Review

# Learning and innovation network in nursing: A concept analysis

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ABSTRACT

*Background:* Approximately 4 years ago a new concept of learning in practice called the 'Learning and Innovation Network (LIN)' was introduced in The Netherlands. To develop a definition of the LIN, to identify working elements of the LIN in order to provide a preliminary framework for evaluation, a concept analysis was conducted.
*Method:* For the concept analysis, we adopted the method of Walker and Avant. We searched for relevant publications in the EBSCO host portal, grey literature and snowball searches, as well as Google internet searches and dictionary consults.
*Results:* Compared to other forms of workplace learning, the LIN is in the centre of the research, education and practice triangle. The most important attributes of the LIN are social learning, innovation, daily practice, reflection and co-production. Often described antecedents are societal developments, such as increasing complexity of work, and time and space to learn. Frequently identified consequences are an attractive workplace, advancements of expertise of care professionals, innovations that endorse daily practice, improvement of quality of care and the integration of education and practice.
*Conclusions:* Based on the results of the concept analysis, we describe the LIN as 'a group of care professionals, students and an education representatives who come together in clinical practice and are all part of a learning and innovation community in nursing. They work together on practice-based projects in which they combine best practices, research evidence and client perspectives in order to innovate and improve quality of care and in which an integration of education, research and practice takes place'. We transferred the outcomes of the concept analysis to an input-throughput-output model that can be used as a preliminary framework for future research.

## 1. Introduction

Approximately 4 years ago, a new concept of learning in practice called the 'Learning and Innovation Network' (LIN) was introduced in The Netherlands. In the LIN, pre-registration nursing students together with nursing staff and education representatives work in a ward to give care and conduct and implement research. The aim of the LIN is to combine the professional development of pre-registration nurses, new registrants and current staff for learning from each other in order to innovate and improve the field of nursing (Gobbens, 2019).

The complexity of healthcare increases rapidly due to the ageing population, technological developments and the shift in healthcare from cure to care and prevention. This increasing complexity translates into a global need for more and higher educated nurses (Mistiaen et al., 2011; Van der Velden et al., 2011). National reports on agile healthcare outline that the profile of nurses is changing as well. Alongside the complex patient care, the nurse also plays an important role in the development and monitoring of the quality of care (Institute of Medicine, 2011; Kaljouw and Van Vliet, 2015). This changing profile is incorporated in the Dutch nurse education profile 'Bachelor of Nursing' (Landelijk Overleg Opleidingen Verpleegkunde, 2016) as well as international reports (NMC, 2018). It also implies that experienced nurses need to develop themselves to monitor and improve the quality of care and to conduct practice-oriented research and implement findings.

International nursing standards (Nursing and Midwifery Board Australia, 2016; WHO, 2009) also emphasize lifelong learning in order to stay up-to-date, which also has implications for the pedagogy of the educational programme: by developing learner agency students learn to define and pursue their own learning goals (Deschênes, 2020) rather than being directed by the requirements that are imposed to the learners from the educator or the curriculum.

Following the social constructivism introduced by Vygotsky (1978), there is an increased awareness that learning takes place in interaction with others and asks for an active role of the participant in the learning process. Mann (2011), in her reflection on future medical education, directs educators to base future educational programmes on socio-cultural learning theories, particularly situated learning, and communities of practice, which view learning as intimately tied to context and through which individual and collective learning takes place.

Learning in the context of the practice setting, also named 'workplace learning', has several advantages as listed by Snoeren (2015). It reduces costs, is more flexible and tends to be 'just in time' compared to regular forms of training. Another advantage is that the subject learned can be directly adopted into practice. A limitation to workplace learning can be that, because of its highly situated, context-dependent character, the evaluation of what was learned and the transferability of the obtained competences to other situations can be difficult (Simper et al., 2018). Learning in the context of practice has various forms and names, for example, living labs, field labs, Dedicated Education Units, Care and Innovation Units and preceptorship. A relatively new form is the Learning and Innovation Network (LIN).

Over the last several years, there has been an increasing demand from the professional field to install new LINs. To further professionalize the current and new LINs, it is essential to deconstruct the LIN concept to its major elements and to evaluate and improve the concept. Therefore, the purpose of this paper is to provide an in-depth analysis of the LIN concept. The aims of this analysis are to develop a definition of the LIN and to identify working elements of the LIN in order to provide a preliminary framework for evaluation.

