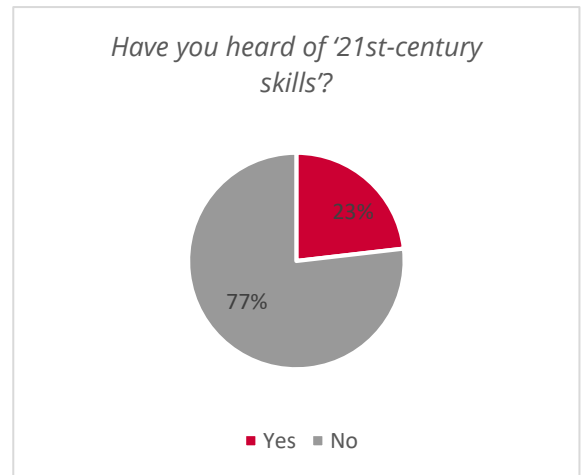


Figure 4 – Familiarity with 21st-century skills

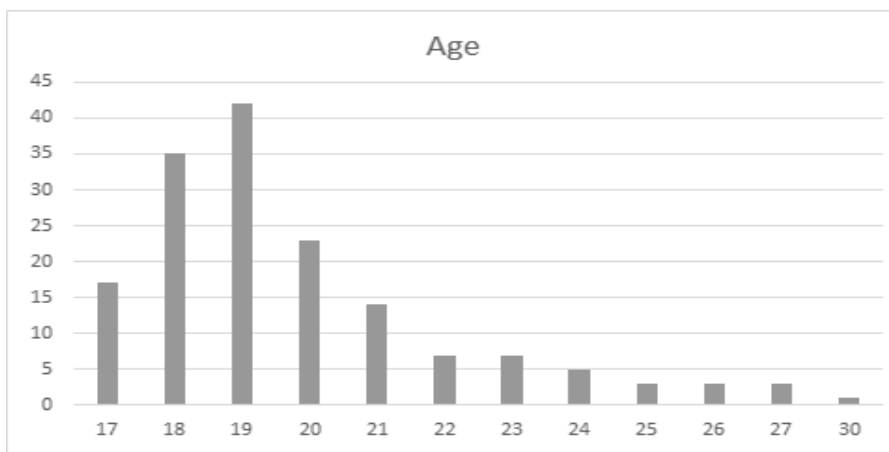


Figure 5 – Age of students

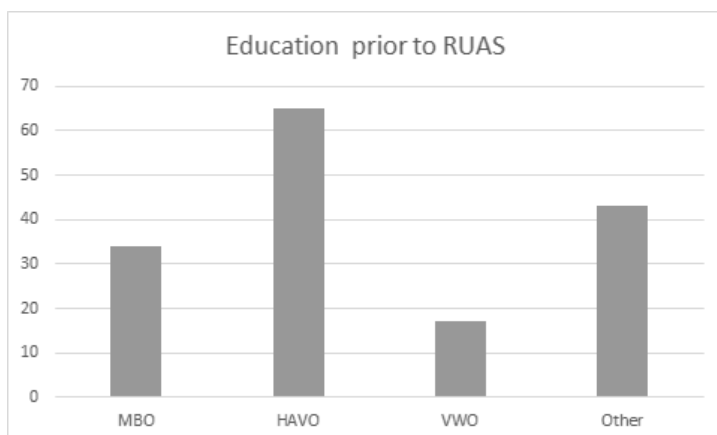


Figure 6 – Education prior to the RUAS students

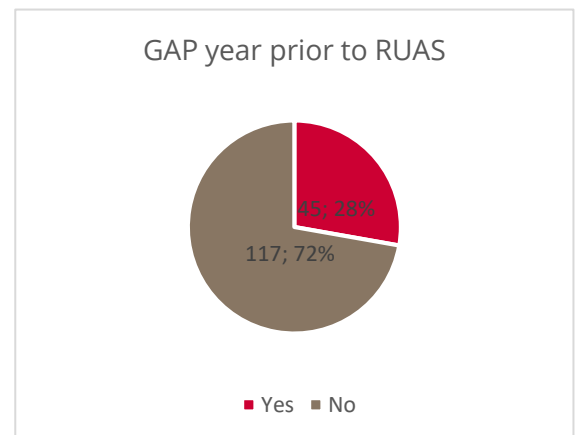


Figure 7 – GAP year amongst RUAS



### 3.3 Results importance 21st-century skills to their future profession according to students

In general students deem all 19 skills important. On a scale of 1-10, the lowest score is 7. The skill which scores highest is 'Communication' with 10 points. Critical thinking scores second best with 9,5 points followed by IMT literacy, Creativity, Collaboration, Curiosity, Initiative, Persistence, Adaptability and Social health with 9 points. The lowest score of 7 points was given to Numeracy, Scientific literacy and Environmental literacy.

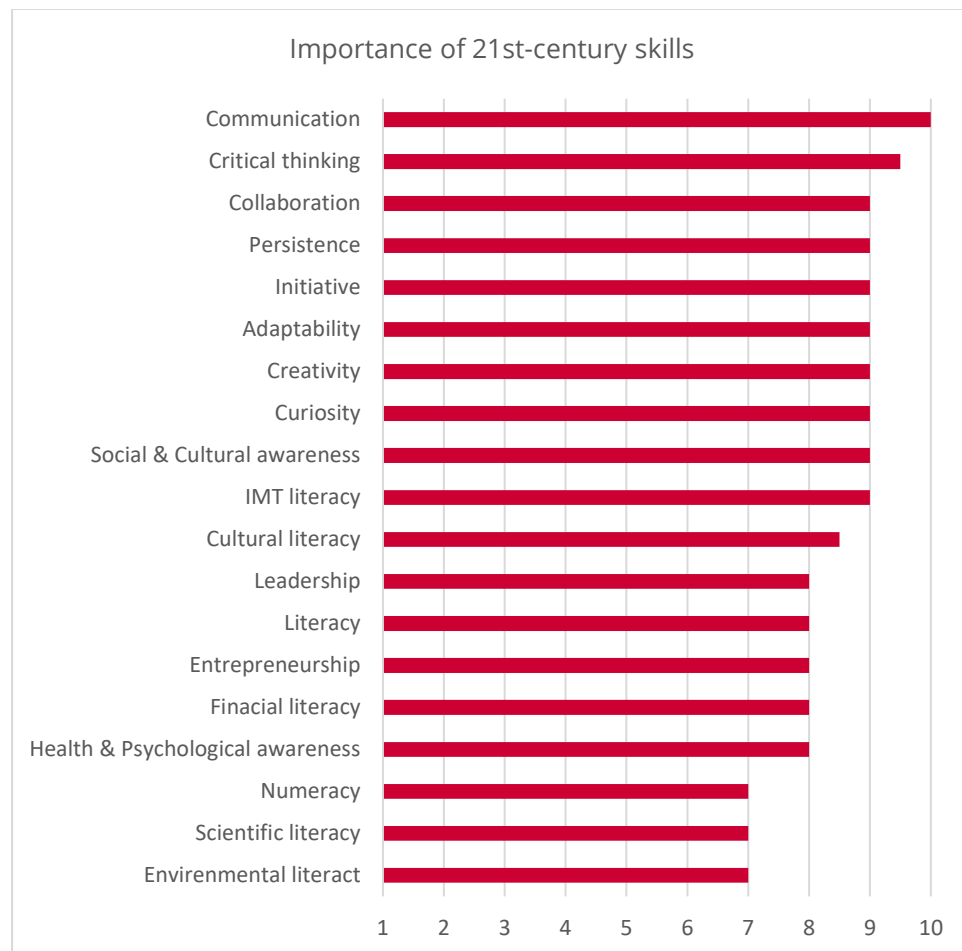


Figure 8 – Importance of 21st-century skills

When zooming in on the scores per school, we see some interesting differences between students from different institutions (see figure 9).

IMT literacy scores highest at CMI, 10 points, while at the other schools the score is 8 points. Not very surprising in a school where IMT is pivotal. The biggest difference between the schools is seen with Environmental literacy: CMI scores only 4 points, while RBS score 8.

Another difference is demonstrated when it comes to Social & Cultural awareness. Students from WdKA find it extremely important (10 point), while students from CMI give only 7 points. Something similar is the case with creativity, which is valued as considerably less important by IBK students than by those of the other schools. Compared to WdKA students (10 point) the difference is even 3 points.

As for Financial literacy, students from CMI and WdKA value this aspect as less important than their counterparts from RBS and IBK.

The skill Entrepreneurship is valued less by CMI students (7 points) than by students from the other schools. Students of WdKA (arts) and RBS (business administration) have the same scores for Entrepreneurship (9 points).

