

**The Role of Professional Identity in Shaping Learning
Strategies for 21st Century Skill Development among Dutch
Hospital Nurses**

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Abstract

The rapidly changing healthcare sector demands nurses to acquire 21st century skills to adjust to their changing work context. To examine how nurses develop these skills, it is important to have insight into what learning strategies nurses use. In addition, the professional identity of nurses plays a significant role in the nursing workforce of this century. This study examines the learning strategies used by nurses to develop 21st century skills and how their professional identity influences these learning strategies. A narrative qualitative study approach with semi-structured interviews is conducted to get an understanding of the learning and personal behavior of Dutch hospital nurses. The sample of this study contains 11 nurses working in a Dutch hospital selected of seven departments. Composite narratives are used to analyze and present the results. These results show that nurses use collaboration, learning from practice, formal education and self-study mechanisms as learning strategies. In addition, the results show that professional identity plays a significant role in shaping these strategies due to career stage, workplace context or interpersonal factors of the nurses resulting in four composite narratives. These narratives differ in their usage of learning strategies to develop 21st century skills and professional identity. This study's contribution is the insights into the learning strategies used by working nurses to develop 21st century skills and the understanding of the relationship with professional identity which can be used for further development of new learning innovations for nurses. Further research on this topic is recommended to examine what other factors influence this relationship and how it may change over time.

Keywords: 21st century skills, learning strategies, professional identity, nurses, composite narratives

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Table of content

Abstract.....	2
Acknowledgements.....	3
Table of content.....	4
1. Introduction.....	6
2. Theoretical Framework.....	8
2.1 <i>21st century skills</i>	8
2.2 <i>Learning strategies</i>	12
2.3 <i>Professional identity</i>	15
3. Methodology.....	16
3.1 <i>Design</i>	16
3.2 <i>Setting</i>	17
3.3 <i>Participants</i>	17
3.4 <i>Procedure</i>	17
3.5 <i>Data analysis</i>	20
4. Results.....	23
4.1 <i>Narrative 1, Agnes (2,5,7)</i>	24
4.2 <i>Narrative 2, Alex (3,6)</i>	27
4.3 <i>Narrative 3, Debby (1,8,10)</i>	29
4.4 <i>Narrative 4, Esther (4,9,11)</i>	32
4.5 <i>summary of results</i>	35
5. Discussion and Conclusion.....	37
5.1 <i>Discussion</i>	37
5.2 <i>Limitations and suggestions for further research</i>	42
5.3 <i>Conclusion</i>	44
References.....	45
Appendices.....	52
<i>Appendix I – Informal overview of study</i>	52

<i>Appendix II – Preparation document interview</i>	53
<i>Appendix III – Interview guide (NL)</i>	54
<i>Appendix IV– Interview guide (EN)</i>	56
<i>Appendix V - Codebook</i>	58
<i>Appendix VI - Table for combining narratives</i>	61
<i>Appendix VII - Use of Artificial Intelligence</i>	62

1. Introduction

The healthcare sector is changing dramatically due to changing technological advancements, patient demographics and an increasing complexity of health conditions. These changes increase the demand for nurses to possess 21st century skills. These skills are defined as creativity and innovation, critical thinking and problem solving, learning to learn and metacognition, communication, collaboration, information literacy, ICT literacy, Citizenship, life and career and personal and social responsibility (Griffin et al., 2018). Developing these skills is crucial for nurses to adjust to the changing healthcare environment as nurses in the 21st century must find crucial solutions, be innovative and be competent with technological challenges (Atasoy et al., 2023). The use of 21st century skills by nurses is facilitated by learning strategies which can be seen as the approaches used by individuals to acquire and apply knowledge effectively (Berings et al., 2005). In the working environment of nurses, learning plays a key role (Skår, 2009). In addition, existing literature shows that the nursing profession works around a culture where individuals need to learn as much as possible and where nurses perceive themselves as lifelong learners (Jensen, 2007; Gerrish, 2000). However, despite the knowledge of learning strategies in general, there is a gap in understanding the specific strategies nurses use to develop 21st century skills (Qalehsari et al., 2017; Holman et al., 2001).

The use of various learning strategies as well as a greater learning engagement can be enhanced by one's professional identity (Matsumaya et al., 2017; Goodolf, 2018). A professional identity is the view of how individuals perceive themselves in their roles as professionals (Slay & Smith, 2011). It is a sense of belonging in the work context based on attributes, beliefs, values, motives and experiences (Ibarra, 1999). All these factors can have an influence on learning strategies. For instance, if an individual's professional identity is developed in a responsible position that emphasizes the importance of learning tasks, individuals will start using learning strategies sooner (Matsumaya et al., 2017). The influence nurses' professional identity has on their learning strategies used to develop 21st century skills is examined in this study.