## 2. Method

For the concept analysis, we chose the method of Walker and Avant (2014). This method examines the function and structure of a concept that permits to decide which phenomena match the concept and which do not. The concept analysis procedure outlines the following eight steps:

1. selecting the concept;
2. identifying the purpose of the analysis;
3. identifying all uses of the concept;
4. determining attributes of the concept;
5. identifying a model case;
6. identifying additional cases, such as borderline and contrary cases;
7. identifying antecedents and consequences; and
8. defining empirical referents.

The method is not a rigid linear process but has a merely iterative nature. Considerations about the distinction between additional and contrary cases (step 6), for example, can determine attributes (step 4). Step 1 and 2 are described in the introduction, in the section below, we elaborate on step 3 to 8.

To identify all uses of the concept, according to step 3 in the method of Walker and Avant (2014), we searched in a wide scope of sources in order to prevent bias by demarcation. The following sources were consulted: publications found through the EBSCO host portal, grey literature and snowball searches as well as Google internet searches and dictionary consults. EBSCO host is a research platform that offers articles from a wide range of journals in Academic Search Premier, Business Source Premier, Hospitality and Tourism Complete, CINAHL, MEDLINE,

ERIC, Psychology and Behavioural Science, LISA, and GreenFILE. In the EBSCO host portal, we used the following keywords: "innovation and learning networks" OR "learning and innovation networks" OR "learning and innovation network" OR "innovation and learning network". With the Google search engine, we used the keyword leer- en innovatienetwerk. In addition, we looked up the meaning of the single words 'Learn', 'Innovation' and 'Network' in the online *Oxford Dictionary* (2004).

To determine the defining attributes, antecedents, consequences and empirical referents (steps 4, 7 and 8), we selected a total of 10 publications that met the inclusion criteria—two articles (Ingram, 2015; Moschitz et al., 2015), two reports (Schot et al., 2019; ZonMw, 2015) and six webpages (de Boer & Willemse, 2016; Inholland, n.d.a; Inholland, n.d.b; Waardigheid en trots, 2017; Actie Leer Netwerk, 2016; Gobbens, 2019). We included only English and Dutch articles, published between 2010 and 2020 and only selected the results that described 'learning and innovation networks' and not, for example, learning in an innovation network. To keep a broad scope, we included articles on LIN in other areas besides nursing. Moreover, we included webpages to yield a richer understanding of the concept. Based on these criteria, we included 10 publications for this concept analysis.

In the publications, we marked elementary keywords and divided the keywords into the following categories: attributes (step 4), antecedents and consequences (step 7) and empirical referents (step 8). Within each category, we combined similar keywords to end up with a limited number of subscriptions. After that, we chose the characteristics that were named most often or in our opinion described the elementary components.

The model case (step 5) is based upon the defining attributes as subscribed in the results, combined with an actual example from real life. We presented the model case to four experienced lecturer practitioners in various LINs to check the accuracy of the case. In the analysis, the description of the case influenced the attributes, and vice versa. Wilson (1963) calls this back-and forth examination of cases and defining attributes an internal dialogue.

Additional cases (step 6) are instances of concepts that are related to the concept being studied but that do not contain all the defining attributes and therefore helps us understand how the concept being studied fits into the network of the concepts surrounding it (Walker and Avant, 2014). To distinguish the model case from other learning network initiatives, we decided to study two other concepts of learning in practice and practice-based research. The amount of concepts in these areas is abundant, for example, field labs, communities of practice, workplace learning, living labs and practice development. We decided to focus on two other concepts with the following inclusion criteria. First of all, the concept takes place in the field of nursing in daily practice at the physical location of a ward. Secondly, it involves the combination of at least two elements in the triangle of higher education: nursing practice and research. Based on these inclusion criteria, we chose to compare the LIN with the concepts dedicated education units (DEUs) and nursing development units (NDUs). The literature we found was converted by the author into a case description comparable to the model case.