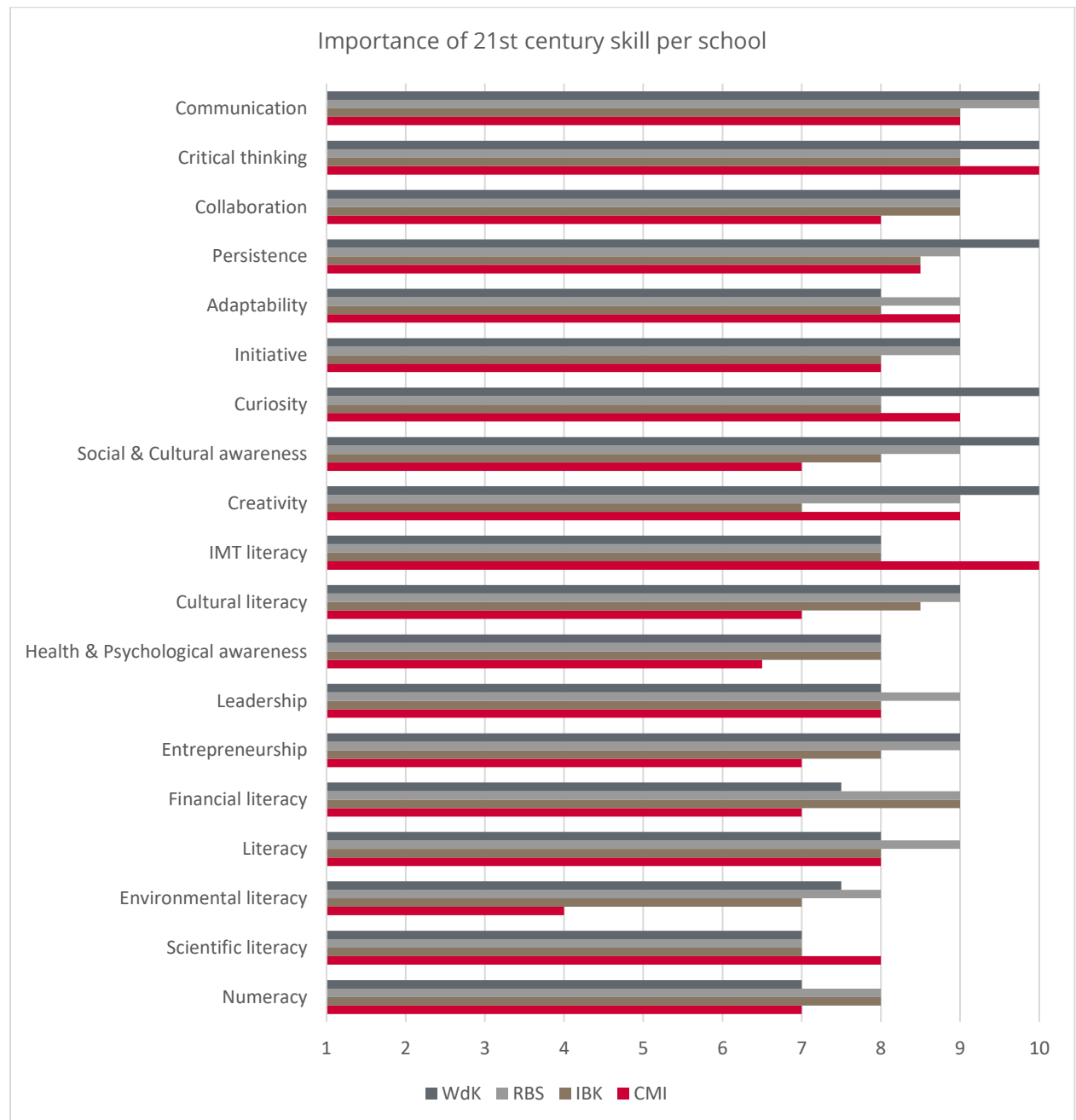


Figure 9 – Importance per school

Another skill that WdKA students find important is curiosity, which scores 10 points. It is also highly valued by the other schools, but not with the maximum score.

### 3.4 Results of to what extent the students think they developed the skill prior to RUAS.

Looking at the general picture, differences between the scores are less big when compared to the importance of the skills according to the students. Lowest score is 6 points for Financial literacy, Environmental literacy and Entrepreneurship, highest score is 8 points for Critical thinking, Communication, Collaboration, Curiosity, Persistence and Social and Cultural awareness.

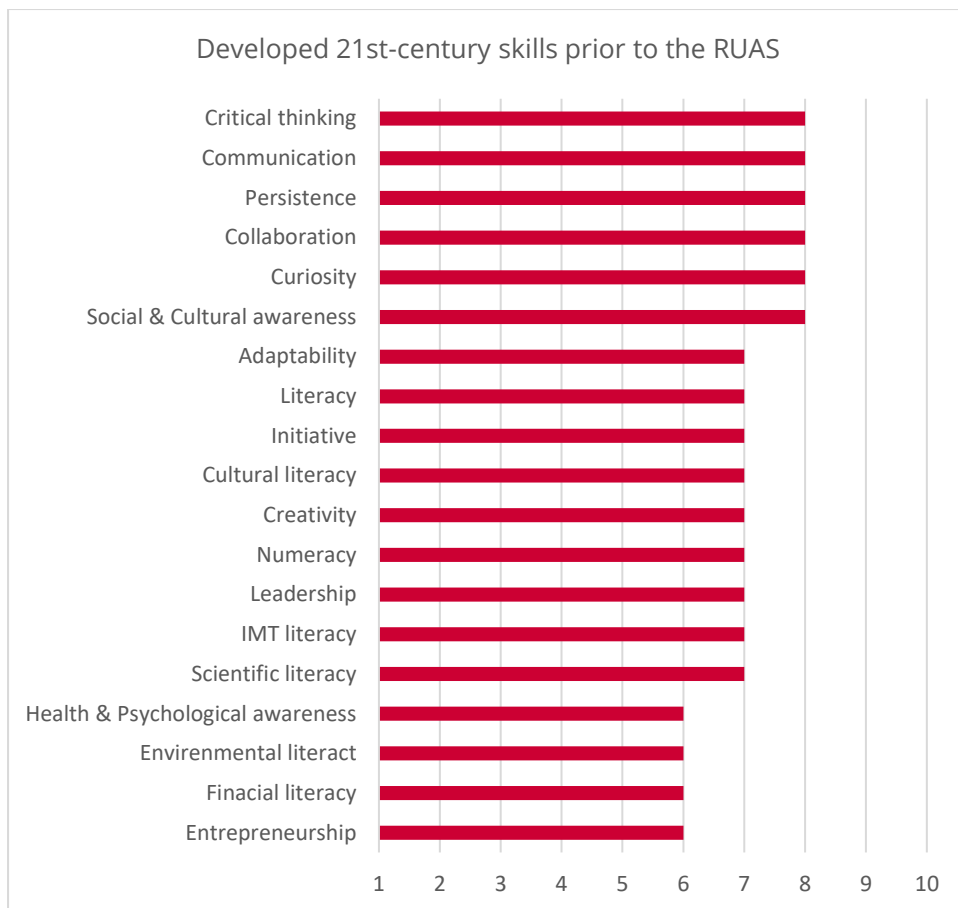


Figure 10 – Developed 21st-century skills prior to the RUAS

However, if we focus on the scores per institute, some scores diverge a lot. For example, students from CMI indicate they developed Scientific literacy prior to RUAS rather well (8 points) while students from IBK only score 5.5 points. An even bigger difference is found between the same student population when it comes to IMT literacy. CMI students again indicate that they master this skill well (8 points) while IBK students developed this skill insufficiently (5 points).

One skill that almost all students developed alike is Environmental literacy, which they indicate as having mastered sufficiently (6 points) prior to coming to RUAS.

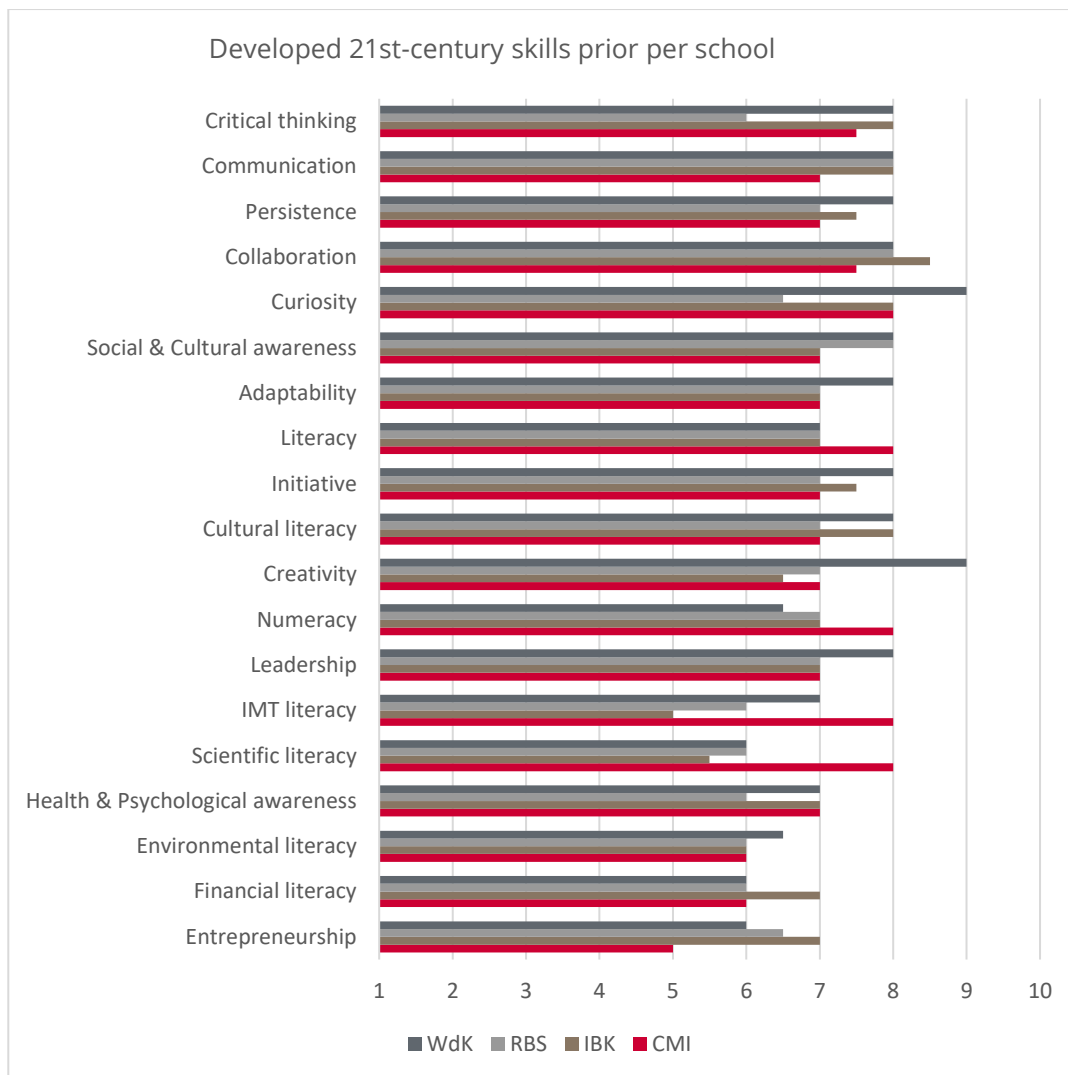


Figure 11 – Developed 21st-century skills prior to the RUAS per school

Creativity scores high with WdKA students, while IBK students give the lowest score, 6.5 points. WdKA students indicate they developed Curiosity very well prior to RUAS (9 points), while RBS students feel they still have a lot to learn (6.5 points).

### 3.5 Observations regarding the differences in Delta-scores

Noticeable is how comparable the scores are between the skills students think they developed prior to RUAS and outside RUAS. The only skills that deviate are Numeracy, Scientific literacy and Adaptability. Numeracy and Scientific literacy are skills that are developed in educational programmes, in particular in primary and secondary education (Numeracy) and tertiary education (Scientific literacy).