To provide a preliminary framework for evaluation, we clustered and assigned the empirical referents, as well as the antecedents, consequences and attributes, to an input-throughput-output model. For the clarity of the framework, we chose to assign the most important antecedents to the category input, the attributes and empirical referents and attributes to throughput and the consequences to output. We chose to focus this preliminary framework on nursing and therefore left out the typical agricultural characteristics, which were not applicable to the nursing LIN, for example 'within the theme sustainability'. Furthermore, we compared the framework with the model case to check if more items needed to be added to the preliminary framework.

## 3. Results

In the introduction, we described the selection of the concept (step 1), namely the LIN. The purpose of the analysis (step 2) is to develop a definition of the LIN and to identify working elements of the LIN in order to provide a preliminary framework for evaluation.

### 3.1. Identifying all uses of the concept

In the third step ('identifying all uses of the concept') of the Walker and Avant method, we found that the term 'Learning and Innovation Network' is a direct translation of the Dutch concept 'Leer- en innovatienetwerk'. It is a new concept in the field of nursing; the term has not been described in either Dutch or English scientific literature on nursing. On various websites, the LIN is defined in different ways, depending on the profession of the reader envisaged by the website. In a brochure written by Gobbens (2019), the LIN is defined as 'an intensive collaboration between a healthcare organization and an educational institution. Students, nurses and care professionals work together on quality improvement projects stemming from questions and needs of the workplace, the main aim always being to increase the quality of care for and wellbeing of clients and to develop interventions to achieve that aim'.

To further analyse the term LIN, it can be subdivided into its three components: learning, innovation and network. In the online *Oxford Dictionary* (2004), the term 'learn' is defined as 'to acquire knowledge of (a subject) or skill in (an art, etc.) as a result of study, experience, or teaching, but also to teach (a person) *to do* or *how to do* something'. Innovation is referred to as 'the introduction of novelties; the alteration of what is established by the introduction of new elements or forms' or 'a change made in the nature or fashion of anything; something newly introduced; a novel practice, method, etc.' Finally, 'network' is described in the dictionary as 'an interconnected group of people; an organization; *spec.* a group of people having certain connections which may be exploited to gain preferment, information, etc., especially for professional advantage'.

In academically oriented articles, the term 'learning and innovation network' emerges in the field of technology and agriculture (Law and Liang, 2019; Brunori et al., 2013; Ingram et al., 2015). In the last field, the concept of 'Learning and Innovation Networks for Sustainable Agriculture' (LINSA) was introduced. LINSA are defined as 'networks of producers, customers, experts, non-governmental organizations, small and medium enterprises, local administrations and components of the formal Agricultural Knowledge System (AKS), which are mutually engaged in with common goals for sustainable agriculture and rural development, cooperating, sharing resources and co-producing new knowledge by creating conditions for communication' (Ingram et al., 2015, p. 55). The elements that the concept seems to have in common with the Dutch LIN in the field of nursing are the shared goals within the network and the aim of learning with and from each other, which, in the end, leads to innovative processes or products. Important differences between LINSA and the Dutch LIN lie mainly in the kind of stakeholders. LINSA have stakeholders such as non-governmental organizations and local administrations on board but do not have a focus on educational institutions to collaborate in educating students.

### 3.2. Determining attributes of the concept

Attributes consist of the characteristics that are most frequently associated with the concept and can help to differentiate the concept of LIN from other concepts.

In Table 1, the attributes are listed, and we marked in which of the 10 publications the characteristic has been mentioned. In order to illustrate the difference between the descriptions of the nursing LIN (light grey) and the agricultural LINSA (dark grey).

In 7 out of 10 sources, social learning is mentioned most often in the

**Table 1**
Identified attributes of LINs.

| | Inholland (n.d.a) | de Boer and Willemse (2016) | Waardigheid en trots (2017) | Inholland (n.d.b) | ZonMw (2015) | Actie Leer Netwerk (2016) | Gobbens (2019) | Schot et al. (2019) | Moschitz et al. (2015) | Ingram (2015) |
|---|---|---|---|---|---|---|---|---|---|---|
| Within nursing | x | x | x | x | x | x | x | x | | |
| Social learning | x | x | x | | x | x | x | | x | |
| Innovation | x | | x | | | x | x | | x | x |
| Collaboration, co-creation | x | x | x | | | x | | | x | x |
| Critical reflection | | x | x | | x | x | x | x | | |
| Working together in daily practice, co-production | x | | x | | | x | x | x | | |
| Sharing and creating knowledge | | x | | | | x | | | x | x |
| Practice-based research | | | x | | | x | x | x | | |
| Intensive collaboration between education, research and practice | | x | x | | | x | | | | |
| Integral transdisciplinary collaboration | | | | x | | | | | x | x |
| Within the theme sustainability | | | | | | | | | x | x |

description of the LIN, followed by innovation, endorses daily practice, reflection and co-production. The least described is the theme sustainability; transdisciplinary approaches; and collaboration between research, education and practice. The selected publications contain eight descriptions of LIN within nursing and two within the theme sustainability.