### 3.6 Results of to what extent social activities (outside RUAS) contribute to the development of 21st-century skills

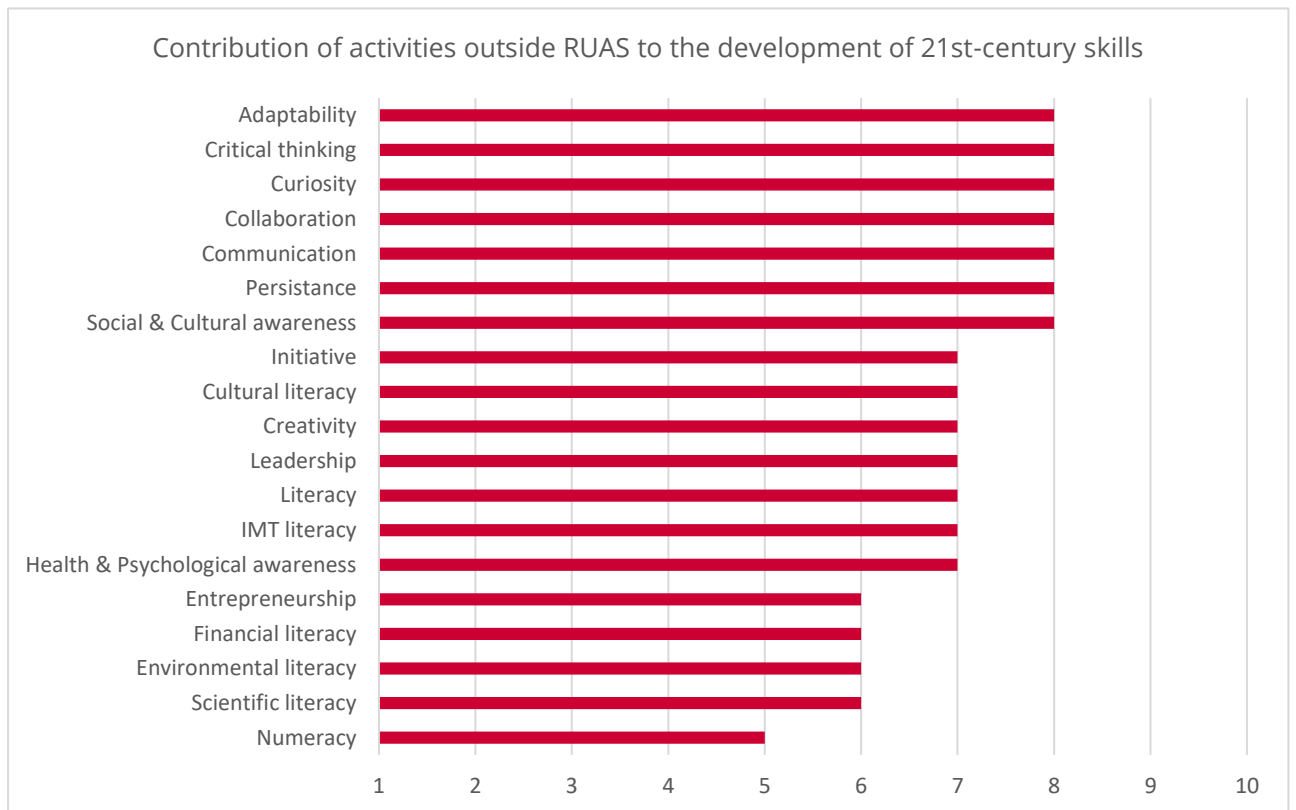


Figure 12 - Contribution of social activities (outside RUAS) to the development of 21st-century skills

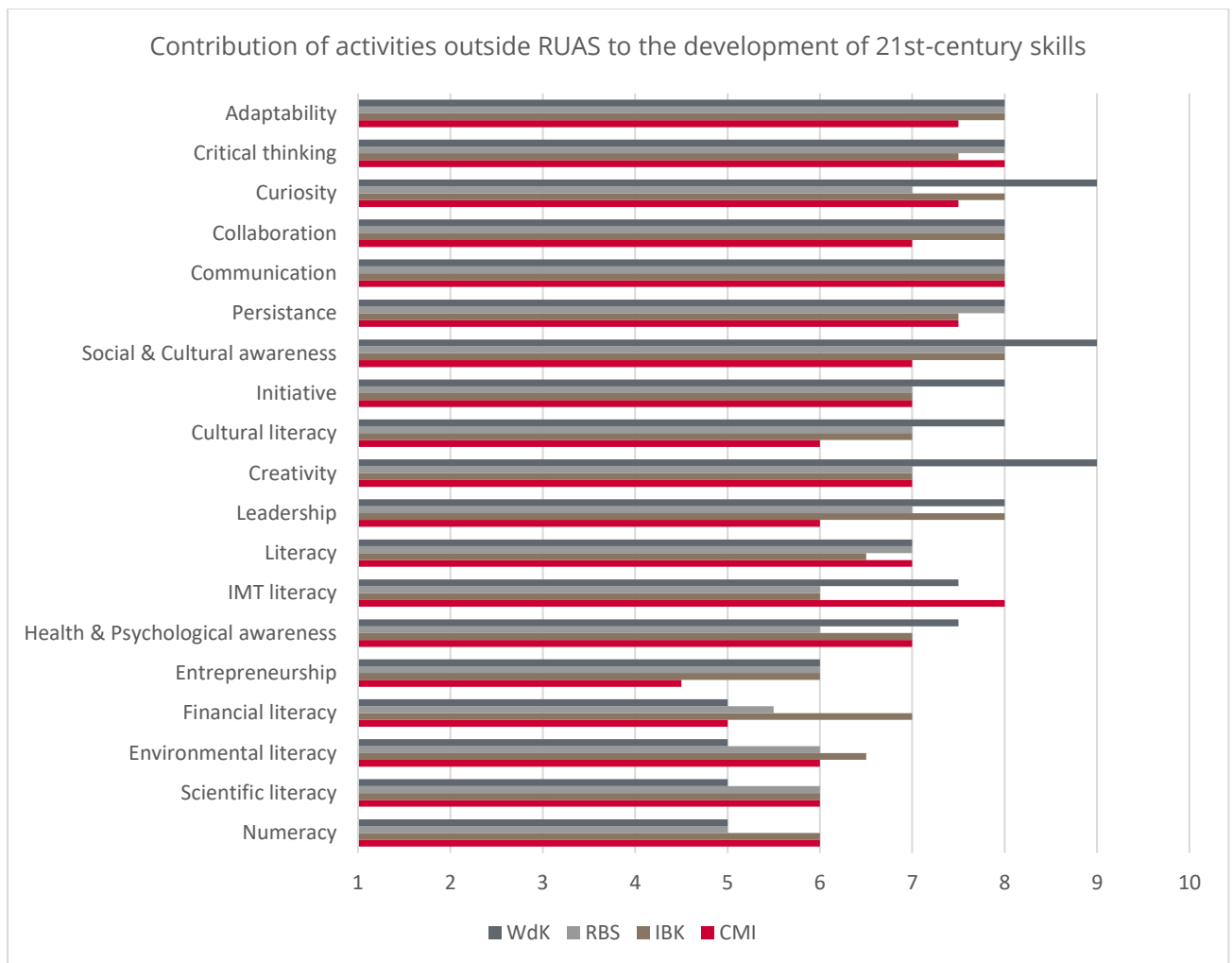


Figure 13 - Contribution of social activities (outside RUAS) to the development of 21st-century skills per school.

When we zoom in on the scores of the separate schools (see figure 13), we see some interesting differences. IBK students think they developed Financial literacy also through social activities (7 points), while students of the other three schools indicate they didn't (5 points). CMI students graded their development of cultural literacy via social activities as sufficient (6 points); however, WdKA students are more convinced they did (8 points). This is similar for creativity: WdKA students developed these skills very well (9 points), students from the other three schools score significantly lower.

Entrepreneurship is a skill CMI students haven't sufficiently developed through social activities, they say. Students of the other three schools aren't really convinced either; however, they find it sufficient (6 points). Leadership and health and psychological awareness are both rated lowest by CMI students, while WdKA students indicate they have developed these skills through social activities very well (resp. 8 and 9 points).

### 3.7 Results of to what extent international activities (RUAS programmes) contribute to the development of 21st-century skills