### 3.3. Identifying a model case

A model case (step 5) (Box 1) demonstrates all the defining attributes of the concept.

### 3.4. Identifying additional cases

The comparison of similarities and differences between the LIN and other related concepts, dedicated education units (DEUs) and nursing development units (NDUs), are intended to further define the LIN (step 6). We compared the three concepts, mainly on how practice, education and research are involved in the three different concepts. The DEU uses a partnership between tertiary education and clinical providers to provide clinical education for undergraduate nursing students, which is led by academics and registered nurses in the clinical environment (Moscato et al., 2013). The component research is represented by the focus on evidence-based practice, mainly used for the development of students (George et al., 2017). The difference between the LIN and the DEU lies in the fact that the DEU does not seem to place emphasis on the learning of the staff or the organization and does not focus on research and innovation. The related case of Box 2a is based on the DEU (Masters, 2016; Nishioka et al., 2014; George et al., 2017).

The aspect of research and innovation is the main goal of another concept related to the LIN called the NDU (Box 2b). Gerrish (2001) describes the NDUs as 'centres for pioneering innovative practice'. The aim of the NDU is to achieve and promote excellence in nursing (Avallone and Gibbon, 1998) by engaging in research and evaluation of practice development, to disseminate their findings to a wider audience, and to facilitate the professional development of nurses. It is expected that both the nursing professional and patient care benefit from this excellence.

Compared to the NDU, the LIN has similarities in the goal of

**Box 1**
Model case.

In the morning, third-year student Sofie and RN Saida work together to care for their shared patients. Sofie cares for some of the less complex patients on her own; other patients are cared for by Saida. Before, during and after care, Sofie and Saida engage in clinical reasoning, ask each other questions and provide feedback. In the afternoon, Sofie and Saida come together with Sofie's fellow student Karen; Mark, another professional; and Anne Marie, a lecturer, to discuss how they can decrease the number of medication errors. This theme was chosen by the collective of students and nurses to focus on as a result of a reflection exercise with the lecturer. Before the meeting, Mark and another student visited other wards together to see what their best practices were in eliminating errors; Sofie and Anne Marie looked up journals to find the latest evidence on that subject; and Saida and Karen carried out a survey to see what their own colleagues already did to prevent medication errors. After combining all of the evidence, they designed a new procedure for administering and supervising medication. Next week, they will come together to talk about how to implement and evaluate the new procedure in an attractive and creative way.

**Box 2a**
Dedicated education unit.

Senior nursing student Emma is partnered with Yvon, a staff nurse who is her designated clinical instructor. The academic lecturer Carla supports Emma and Yvon in relation to educational tasks and the transfer of classroom concepts to direct care. Emma is learning a lot during this apprenticeship, because the gap between practice and what she has learned during her university courses seems to be narrower than in other apprenticeships. Carla shows her and Yvon where they can find the latest interventions on preventing loneliness among elderly people, and Yvon helps Emma and Carla to understand why some of these interventions can be tailored to the case of Ms. D, who is suffering from dementia.

**Box 2b**
Nursing development unit.

The ambitious team of care professionals in geriatric rehabilitation organization A wants to improve their client-centred goalsetting. They struggled with other professionals' emphasis on the maximal mobilization of clients and set higher aims than the patients are in need of to live a satisfied life. In the nurses vision of patient-centred care, they tried out a new intake interview, in which they get to know their patients better. The new way of interviewing was designed together with patients, physical therapists, and psychologists and was based on new insights from research. The evaluation after 3 months of working with this new way of interviewing indicates that patients have been more confident and satisfied and nurses have had more pleasure in their work. Paula, for example, said, 'I have learned so much from this way of working. It has been helpful to me to speak to other professionals and patients to understand their point of view, and getting to know them makes it easier for me to consult them on other occasions'. In a few months, Paula will speak at the national geriatric rehabilitation congress to inform others about their new way of interviewing.
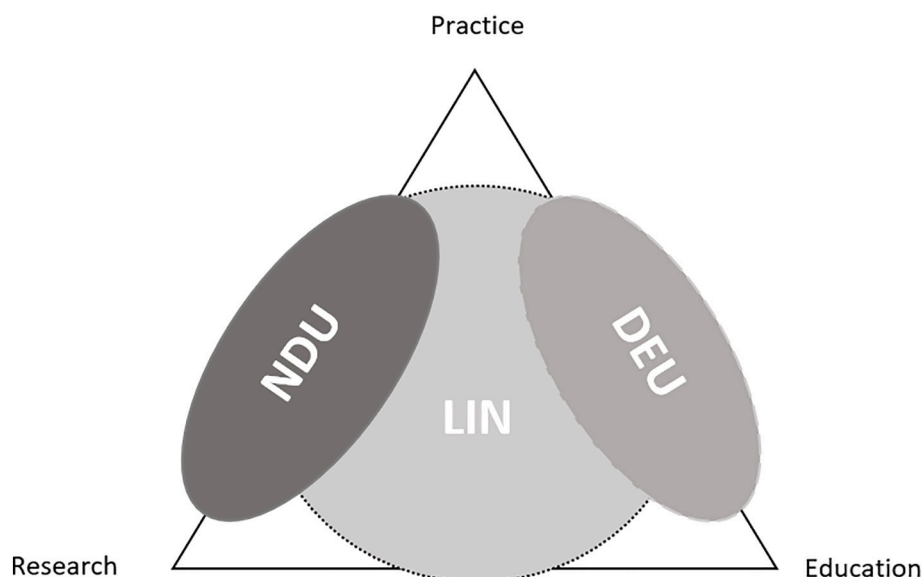


**Fig. 1.** Position of the LIN, NDU and DEU in the triangle of research, education and practice (constructed by the author).

innovation, the link between research and practice, and the development of staff. One important difference is that students or educational organizations do not seem to have an important involvement in the NDU. Although, according to Gerrish (2001), the University of Leeds, which monitors the NDUs in the UK, uses 'collaboration with higher education' as one of many criteria to declare a unit an NDU, the role that educational organizations seem to play in these NDUs is that of a research partner, in terms of being an evaluator of the NDU. Fig. 1 shows how the LIN compared with the NDU and DEU is at the centre of the triangle of research, education and practice.

### 3.5. Identifying antecedents and consequences

Antecedents and consequences refer to step 7 in the concept analysis. Antecedents (Table 2) are those events or incidents that have to be in place prior to the occurrence of the concept and shed light on the contexts in which the concept is generally used. Consequences (Table 3) are those events or incidents that occur as result of the occurrence of the concept.

Developments in society, such as increasing complexity of work and changes in involvement of stakeholders, are the most frequently mentioned antecedents for the LIN. Active members, openness to change and creating conditions for communication are described in only one publication.

An attractive workplace, advancements of expertise of care professionals, innovations that endorse daily practice, improvement of quality of care and the integration of education and practice are mentioned most often (6 out of 10). The least often described characteristics are the rebuild of identities, understanding of the language and culture of other professionals and evidence-based practice (1 out of 10).

### 3.6. Empirical referents

Empirical referents (Table 4) are actual phenomena that, by their existence or presence, demonstrate the occurrence of the concept itself and are related to the defining attributes. The phenomena are described in clear, observable behaviour, thus making it possible to determine the existence of the concept. For this reason, they are useful in the design of a framework for evaluation, because they contribute to both construct and content validities (Walker and Avant, 2014).