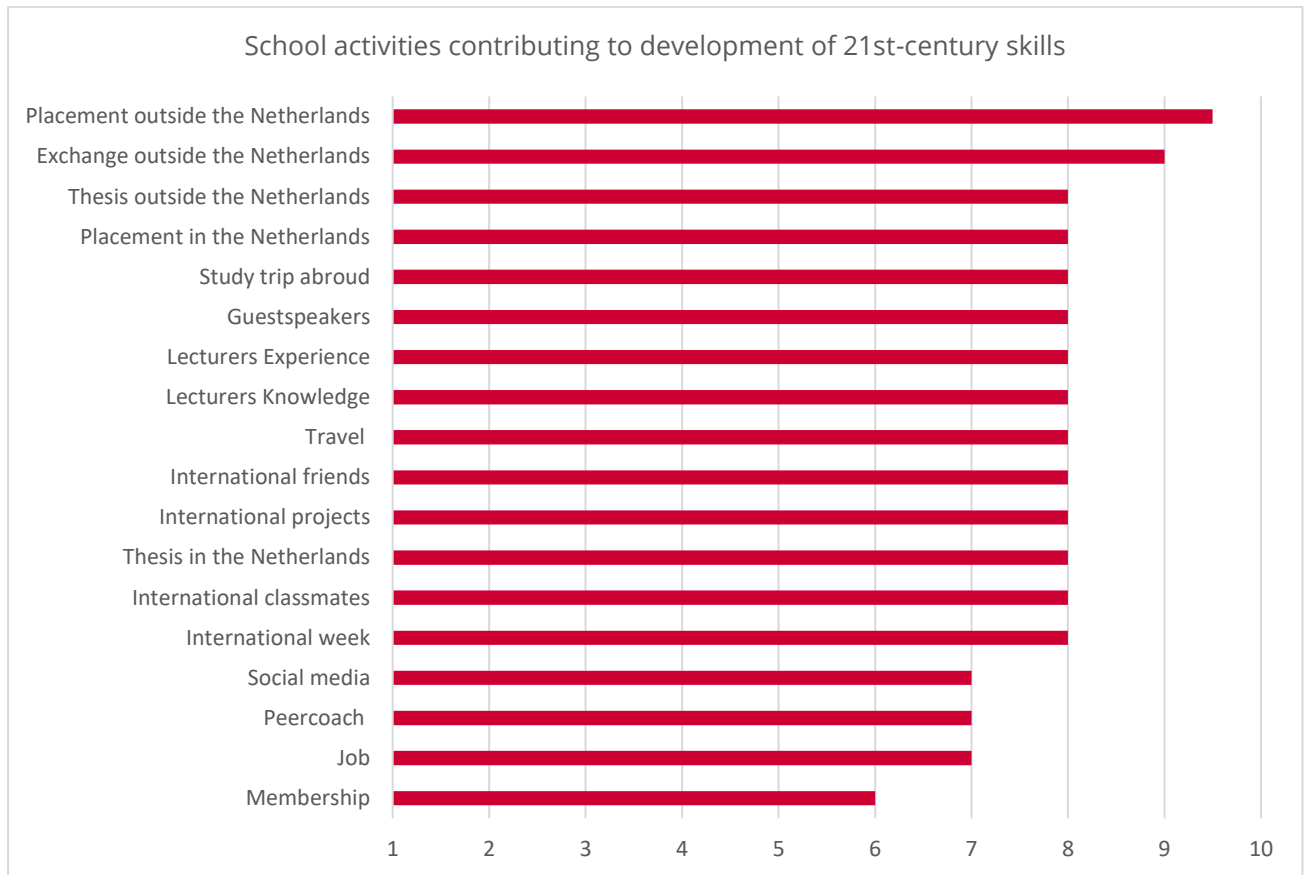


Figure 14 – International activities contributing to the development of 21st-century skills

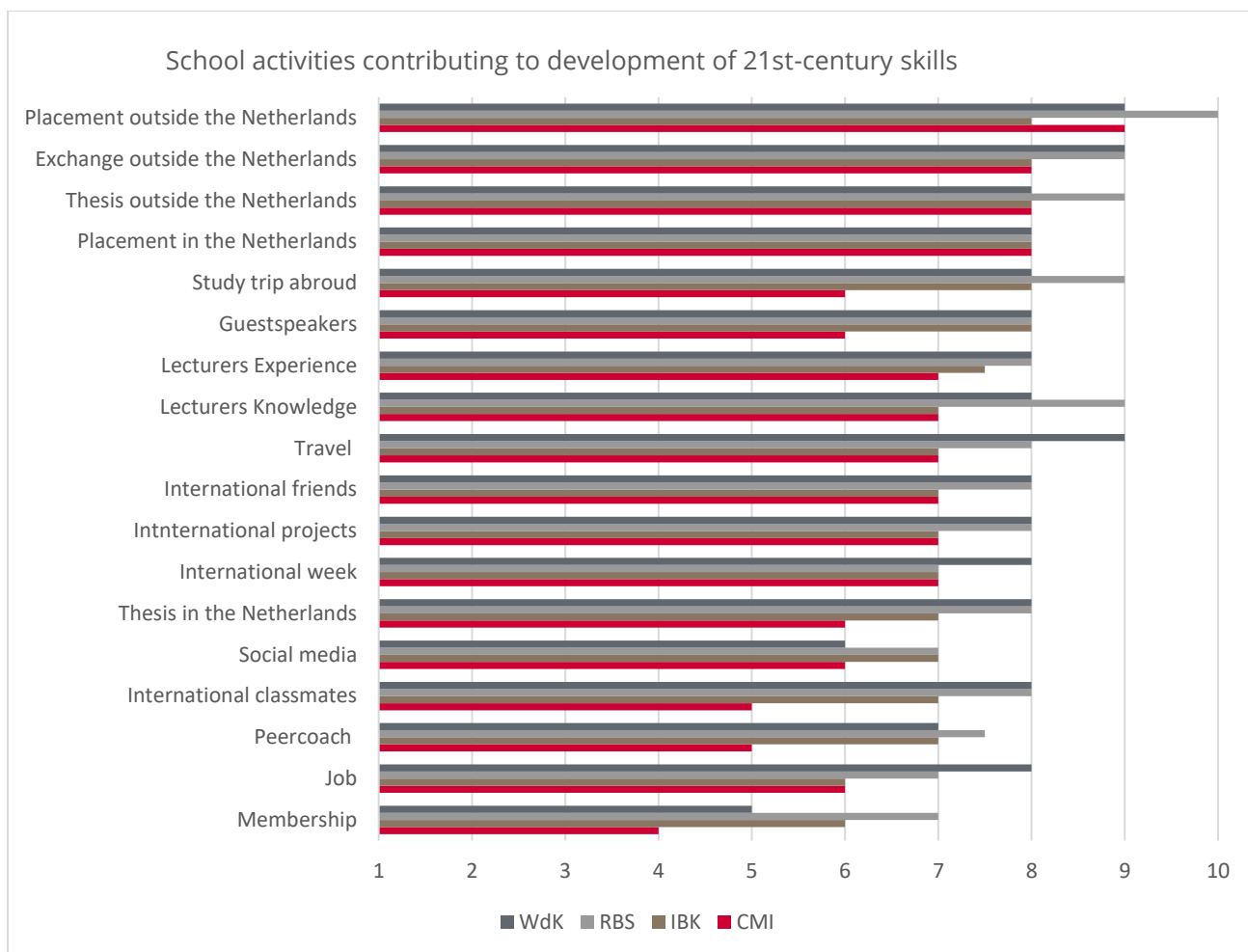


Figure 15 – Contribution of international activities (RUAS programmes) to 21st-century skills development per school

To define whether students feel international activities and experiences will enhance the development of 21st-century skills, they were asked to indicate how important they value each activity. Activities for which you have to go abroad score best (internship, study or graduation abroad). The first 'domestic experience' they value quite high is RUAS lecturers with international experience or with sufficient knowledge of international study material. The experiences that are valued least are membership of a sport or student organisation, social media communities and a side job.

When zooming in on the results per institute we see some interesting differences. RBS, which is the institute that has historically the most internationalised programmes scores highest on all topics. CMI, with most respondents from the IT-programme, scores lowest. We particularly see a big difference in scores between RBS and WdKA on the one hand (rather –important) and CMI on the other hand (almost –not important) when it comes to international study trips and international classmates at RUAS. This is also in line with the number of students that are looking for international experiences within each programme. For IBK students international experiences at home are important. After an internship abroad, they value international guest speakers and an internship within an international company in the Netherlands higher than a semester abroad.

There is only one skill that is rated higher in terms of development than importance, and that is Environmental literacy by CMI students. They feel they have already acquired enough or even more knowledge regarding environmental issues than their future employer will require of them.



### 3.8 Missing competencies

The students were also asked to indicate if they miss any competencies that they feel are important to develop for their employability. In general students mention mostly skills and competences that are explicitly mentioned in the survey or can be related to one of the competences. Competences related to language proficiency and technological skills are often mentioned. Obviously, these are all covered by the skills Literacy and IMT. For Empathy and Relationship building we can say that they can be traced back to our list of competencies. It might be that the students did not read the definitions well enough or did not understand what was covered by the competency in the survey. Or maybe they find these skills so important that they should be mentioned separately.

### 3.9 Overall interpretation of the data

When one looks at the data in general, the standard deviation is relatively small when it comes to defining importance and it becomes bigger when defining their development. So it seems the students' interpretation of importance of the skills deviate less between the schools than we expected. More deviation was displayed in their own development of this skill.

Another outcome after analysis of the data is that it seems that some skills are rated higher within schools where those skills are expected to be relevant. E.g. Curiosity and Creativity are both skills attributed to the more artistic student and students from WdKA score highest on these skills. This is similar for IMT literacy, which is rated highest by CMI students, whereas Entrepreneurship is rated lowest by CMI students. Although we gave the same definition of skills to all students, the way students interpret the skills for their domain and programme may differ.

## 4 Conclusion

With 7 out of 10 points being the lowest score, we can conclude that the students who filled out the survey acknowledge the importance of the 21st-century skills we defined, although not more than 23% of the students being surveyed had heard of the term 21st-century skills.

We see that overall the foundational literacies are seen as least important and that competencies and life skills are both in the top 6.

When looking at the different schools we see that the top 6 isn't the same for every school.

CMI	IBK	RBS	WdKA
<b>IMT literacy</b>	<b>Critical thinking</b>	<b>Communication</b>	<b>Communication</b>
<b>Critical thinking</b>	<b>Communication</b>	<b>Critical thinking</b>	<b>Critical thinking</b>
<b>Creativity</b>	<b>Collaboration</b>	<b>Collaboration</b>	<b>Persistence</b>
<b>Adaptability</b>	<b>Financial literacy</b>	<b>Financial literacy</b>	<b>Social and cultural awareness</b>
<b>Curiosity</b>	<b>Persistence</b>	<b>Persistence</b>	<b>Creativity</b>
<b>Communication</b>	<b>Cultural literacy</b>	<b>Cultural literacy</b>	<b>Curiosity</b>

Figure 16 - Top 6 Skills CMI IBK RBS WdK

What students at WdKA find important for their future profession, differs from what IBK students deem important. It seems that some skills are rated higher within schools where those skills are expected to be relevant. E.g. Curiosity and Creativity are both skills liaised to the more artistic student and students from WdKA score highest on these skills. This is similar for IMT literacy, which is rated highest by CMI students, and entrepreneurship, which is rated lowest by CMI students.

A reservation seems appropriate here: WdKA students have to indicate how they have developed and acquired 7 competencies looking at the development and composition of their portfolio. This clarifies a possible distinction between the understanding of the definitions given and the interpretation of the definitions by the students of the different schools.

What is also noticeable is that when the average of the scores per 21<sup>st</sup> century skill per school is calculated, WdK and RBS both score 8.3, IBK 7.7 and CMI 7.6. Students from WdKA and RBS in general seem to attribute a higher importance to the skills than students from IBK or CMI. Students in these programmes might be more aware of the skill mentioned and the development of that skill in prior education.