The most often mentioned stakeholders were nurses or nurse assistants, nursing students and lecturer practitioners, and the most frequently named learning activities were the practice-based projects

**Table 2**
Identified antecedents.

| | Inholland (n.d.a) | de Boer and Willemse (2016) | Waardigheid en trots (2017) | Inholland (n.d.b) | ZonMw (2015) | Actie Leer Netwerk (2016) | Gobbens (2019) | Schot et al. (2019) | Moschitz et al. (2015) | Ingram (2015) |
|---|---|---|---|---|---|---|---|---|---|---|
| Developments in society, such as increasing complexity of work and changes in involvement of stakeholders | x | | x | | x | | | | x | x |
| A (future) shortage in staff as impulse to invest in the education of nurses | x | | x | | x | | | | | |
| Time and space to learn | | | x | | x | x | | | | |
| Mutual aim of the stakeholders | | | | | | | | | x | x |
| Equal distribution of engagement of all stakeholders | | | | | | | | | x | x |
| Active members willing to produce their own learning process | | | | | | | | | x | |
| Openness to change | | | | | | | x | | | |
| Conditions for communication | | | | | | | | | | x |

**Table 3**
Identified consequences.

| | Inholland (n.d.a) | de Boer and Willemse (2016) | Waardigheid en trots (2017) | Inholland (n.d.b) | ZonMw (2015) | Actie Leer Netwerk (2016) | Gobbens (2019) | Schot et al. (2019) | Moschitz et al. (2015) | Ingram (2015) |
|---|---|---|---|---|---|---|---|---|---|---|
| Advancements of the expertise of care professionals | | x | x | | x | x | x | x | | |
| Attractive workplace for employees and students | | x | x | x | x | x | x | | | |
| Integration of education and practice (e.g., actualization of the educational programme) | x | x | x | | x | | x | x | | |
| Innovations that endorse daily practice | x | | x | | x | x | x | x | | |
| Improve quality of care/practices | | x | | x | x | | x | x | x | |
| Advancements of the expertise of lecturer practitioners | x | x | | | | x | x | | | |
| Interesting and powerful learning environment | | x | | x | x | | | | | |
| Students acquire competences tailored to field of work | | x | | | | x | | x | | |
| Increased number and quality of internships | | x | | | | x | x | | | |
| Stimulation of investigative attitude and research abilities | | | | | | | x | x | | |
| Enhancements are directly in favour of clients | | x | | | | | x | | | |
| Learning healthcare organization | | x | | | x | | | | | |
| Rebuild the identities of the stakeholders | | | | | | | | | x | |
| Understanding of the language and culture of other professionals | | | x | | | | | | | |
| Increased evidence-based practice | | | | | | | | x | | |
| Care professionals challenge themselves | | | | | | | | x | | |

and the guidance of the lecturer practitioner.

## 4. Discussion

In our study, the main aim was to provide an in-depth analysis of the concept LIN by using the method of Walker and Avant (2014). This method enables us to develop a definition of the LIN and to identify working elements of the LIN in order to provide a framework for evaluation.

As a result of the concept analysis of the LIN, we propose the following definition of the LIN as 'a group of care professionals, students and an education representatives who come together in clinical practice and are all part of a learning and innovation community in nursing. They are active members who shape their own learning process and support other learners. They constantly reflect and learn from and with each other by a combination of individual and team learning activities. They work together on practice-based projects in which they combine best practices, research evidence, and client perspectives (Evidence-Based Practice) in order to innovate and improve the quality of care and in which an integration of education, research and practice takes place'.

To compose a preliminary framework for evaluation, we converted the empirical referents together with the attributes, antecedents and consequences obtained from the concept analysis into an input-throughput-output model. This preliminary framework (Fig. 2) can serve as a basis for evaluation, which was the second aim of this study.

As illustrated in Fig. 2, the embodiment of the concept of the LIN can be seen in the fact that students, lecturers, nurses, clients and researchers work together in practice and regularly engage in a variety of learning activities, such as peer coaching, bedside teaching, clinical case discussions and reflection exercises. In addition, they work together on projects in which they conduct research into their own topic of interest or a topic of the research group or organization.