After the data analysis we become more and more aware of the impact of the definition of Entrepreneurship that we have chosen. As already mentioned, a better wording would have been entrepreneurial attitude. Becoming an entrepreneur or being entrepreneurial are two different things and entail different practical applications. Students that aim to have their own start-up or want to work as an entrepreneur need different sets and levels of skills than the students who in general need to develop an entrepreneurial attitude such as initiative taking, risk mitigating, customer-driven thinking, etc. The entrepreneurial attitude is applicable for university students in all disciplines, while entrepreneurial skills are more required for students following study programmes in economics, business and management related areas.

### 4.1 To what extent do students think social activities contribute to developing 21st-century skills?

Looking at the absolute points students allocate we see that social activities contribute less to developing a skill than education before RUAS. However, we have to say the difference is not that eminent. Compared to the scores students allocate to 'how important they find the skills', the gap is substantially bigger. The importance is always rated higher than the effect social activities have on the development of skills, except for the skill Environmental literacy, which scores 4 point from CMI students on importance and 6 on the contribution of social activities. This indicates that students in general think social activities can sufficiently

contribute to developing 21st-century skills. For some skills they are not convinced this is the case (Numeracy, Scientific- Financial-, Environmental literacy, entrepreneurship).

Regarding the different schools, we can conclude we see the same phenomenon as with the importance of the skills: skills that are relevant for a particular school are also rated higher when it comes to the attribution of social activities. Students of WdKA rate skills as Creativity, Curiosity, Initiative, Cultural literacy substantially higher than students from the other schools. Financial literacy scores lowest with students from WdKA and CMI, traditionally schools and professions where financial knowledge is not highly developed.

When calculating the average score per school on every skill, we see again that students from WdK attribute the highest scores (6.9). Students from IBK score an average of 6.7, RBS 6.5 and CMI 6.4. The average scores do not differ enough to conclude that students from one school are more socially active than students from other schools in relation to acquiring or enhancing 21st-century skills.

## 4.2 To what extent do students think international activities contribute to developing 21st-century skills?

We have to conclude that the programme/school that students are attending *in general* defines the way students look at the value of international activities for developing 21st-century skills. RBS students contribute a substantially higher value to international activities than the other schools, although WdKA students are also rather positive about the impact. Both schools have an international professional field and are very much focused on international opportunities during the bachelor phase. Nevertheless, for all programmes an international outlook is indispensable and meaningful in relation to the international development of the professional profile, the intercultural and international work environment as well as the personal development from an intercultural citizenship's perspective.

All students agree that an internship abroad will contribute to the development of 21st-century skills, although we have to take into consideration the fact that the surveyed students are 1<sup>st</sup>-Year students. Students of CMI, RBS and WdKA have defined international activities as top-3 activities to develop skills. IBK students are the exception in this, their top 3 contains two domestic activities.

# 5 Road Forward

## Intro

Despite the results of the research we have to understand that the framework 21st-century skills is not only a dynamic framework, but also a framework that is part of a continuous debate. There are, as mentioned, experts, researchers and scholars who definitely value the framework as an essential element of the educational system (primary, secondary and tertiary education) in order to attribute and develop the skills necessary to live and work in a globalising and diverse world. But there are also professionals who criticise the framework (Biesta, 2016) because of the economic focus. Nevertheless, the framework 21st-century skills is still a dominant factor in the development of skills in the educational system.

We see a development that different platforms or centres are looking at the future. The term 21st-century skills has evolved from transversal and transferable skills into 21st-century skills, whereas other platforms are using new terms like future skills (Apollo RI, EU), employability skills (EU), new skills (EU, Accenture) or next skills (MRDH) or focusing on a specific domain, digital skills (FoE, Accenture). These platforms in particular address necessary skills for the next economy or the new economic reality. Others, as mentioned in the previous paragraph, like Gert Biesta (2016), Erik Meester (2017) and Paul Kirschner (2017) have a critical stance regarding 21st-century skills. Especially if we look at 21st-century skills from an economic perspective. It's more than addressing general skills: Knowledge and Norms, Values and Beliefs are essential components of (global) learning.

## Recommendations RUAS

- Educational programmes have to address 21st-century skills as essential skills to develop personal talent and ambition of students in order to create an in-depth level of employability in a fast-changing and hyper mobile world.
- Educational programmes will take into perspective not only the debate of 21st-century skills in the educational fora, but will also look at specific skills that are essential and contribute to the professional profile of the educational programme.
- Educational programmes have to define and develop the specific skills essential for the professional profile. Not only in terms of learning outcomes, but in particular the definition of the skills that make a contribution to the professional profile.
- Educational programmes will involve all stakeholders in the process to align all aspects of the skills with the objective to have clear and tangible learning outcomes regarding 21st-century skills.

## Implementation (see also Impact Map)

- The research group presents and discusses the outcomes of the research during a dissemination session of the knowledge center business innovation for RUAS representatives of educational programmes.
- The research group presents and publishes (website) the report and an infographic about research findings and recommendations for educational programmes of RUAS, in particular the schools who participated in the research (WdKA, RBS, IBK, CMI). These documents are downloadable from the website for educational purposes.
- Curriculum Committees discuss the outcomes of the research with management, advisory boards and development teams in order to review learning outcomes and module descriptions. Curriculum committees will decide whether research group members and/or external experts will be asked to provide additional information or advice regarding the outcomes of the research or the discussion regarding the outcomes.
- Management of educational programmes will (decide to) address the report during business advisory board meetings and/or network meetings. Management can ask research group members to participate in and contribute to the discussion with the advisory board.

- The professorship Internationalisation facilitates advice, consult and communication regarding the outcomes of the research by connecting internal and external experts to the specialists of the educational programmes.
- The educational programmes provide information and content regarding follow-up research about the topic of 21st-century skills after the process of discussion, development and design.

## Impact Map

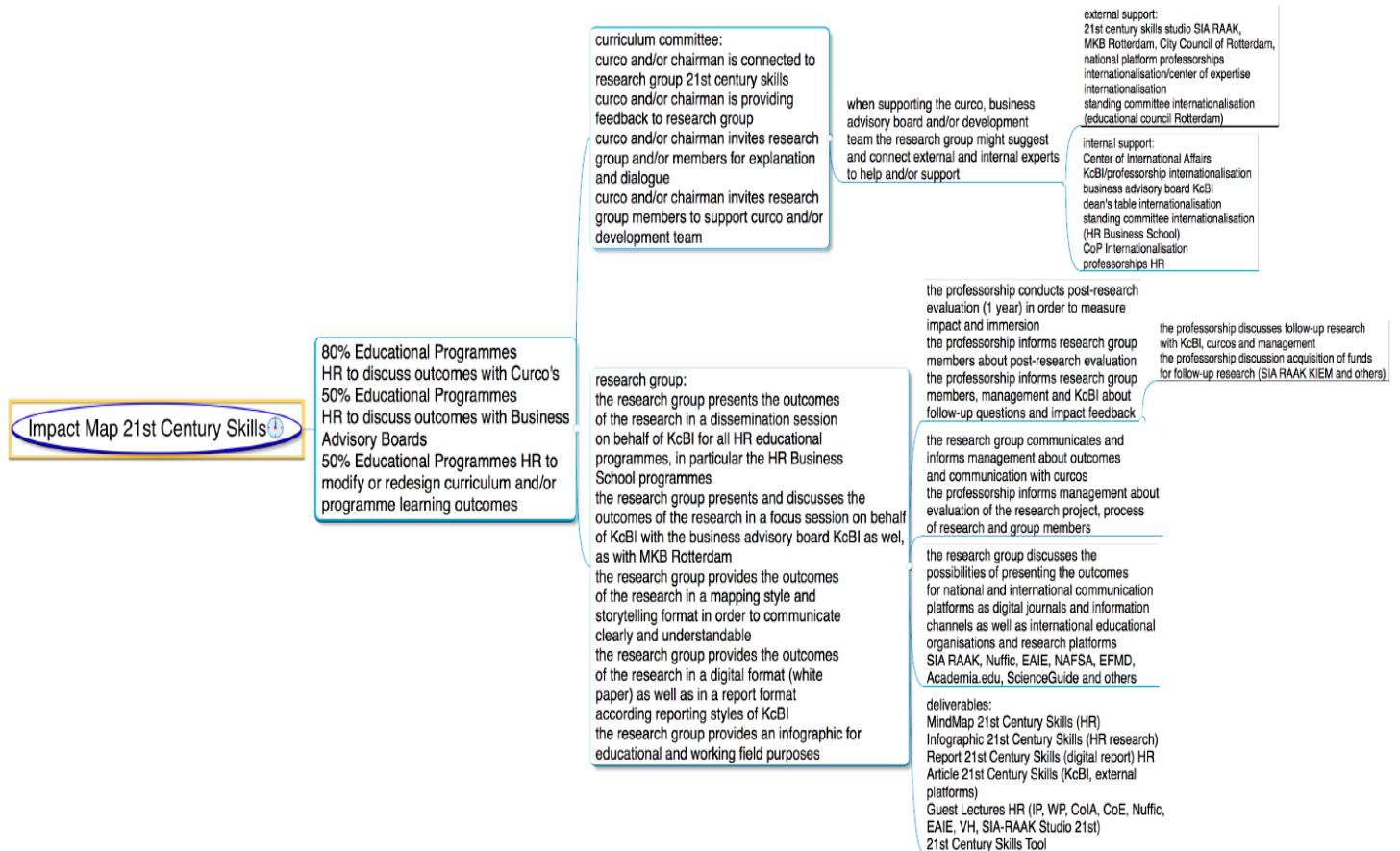


Figure 17 – Impact Map

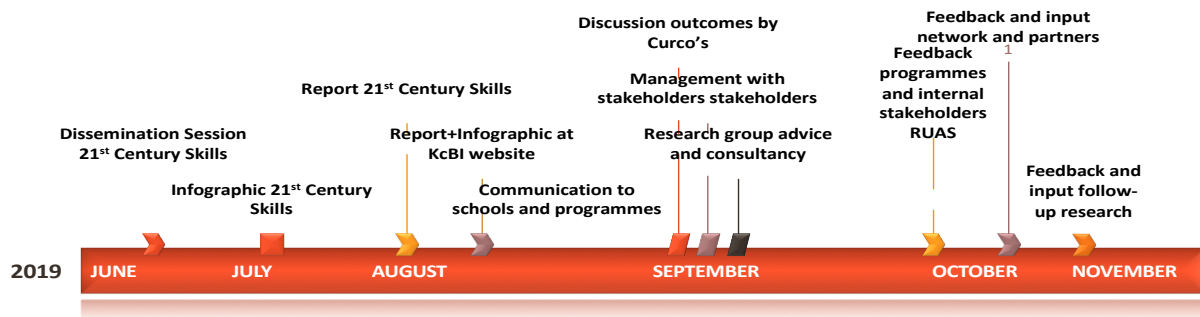


Figure 18 - Timeline

#### Next steps follow-up research

- Given the outcome of the research it would be advisable to conduct follow-up research regarding 21st-century skills with 4<sup>th</sup>-Year students of the participating schools in order to determine how their perspectives have changed during their studies. As a comparative study a 4-year period could indicate if these students went through a developmental process regarding skills attribution as well as personal and professional growth.
- There is food for thought looking at the definitions of the 21st-century skills and the interpretation by students of the different schools. Although students understand the definitions given, there might be a diverse attitude as well as a different interpretation what the definitions mean to the individual student. This could be the research topic for follow-up research.
- How to develop a framework of diverse didactical methods that are most effective and efficient for teaching and supporting 21st-century skills in a diverse educational environment? Research that involves also external stakeholders like the company network, private and public organisations, partner institutions in the Netherlands and abroad as well as research centres.

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# Appendices

## A Complete Data Overview

At which institute of the Rotterdam University of Applied Sciences (RUAS) are you studying?	Frequency	Percent
CMI	32	19,5
IBK	22	13,4
RBS	78	47,6
WdK	32	19,5
Total	164	100
In what year did you start studying at RUAS?	Frequency	Percent
2016	78	47,6
2017	86	52,4
Total	164	100
What is your gender?	Frequency	Percent
Male	70	42,7
Female	91	55,5
Unknown	3	1,8
Total	164	100
What is your age?	Frequency	Percent
17	17	10,4
18	35	21,3
19	42	25,6
20	23	14
21	14	8,5
22	7	4,3
23	7	4,3
24	5	3
25	3	1,8
26	3	1,8
27	3	1,8
30	1	0,6
Total	160	97,6
Missing	4	2,4
Total	164	100

What is your nationality?	Frequency	Percent
Dutch	107	65,2
Dutch mixed	5	3,0
European	33	19,8
Asian	4	2,4
Middle East	4	2,4
Other	4	2,4
Unknown / Missing	7	4,3
Total	164	100
What is the level of your previous education?	Frequency	Percent
MBO	34	20,7
HAVO	65	39,6
VWO	17	10,4
Other	43	26,2
Total	159	97
Missing	5	3
Total	164	100
Was your previous education before RUAS inside or outside the Netherlands?	Frequency	Percent
In the Netherlands	111	67,7
Elsewhere	49	29,9
Total	160	97,6
Missing	4	2,4
Total	164	100
Did you take a GAP-year before starting your studies at RUAS?	Frequency	Percent
Yes	45	27,4
No	117	71,3
Total	162	98,8
Missing	2	1,2
Total	164	100
Have you heard of 21st-century skills in your previous education?	Frequency	Percent
Yes	38	23,2
No	126	76,8
Total	164	100

## B Data List 21st-century skills

Literacy	CMI				IBK				RBS				WdK			
	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	31	8,00	8,23	1,65	22	8,00	7,77	1,34	76	9,00	8,46	1,64	31	8,00	7,87	2,05
Development prior	31	8,00	7,68	1,54	21	7,00	6,48	1,97	77	7,00	7,03	2,05	30	7,00	7,33	2,31
HR																
Outside	31	7,00	7,06	1,91	22	6,50	6,36	1,47	78	7,00	6,40	2,19	29	7,00	6,41	2,37
Numeracy	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	32	7,00	6,56	2,08	22	8,00	7,68	1,09	75	8,00	7,85	1,73	32	7,00	6,00	1,92
Development prior	32	8,00	7,56	1,54	22	7,00	7,00	1,77	74	7,00	6,59	2,15	30	6,50	6,40	2,25
HR																
Outside	31	6,00	5,55	2,22	20	6,00	5,25	1,48	73	5,00	5,53	2,25	30	5,00	4,17	1,95
Scientific literacy	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	31	8,00	7,06	1,82	22	7,00	6,59	1,74	74	7,00	7,31	1,84	29	7,00	6,45	2,84
Development prior	30	8,00	7,23	2,14	22	5,50	5,45	1,92	73	6,00	6,07	2,04	29	6,00	6,07	2,75
HR																
Outside	30	6,00	6,13	2,24	22	6,00	5,18	1,89	73	6,00	5,51	2,34	29	5,00	4,86	2,66
IMT literacy	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	28	10,00	9,36	1,16	19	8,00	7,21	1,99	68	8,00	8,16	1,65	23	8,00	8,00	2,15
Development prior	28	8,00	7,36	2,23	19	5,00	5,42	1,57	68	6,00	6,32	2,00	21	7,00	6,29	2,49
HR																
Outside	28	8,00	7,89	1,75	18	6,00	5,89	1,81	66	6,00	6,30	2,30	22	7,50	6,95	2,52
Financial literacy	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	32	7,00	6,81	1,79	21	9,00	8,57	1,16	77	9,00	8,68	1,27	32	7,50	7,34	1,89
Development prior	32	6,00	5,75	2,64	20	7,00	7,15	1,46	76	6,00	5,78	2,23	30	6,00	5,50	2,40
HR																
Outside	32	5,00	5,53	2,31	21	7,00	6,62	1,43	74	5,50	5,51	2,37	30	5,00	5,17	2,32
Cultural literacy	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	32	7,00	7,16	2,16	22	8,50	8,55	0,86	77	9,00	8,16	1,93	31	9,00	8,81	1,30
Development prior	32	7,00	6,94	1,97	22	8,00	7,50	1,68	75	7,00	6,59	2,19	29	8,00	7,10	2,14
HR																
Outside	32	6,00	6,25	2,34	22	7,00	7,32	1,76	76	7,00	6,91	2,23	30	8,00	7,07	2,53
Environmental literacy	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance	29	4,00	5,14	2,61	22	7,00	6,36	1,76	73	8,00	7,33	2,12	30	7,50	7,13	2,05
Development prior	29	6,00	5,55	2,56	22	6,00	6,09	1,44	73	6,00	6,18	2,21	28	6,50	6,07	2,68
HR																
Outside	29	6,00	5,28	2,75	22	6,50	6,27	1,70	74	6,00	6,19	2,24	28	5,00	5,75	2,86

	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
<b>Critical thinking</b>																
Importance	32	10,00	9,22	1,13	22	9,00	8,86	0,77	5	9,00	8,60	1,14	25	10,00	9,72	0,54
Development prior HR	32	7,50	7,59	1,92	22	8,00	7,32	1,67	4	6,00	6,25	2,06	24	8,00	7,88	1,62
Outside	32	8,00	7,88	1,98	22	7,50	7,23	1,41	5	8,00	7,00	1,73	25	8,00	7,88	1,76
<b>Creativity</b>																
Importance	32	9,00	8,44	1,34	22	7,00	7,23	1,48	77	9,00	8,47	1,41	32	10,00	9,84	0,63
Development prior HR	32	7,00	6,63	1,54	22	6,50	6,41	1,68	76	7,00	6,41	2,07	30	9,00	8,37	1,88
Outside	32	7,00	7,31	1,55	22	7,00	6,50	2,04	75	7,00	6,89	2,02	31	9,00	9,06	1,09
<b>Communication</b>																
Importance	32	9,00	8,78	1,41	22	9,00	9,00	0,98	77	10,00	9,42	0,89	32	10,00	9,41	0,98
Development prior HR	32	7,00	7,00	1,72	22	8,00	7,77	1,48	76	8,00	7,42	2,12	31	8,00	7,81	1,49
Outside	32	8,00	7,47	1,72	22	8,00	7,82	1,92	76	8,00	7,71	2,12	32	8,00	8,19	1,35
<b>Collaboration</b>																
Importance	31	8,00	8,35	1,36	22	9,00	8,68	1,21	77	9,00	9,14	1,05	32	9,00	8,97	1,23
Development prior HR	32	7,50	7,03	1,67	22	8,50	8,18	1,56	76	8,00	7,08	2,18	31	8,00	7,74	1,91
Outside	32	7,00	6,41	2,64	22	8,00	7,82	1,65	76	8,00	7,36	2,27	32	8,00	7,44	2,55
<b>Entrepreneurship</b>																
Importance	31	7,00	6,58	1,84	22	8,00	8,32	1,43	74	9,00	8,69	1,67	32	9,00	8,50	1,39
Development prior HR	28	5,00	5,32	2,21	22	7,00	6,55	1,97	74	6,50	5,91	2,53	31	6,00	5,74	2,53
Outside	28	4,50	5,18	2,20	21	6,00	6,00	1,95	71	6,00	5,92	2,49	31	6,00	5,39	2,39