**Table 4**
Identified empirical referents.

| | Inholland (n.d.a) | de Boer and Willemse (2016) | Waardigheid en trots (2017) | Inholland (n.d.b) | ZonMw (2015) | Actie Leer Netwerk (2016) | Gobbens (2019) | Schot et al. (2019) | Moschitz et al. (2015) | Ingram (2015) |
|---|---|---|---|---|---|---|---|---|---|---|
| *Participation of various stakeholders* | | | | | | | | | | |
| Nurses/nurse assistants | x | x | x | | | x | x | x | | |
| Nursing students | x | x | x | | x | x | x | | | |
| Lecturer practitioner/teacher | x | x | | | x | x | x | x | | |
| Care institution | x | | | | | x | x | | x | |
| Clients/consumers | | | | | x | | x | | x | x |
| Researcher | | | | | | | x | | x | x |
| Research group | | x | | | x | x | | | | |
| Rural residents, market enterprises, NGOs, policymakers and other actors | | | | | | | | | x | |
| *Engage in learning activities* | | | | | | | | | | |
| Practice-based projects in order to improve quality | x | x | | | x | | x | | | |
| Lecturer practitioner guides individual students and the team in:<br>- identifying points for development,<br>- supervising projects,<br>- designing research projects, and<br>- critical questioning of staff and students | | x | | | | x | x | x | | |
| Bedside teaching | x | x | | | | | | | | |
| Nurses come to the educational institution to teach classes | | | | | x | x | | | | |
| Participation in learning activities | | | | | | | | | x | |
| Regular evaluation | | | | | | | | | x | |
| Researchers facilitate the process of reflection | | | | | | | | | | x |
| Education is transferred from school into practice | | | | | | x | | | | |
| Students support each other | | | | | | | | x | | |
| Care professionals participate in research and implement their findings in daily practice | | | | | | | | | x | |
| Experimenting | | | | | | | | | | x |
| Peer review | | | | | x | | | | | |

Important social and organizational developments, such as an increasing complexity of work, a change in involvement of the stakeholders and a (future) shortage in staff are important reasons to start a LIN. In order to make a LIN work, important antecedents are the existence of a mutual aim and an equal distribution of engagement among all stakeholders. Other important requirements that have to be met for a successful LIN are active members who produce their own learning process and are open to change and time and space for all members to learn and communicate with each other together (Fig. 2).

The research and sharing of knowledge done by students, nursing staff, clients, researchers and lecturers intends to lead to evidence-based practices and co-create practical innovations at the workplace in favour of clients and gives them an understanding of the language and culture of each other. The team processes and team interventions also intend to create an attractive learning and working environment, which commits employees and students to the organization. In an attractive learning environment, the expectation is that students will feel like an equal partner and will therefore dare to ask questions and make suggestions to improve care. The nursing staff will be open to reflecting on and changing off the way they work, which will lead to an improvement in the learning culture of the team (Nevalainen et al., 2018). It is also expected that this way of working will not only lead to an increased number of internships but also improvements in the quality of the internship, with which all parties work on reducing the shortage of (future) nurses. Because of all the competences they acquire along the way, students, nurses and lecturers are better equipped to anticipate the changing needs of nursing. The lecturer brings back these findings to the educational organization, which leads to an improvement in the alignment of education and nursing practice. All in all, it is expected that the LIN will lead to an improvement in the quality of care.

Some limitations of the study should be mentioned with regard to the subject of the study and the manner of the review. First, the defining concepts are not immutable. They may change slightly over time if the concept changes or they may change when used in a different context. As the ongoing action research on LIN continues, the concept may slightly change in the future. Secondly, in the analysis of the texts, it was sometimes difficult to assign a characteristic to the right category—an attribute, antecedent, consequence or empirical referent. The method relies on the internal dialogue of the researchers to do this at their own discretion. With that, errors could have been made, and seen from another perspective, other choices could have been made.

It is rather challenging to define catch-all terms as 'learn', 'innovation' and 'network'. For example, examining definitions on 'learn' in academic sources, showed that definitions vary widely across disciplines (Barron et al., 2015). Choosing one definition over another would be arbitrary. Consistent with the Walker and Avant concept analysis to keep a broad scope we decided to use a dictionary for defining aforementioned terms.

Because the LIN is a rather new concept in nursing, there are no peer-reviewed articles published. Therefore, the concept analysis is mainly based on Dutch websites and reports with a popular tone of voice tailored to the readership. The articles describing the LINSA articulated some processes in a better way than the websites or reports on the LIN. Therefore, we took some of these attributes into account, although these were mentioned less often. NDUs and DEUs were chosen to exemplify other concepts to compare them with LIN. We are aware of the fact that, with the choice of NDUs and DEUs, we excluded various other workplace learning concepts. As we wrote earlier, there is an abundant amount of similar initiatives, often based locally. With this article, we envisioned to define important working elements from the LIN, as to position it from other concepts. The framework based on a input-throughput-output model is a preliminary model. Future research among experts, for example in a Delphi study, is needed to further define and set the model. By interviewing experts in practice and academic experts on learning in practice we aim to understand the relations between the antecedents, empirical referents, attributes and empirical referents including its working mechanisms, and attributes.