Curiosity	CMI				IBK				RBS				WdK			
	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	32	9,00	8,63	1,36	21	8,00	8,10	1,18	75	8,00	8,11	1,40	32	10,00	9,38	0,94
	31	8,00	7,68	1,78	22	8,00	7,45	1,63	74	6,50	6,54	2,31	32	9,00	8,41	1,74
	32	7,50	7,56	2,15	21	8,00	7,90	0,89	75	7,00	6,89	2,10	32	9,00	8,75	1,14
Initiative	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	32	8,00	8,47	0,95	22	8,00	8,55	1,01	74	9,00	8,88	1,11	32	9,00	9,22	0,91
	31	7,00	6,77	1,96	22	7,50	6,91	1,77	75	7,00	6,73	2,29	31	8,00	7,48	2,32
	31	7,00	6,45	1,84	21	7,00	7,14	1,68	74	7,00	6,93	2,15	31	8,00	7,48	1,86
Persistence	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	32	8,50	8,72	1,08	22	8,50	8,50	1,06	73	9,00	8,84	1,22	32	10,00	9,31	1,03
	32	7,00	7,34	1,79	22	7,50	7,36	1,84	73	7,00	7,18	2,14	31	8,00	8,10	1,40
	32	7,50	7,28	2,08	22	7,50	7,68	1,46	73	8,00	7,07	2,24	30	8,00	7,83	1,78
Adaptability	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	32	9,00	8,78	1,13	22	8,00	8,27	1,24	75	9,00	8,89	1,21	32	8,00	8,50	1,52
	32	7,00	6,72	1,84	22	7,00	7,18	1,84	74	7,00	7,05	2,05	31	8,00	8,10	1,78
	32	7,50	7,16	2,03	22	8,00	7,32	1,55	74	8,00	7,31	2,17	30	8,00	8,27	1,28
Leadership	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	32	8,00	7,13	1,77	21	8,00	8,52	1,03	76	9,00	8,84	1,38	32	8,00	7,81	1,55
	31	7,00	6,48	2,68	21	7,00	7,10	1,89	75	7,00	6,71	2,28	31	8,00	6,81	2,46
	31	6,00	6,13	2,77	21	8,00	7,62	1,36	75	7,00	6,72	2,31	30	8,00	6,93	2,63
Social & Cultural awareness	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	32	7,00	6,72	2,40	22	8,00	7,91	1,41	76	9,00	8,91	1,37	32	10,00	9,31	1,12
	30	7,00	6,57	2,51	22	7,00	7,14	1,75	75	8,00	7,32	2,27	32	8,00	7,78	1,95
	30	7,00	6,43	2,57	21	8,00	7,48	2,09	76	8,00	8,03	1,93	31	9,00	8,16	2,05
Health & Psychological awareness	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)	N	Median	Mean	(sd)
Importance Development prior HR Outside	30	6,50	6,23	2,54	21	8,00	7,57	1,60	73	8,00	7,55	2,12	30	8,00	7,53	2,17
	31	7,00	5,90	2,61	21	7,00	6,57	1,96	72	6,00	6,0	2,36	29	7,00	6,41	2,63
	28	7,00	6,61	2,47	21	7,00	6,57	1,96	73	6,00	6,19	2,44	28	7,50	7,14	2,21

## C Tables Indications of International Experiences

**On a scale of 1-10 please indicate which of the following international experiences will add to the development of 21st-century skills?**

	<b>CMI</b>		<b>IBK</b>		<b>RBS</b>		<b>WdK</b>	
	N	Median	N	Median	N	Median	N	Median
Placement outside NL	31	9,0	20	8,0	70	10,0	29	9,0
Exchange outside NL	30	8,0	19	8,0	71	9,0	27	9,0
Thesis outside NL	30	8,0	20	8,0	68	9,0	27	8,0
Placement in NL	31	8,0	20	8,0	70	8,0	29	8,0
Study trip abroad	28	6,0	20	8,0	69	9,0	31	8,0
Guest speakers	29	6,0	20	8,0	72	8,0	31	8,0
Lecturers Knowledge	31	7,0	22	7,0	76	9,0	28	8,0
Travel	31	7,0	22	7,0	75	8,0	31	9,0
Lecturers Experience	31	7,0	20	7,5	76	8,0	28	8,0
International projects	27	7,0	19	7,0	76	8,0	27	8,0
International friends	29	7,0	19	7,0	72	8,0	30	8,0
Thesis in NL	30	6,0	20	7,0	68	8,0	27	8,0
International classmates	25	5,0	17	7,0	75	8,0	28	8,0
International week	25	7,0	19	7,0	69	7,0	24	8,0
Job	29	6,0	20	6,0	70	7,0	28	8,0
Peer coach	31	5,0	19	7,0	64	7,5	23	7,0
Social media	29	6,0	21	7,0	73	7,0	29	6,0
Membership	29	4,0	20	6,0	68	7,0	28	5,0

## D Definitions of 21st-century skills (English)

<b>Foundational Literacies</b>	<b>Competencies</b>	<b>Life Skills</b>
Literacy	Critical thinking/problem-solving	Curiosity
Numeracy	Creativity	Initiative
Scientific literacy	Communication	Persistence
IMT literacy	Collaboration	Adaptability
Financial literacy	Entrepreneurship	Leadership
Cultural & civic literacy		Social & cultural awareness
Environmental literacy		Health & psychological awareness

<b>Literacy</b>	Ability to read, understand and use written language
<b>Numeracy</b>	Ability to use numbers and other symbols to understand and express quantitative relationships
<b>Scientific literacy</b>	Ability to use scientific knowledge and principles to understand one's environment and test hypotheses
<b>IMT literacy</b>	Ability to make effective use of information, media and technology (Partnership for 21st skills definition)
<b>Financial literacy</b>	Ability to understand and apply conceptual and numerical aspects of finance in practice
<b>Cultural &amp; civic literacy</b>	Ability to understand, appreciate, analyse and apply knowledge of the humanities
<b>Environmental literacy</b>	Ability to understand, investigate and analyse environmental issues and make accurate conclusions about effective solutions
<b>Critical thinking / problem solving</b>	Ability to identify, analyse and evaluate situations, ideas and information to formulate responses and solutions
<b>Creativity</b>	Ability to imagine and devise new, innovative ways of addressing problems, answering questions or expressing meaning through the application, synthesis or repurposing of knowledge
<b>Communication</b>	Ability to listen to, understand, convey and contextualize information through verbal, nonverbal, visual and written means
<b>Collaboration</b>	Ability to work in a team towards a common goal, including the ability to prevent and manage conflict
<b>Entrepreneurship</b>	Ability to explore opportunities and manage risks to create value for profit and/or social good
<b>Curiosity</b>	Ability and desire to ask questions and to demonstrate open-mindedness and inquisitiveness
<b>Initiative</b>	Ability and desire to proactively undertake a new task or goal
<b>Persistence</b>	Ability to sustain interest and effort and to persevere to accomplish a task or goal
<b>Adaptability</b>	Ability to change plans, methods, opinions or goals in light of new information
<b>Leadership</b>	Ability to effectively direct, guide and inspire other to accomplish a common goal
<b>Social &amp; cultural awareness</b>	Ability to interact with other people in a socially, culturally and ethically appropriate way
<b>Health &amp; psychological awareness</b>	Ability to strive for and understand that a balanced physical and psychological condition will lead to accomplish and work towards a task or goal

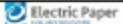

## E Definities van 21st-century skills (Dutch)

<b><u>Basisvaardigheden</u></b>	<b><u>Competenties</u></b>	<b><u>Levensvaardigheden</u></b>
Geletterdheid	Kritisch nadenken/probleem-oplossend vermogen	Nieuwsgierigheid
Rekenvaardigheid	Creativiteit	Initiatief
Wetenschappelijk inzicht	Communicatie	Doorzettingsvermogen
IMT vaardigheid	Samenwerken	Aanpassingsvermogen
Financiële basiskennis	Ondernemerschap	Leiderschap
Maatschappij kennis		Sociaal & cultureel bewustzijn
Milieubewustzijn		Bewustzijn van (psychische) gezondheid

<b>Geletterdheid</b>	Het vermogen om te lezen, en schriftelijke taal te begrijpen en gebruiken
<b>Rekenvaardigheid</b>	Het vermogen om cijfers en andere symbolen gebruiken om kwantitatieve relaties te begrijpen en gebruiken
<b>Wetenschappelijk inzicht</b>	Het vermogen om gebruik te kunnen maken van wetenschappelijk theorieën en principes om je omgeving te begrijpen en om hypothesen te testen
<b>IMT vaardigheid</b>	Het vermogen om effectief gebruik te maken van informatie, media & technologie.
<b>Financiële basiskennis</b>	Het vermogen om financiële kennis in de praktijk toe te passen
<b>Maatschappij kennis</b>	Het vermogen om maatschappelijke situaties te begrijpen, waarderen, analyseren en toe te passen.
<b>Milieubewustzijn</b>	Het vermogen om milieu issues te begrijpen, onderzoeken en analyseren en nauwkeurige conclusies te maken over effectieve oplossingen
<b>Kritisch denken /probleem-oplossend vermogen</b>	Het vermogen om situaties, ideeën en informatie te identificeren, analyseren en evalueren om antwoorden en oplossingen te formuleren
<b>Creativiteit</b>	Het vermogen om iets nieuws te scheppen, een nieuw concept te ontwerpen of een originele oplossing voor een probleem te vinden
<b>Communicatie</b>	Het vermogen om te informatie tot je te nemen, te begrijpen, over te brengen en te duiden op verbale, non-verbale, visuele en schriftelijke wijze
<b>Samenwerken</b>	Het vermogen om in een team naar een gemeenschappelijk doel toe te werken, inclusief het vermogen om conflicten te voorkomen en te managen
<b>Ondernemerschap</b>	Het vermogen om nieuwe mogelijkheden te onderzoeken en risico te managen financiële en / of sociale waarde te creëren
<b>Nieuwsgierigheid</b>	Het vermogen en de wil om vragen te stellen en een open en leergierige houding te laten zien
<b>Initiatief</b>	Het vermogen om een nieuwe taak of een nieuw doel proactief op te pakken
<b>Doorzettingsvermogen</b>	Het vermogen om wilskracht te tonen om een taak te volbrengen of een doelstelling te halen
<b>Aanpassingsvermogen</b>	Het vermogen om plannen, methoden, meningen of doelstellingen te wijzigen in het licht van nieuwe informatie
<b>Leiderschap</b>	Het vermogen om anderen effectief te leiden, coachen en inspireren om een gezamenlijk doel te realiseren
<b>Sociaal &amp; cultureel bewustzijn</b>	Het vermogen om op een sociaal, cultureel en ethisch verantwoorde manier met anderen te interacteren.
<b>Bewustzijn van (psychische) gezondheid</b>	Het vermogen om te streven naar en begrijpen dat een gebalanceerde psychische en lichamelijke conditie zal helpen een taak te volbrengen of een doel te bereiken



## F Questionnaire 21st-century skills

EvaSys	Questionnaire 21st century skills, Rotterdam University of Applied Sciences 2017 [First-year]	
Rotterdam University of Applied Sciences	[KC Internationalization of Higher Education]	
KolO	Questionnaire 21st century skills, First-year RUAS	

Mark as shown: ☐ ☒ ☐ ☐ Please use a ball-point pen or a thin felt tip. This form will be processed automatically.

Correction: ☐ ☒ ☐ ☐ Please follow the examples shown on the left hand side to help optimize the reading results.

### 1. Welcome.

Dear Freshmen,

The first half year of your study at Rotterdam University of Applied Sciences (RUAS) is almost over! Hopefully you already created a good foundation for your future and we hope your study is in line with the expectations which you have.

To gain more insight into certain aspects of your studies at RUAS, we, researchers of the Knowledge Internationalization of Higher Education, would like to ask you to fill out this survey. With your response we will be able to improve the quality of education of current and future students.

Filling in the questionnaire takes approximately 15 minutes of your time and all information collected with this survey will be processed anonymously.

Your input is highly appreciated, thanks in advance.

Koen van der Kooy & Tineke van der Gaast

Knowledge Center Internationalization of Higher Education

### 2. General

2.1 At which institute of the Rotterdam University of Applied Sciences (RUAS) are you studying?

<input type="checkbox"/> CMI	<input type="checkbox"/> COM	<input type="checkbox"/> EAS
<input type="checkbox"/> IBK	<input type="checkbox"/> IFM	<input type="checkbox"/> IGO
<input type="checkbox"/> IvG	<input type="checkbox"/> IvL	<input type="checkbox"/> RAC
<input type="checkbox"/> RBS	<input type="checkbox"/> RMU	<input type="checkbox"/> WdK

2.2 In which study program are you enrolled? e.g. IBL, IBMS, Global, Communication etc.

2.3 In what year did you start studying at RUAS? ☐ 2017 ☐ 2016 ☐ 2015 or earlier

2.4 Have you heard of 21st century skills? ☐ Yes ☐ No

The following questions are about the individual elements of the 21st century skills. How important do you rate a specific element and did you develop this element during your previous study or did you develop these during social activities outside your study.



**3. Literacy: The ability to read, understand and use written language.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 3.1 How important is "Literacy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 3.2 To what extent have you developed 'Literacy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 3.3 To what extent do activities outside RUAS contribute to develop your 'Literacy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**4. Numeracy: The ability to use numbers and other symbols to understand and express quantitative relationships.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 4.1 How important is "Numeracy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 4.2 To what extent have you developed 'Numeracy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 4.3 To what extent do activities outside RUAS contribute to develop your 'Numeracy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**5. Scientific Literacy: The ability to use scientific knowledge and principles to understand your environment and to test hypotheses.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 5.1 How important is "Scientific Literacy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 5.2 To what extent have you developed 'Scientific Literacy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 5.3 To what extent do activities outside RUAS contribute to develop your 'Scientific Literacy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A



**6. IMT Literacy: The ability to make effective use of Information, Media & Technology.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 6.1 How important is "IMT Literacy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 6.2 To what extent have you developed 'IMT Literacy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 6.3 To what extent do activities outside RUAS contribute to develop your 'IMT Literacy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**7. Financial Literacy: The ability to understand and apply conceptual and numerical aspects of finance in practice.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 7.1 How important is "Financial Literacy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 7.2 To what extent have you developed 'Financial Literacy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 7.3 To what extent do activities outside RUAS contribute to develop your 'Financial Literacy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**8. Cultural & Civic Literacy: The ability to understand, appreciate, analyse and apply knowledge of the humanities.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 8.1 How important is "Cultural & Civic Literacy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 8.2 To what extent have you developed 'Cultural & Civic Literacy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 8.3 To what extent do activities outside RUAS contribute to develop your 'Cultural & Civic Literacy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A



**9. Environmental Literacy: The ability to understand, investigate and analyse environmental issues and draw accurate conclusions about effective solutions.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 9.1 How important is "Environmental Literacy" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 9.2 To what extent have you developed 'Environmental Literacy' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 9.3 To what extent do activities outside RUAS contribute to develop your 'Environmental Literacy'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**10. Creativity: The ability to imagine and devise new, innovative ways of addressing problems, answering questions or expressing meaning through the application, synthesis or re-purposing of knowledge.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 10.1 How important is "Creativity" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 10.2 To what extent have you developed 'Creativity' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 10.3 To what extent do activities outside RUAS contribute to develop your 'Creativity'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A



**11. Communication: The ability to listen to, understand, convey and contextualize information through verbal, nonverbal, visual and written means.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 11.1 How important is "Communication" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 11.2 To what extent have you developed 'Communication' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 11.3 To what extent do activities outside RUAS contribute to develop your 'Communication'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**12. Collaboration: The ability to work in a team towards a common goal, including the ability to prevent and manage conflict.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 12.1 How important is "Collaboration" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 12.2 To what extent have you developed 'Collaboration' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 12.3 To what extent do activities outside RUAS contribute to develop your 'Collaboration'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**13. Entrepreneurship: The ability to explore opportunities and manage risks to create value for profit and/or social good.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 13.1 How important is "Entrepreneurship" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 13.2 To what extent have you developed 'Entrepreneurship' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 13.3 To what extent do activities outside RUAS contribute to develop your 'Entrepreneurship'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A





**14. Curiosity: *The ability and desire to ask questions and to demonstrate open-mindedness and inquisitiveness.***

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 14.1 How important is "Curiosity" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 14.2 To what extent have you developed 'Curiosity' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 14.3 To what extent do activities outside RUAS contribute to develop your 'Curiosity'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**15. Initiative: *The ability and desire to proactively undertake a new task or goal.***

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 15.1 How important is "Initiative" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 15.2 To what extent have you developed 'Initiative' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 15.3 To what extent do activities outside RUAS contribute to develop your 'Initiative'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**16. Persistence: *The ability to sustain interest and effort and to persevere to accomplish a task or goal.***

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 16.1 How important is "Persistence" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 16.2 To what extent have you developed 'Persistence' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 16.3 To what extent do activities outside RUAS contribute to develop your 'Persistence'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A



**17. Adaptability: The ability to change plans, methods, opinions or goals in light of new information.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 17.1 How important is "Adaptability" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 17.2 To what extent have you developed 'Adaptability' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 17.3 To what extent do activities outside RUAS contribute to develop your 'Adaptability'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**18. Leadership: The ability to effectively direct, guide and inspire others to accomplish a common goal.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 18.1 How important is "Leadership" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 18.2 To what extent have you developed 'Leadership' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 18.3 To what extent do activities outside RUAS contribute to develop your 'Leadership'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

**19. Social & cultural awareness: The ability to interact with other people in a socially, culturally and ethically appropriate way.**

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 19.1 How important is "Social & cultural awareness" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 19.2 To what extent have you developed 'Social & cultural awareness' during your study *prior to* RUAS? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 19.3 To what extent do activities outside RUAS contribute to develop your 'Social & cultural awareness'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A



## 20. Health & psychological awareness: *The ability to strive for and understand that a balanced physical and psychological condition will lead to accomplish a task or goal.*

Please answer the following questions on a scale of 1-10 where "1" represents the lowest score "Not important / Contributes almost nothing", and "10" is the highest score "Extremely important / Contribute the most". Use "N/A" if you don't know or when it is not applicable.

- 20.1 How important is "Health & psychological awareness" for your future professional perspective? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 20.2 To what extent have you developed 'Health & psychological awareness' during your study *prior to* RUAS ? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A
- 20.3 To what extent do activities outside RUAS contribute to develop your 'Health & psychological awareness'? 1 (lowest) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 (highest) ☐ N/A

## 21. Missing Competences

- 21.1 Which skills - you think are beneficial for your future career - did you miss in the previous set of questions?

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The following questions are about individual experiences during your studies at RUAS and outside which contribute to the development of the 21st century skills.

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22. How important - according to you - are the following experiences during your studies at RUAS in contributing to the development of your *future professional career*?

Please indicate on a scale of 1-10 which of the following (international) experiences will add to the development of your *future professional career*? "1" contributes almost nothing, "10" contributes the most. Use "N/A" if you don't know or when not applicable.

- |  |            |                          |              |                          |     |
|--|------------|--------------------------|--------------|--------------------------|-----|
| 22.1 International week at school  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.2 International projects at school  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.3 Studytrip outside the Netherlands   | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.4 International guestspeakers   | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.5 RUAS lecturers with international experience  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.6 RUAS lecturers that have and show sufficient knowledge in international literature, cases en research | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.7 Placement / internship outside the Netherlands  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.8 Placement / internship at an international company in the Netherlands                                 | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.9 Thesis assignment outside the Netherlands   | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.10 Thesis assignment at an international company in the Netherlands                                     | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.11 Semester exchange program at a partner university  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.12 The peer coach / buddy that is assigned to me by RUAS  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 22.13 My international classmates at RUAS  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |



23. How important - according to you - are the following social activities outside your studies at RUAS in contributing to the development of your *future professional career*?

Please indicate on a scale of 1-10 which of the following (international) experiences will add to the development of your *future professional career*? "1" contributes almost nothing, "10" contributes the most. Use "N/A" if you don't know or when not applicable.

- |  |            |                          |              |                          |     |
|--|------------|--------------------------|--------------|--------------------------|-----|
| 23.1 My international friends outside RUAS   | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 23.2 Part-time job / Holiday job   | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 23.3 Travel  | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 23.4 Membership of an association (eg. sports, student association)                                | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 23.5 Social media groups   | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |
| 23.6 Daily life in the Netherlands (only for international students. Dutch students fill in "N/A") | 1 (lowest) | <input type="checkbox"/> | 10 (highest) | <input type="checkbox"/> | N/A |



## 24. Closing questions

Please note: All information collected with this survey will be processed anonymously.

24.1 What is your nationality?

24.2 What is your gender?

☐ Male☐ Female

24.3 What is your age?

24.4 Was your education before RUAS in the Netherlands or outside the Netherlands?

☐ Inside☐ Outside

24.5 What is the level of your previous education?

☐ MBO☐ HAVO☐ VWO☐ Other

24.6 Did you take a GAP-year before starting your studies at RUAS?

☐ Yes☐ No

24.7 How satisfied are you with the choice of your study program?

1 (lowest)

☐☐☐☐☐☐☐☐☐☐☐☐

10 (highest)

☐ N/A

24.8 How satisfied are you with the first period of your study program?

1 (lowest)

☐☐☐☐☐☐☐☐☐☐☐☐

10 (highest)

☐ N/A

**25. Thank you very much!**

Your effort in helping us improving the education at RUAS is much appreciated and we would like to keep you informed about the result of this research.

25.1 May we approach you for further research on this topic? ☐ Yes ☐ No

25.2 Please fill in your email address:

Thank you -once again for your time and cooperation!

Koen van der Kooy & Tineke van der Gaast

Knowledge Center Internationalization of Higher Education