## 5. Conclusion

This concept analysis gives a definition of the young concept 'Learning and Innovation Network' (LIN) and identifies working elements to provide a framework for evaluation. It provides a starting point for ongoing research to systematically examine how the diverse elements influence each other.

Further knowledge of the LIN and its attributes, antecedents, and consequences can aid educational and healthcare organizations to improve the processes and structures of learning in order to attain life-long learning and face the demands of future care.

## CRediT authorship contribution statement

**Marjolein Albers**: Writing – Original draft, Writing – Review and editing, Conceptualization, and Methodology. **Robbert Gobbens, R.R. J.**: Writing – Review and editing and Funding acquisition. **Margreet
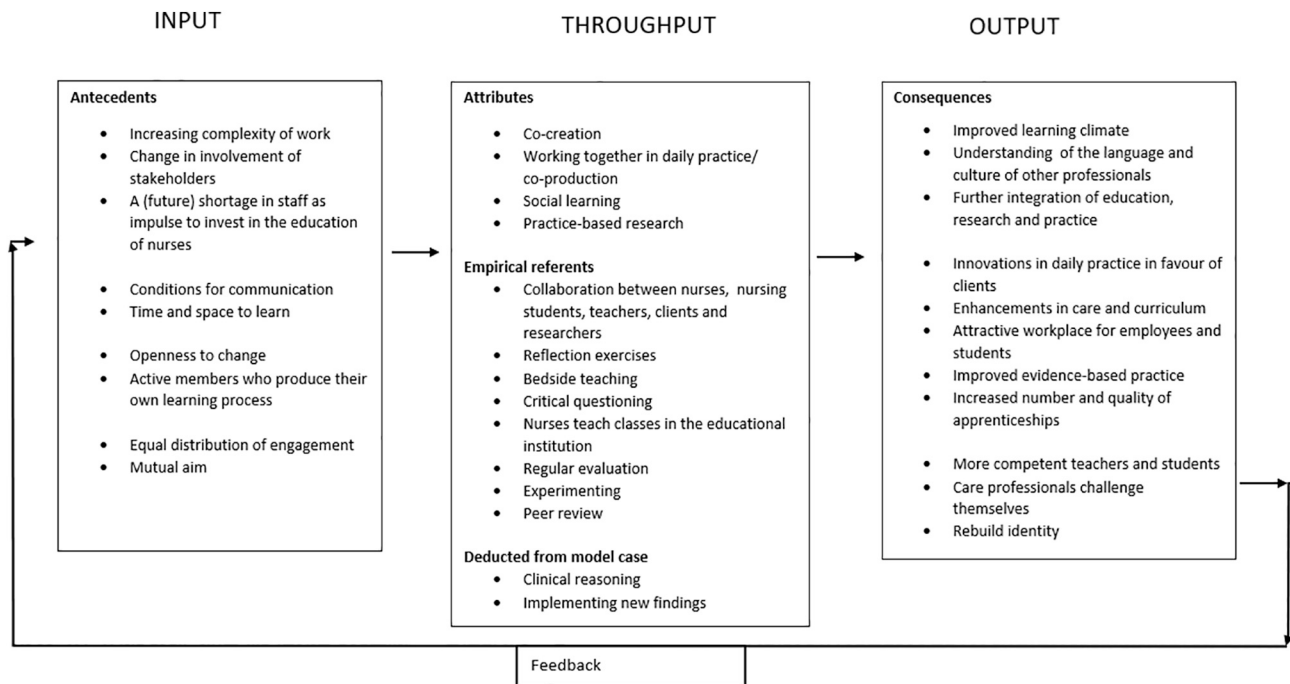
## INPUT · THROUGHPUT · OUTPUT



**Fig. 2.** Framework for the evaluation of the LIN.

**Reitsma**: Writing – Review and editing. **Olaf Timmermans**: Writing – Review and editing, Conceptualization, and Methodology. **Henk Nies**: Writing – Review and editing and Funding acquisition.

## Declaration of competing interest

None.

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