The term "21st century skills" is referred to the competencies that are more aligned with the current economic and social developments, in contrast to the skills that were required for the last century that was more focused on industrial mode of production (Van Laar et al., 2017). When looking at the nursing profession, 21st century skills involve the ability to critically

analyze information, think of alternative treatments, communicate to colleagues about a patient, dealing with a variety of health technology and considering ethical issues. Nowadays, nurses are being trained to work in settings they might not be employed in soon and are being prepared for work they might not have, leading to a challenge in defining their professional identity (Bartels, 2005; Slay & Smith, 2011). The professional identity of the nurse is considered as having the feeling of being someone who is able to practice the nursing profession with skill and responsibility (Öhlén & Segesten, 1998). The professional identity of a nurse is crucial in their profession as the development of it is just as important as learning new skills and knowledge in the medical profession (Monrouxe, 2009). Moreover, it is a key factor in the nurses' ability to provide high-quality care to improve patient outcomes and enhance learning motivation and behavior. (Cronenwett et al., 2007; Xu et al., 2023).

Understanding the specific relationship between learning strategies to develop 21st century skills and professional identity is crucial for nurses' ability to adapt to the changing healthcare environment and maintaining satisfied with their job and personal development. Also, it is crucial for developing new learning innovations needed to prepare and train nurses for this century's demands. Even though existing literature has explored the relationship between learning strategies and professional identity, much of the research is focused on nursing in an educational setting and not explicit on 21st century skills. This study contributes to filling this gap in research.

Therefore, the aim of this study is to investigate the relationship between professional identity and the learning strategies being used by nurses to develop 21st century skills. This is done by acquiring the following research question: *“What learning strategies do Dutch nurses working in hospitals use to develop 21st century skills, and what role does their professional identity play in shaping these strategies?”* To answer this research question, semi-structured interviews with 11 nurses working in a Dutch hospital were performed. The results are presented by using composite narratives.

2. Theoretical Framework

2.1 21st century skills

The current workplace requires highly skilled employees who are given complex and interactive tasks. The 21st century has brought a major shift from the industrial era to the information era (Griffin et al., 2011). Therefore, 21st century employees are expected to efficiently select knowledge, apply knowledge and possess sufficient technical skills to adapt to the changing requirements of their job (Van Laar et al., 2017). This transformed environment has changed individuals' lifestyles, perspectives and perceptions of their environment (Griffin et al., 2011). This transformation is also occurring within the healthcare sector. The medical profession must face challenges such as changing demographics, disease patterns, new technologies and changing professional roles in the 21st century (Towle, 1998). In order to successfully thrive in the current work sector, individuals must develop skills that align with the requirements of the current work environment, called 21st century skills.

21st century skills are today's survival skills individuals not only need for a successful career but also for a quality and personal civic life (Soulé & Warrick, 2015). Existing literature has viewed 21st century skills in different ways. Ananiadou and Claro (2009) organized 21st century skills by focusing on cognitive skills, intrapersonal skills, interpersonal skills and technical skills. The cognitive skills include non-routine problem solving, critical thinking and systems thinking. Intrapersonal skills include self-management, time management, self-development, self-regulation, adaptability and executive functioning. Interpersonal skills include complex communication, collaboration, teamwork, cultural sensitivity and dealing with diversity. Technical skills include research skills, entrepreneurial skills and financial literacy. This can be seen as the Organization for Economic Co-operation and Development (OECD) approach (Geisinger, 2016).

In addition, Metz (2011) organized 21st century skills by emphasizing subject knowledge, especially in science. These skills are organized in a corresponding way to Ananiadou and Claro (2009) as these skills can also be conceptualized as cognitive skills, intrapersonal skills, interpersonal skills and technical skills. The non-routine problem solving, critical thinking, system thinking and self-management are similar to the skills identified by Metz (2011). In addition, creativity, flexibility, adaptability, innovation, creativity, complex communication,

collaboration, social and cross-cultural skills, productivity and accountability are also identified (Metz, 2011).

A similar model with three components of the OECD framework (Ananiadou & Claro, 2009), except from technical skills provides academic mastery, critical thinking, creativity, communication and collaboration, leadership, global awareness, growth mindset, learning how to learn and intrinsic motivation (Soland et al., 2013).

The Partnership for 21st Century learning (2007) also provides a model with four categories: key subjects and 21st century themes, learning and innovation skills, information, media and technology skills and life and career skills. The learning and innovation skills align with the skills from existing literature such as creativity, critical thinking, problem solving, communication and collaboration (Ananiadou & Claro, 2009; Metz, 2011; Soland et al., 2013; P21CL, 2007). The key subjects and 21st century themes contain global awareness, financial, economic, business, and entrepreneurial literacy, civic literacy, health literacy and environmental literacy. Information, media and technology skills consist of informational literacy, media and information, communication and technology literacy. Life and career skills entail flexibility, adaptability, initiative and self-direction, productivity, accountability and leadership and responsibility. A systematic overview of all the defined 21st century skills can be found in Table 1. In this table, all the similar skills are on top, placed next to each other and the non-similar skills are placed underneath.

Even though the different frameworks of 21st century skills have some similarities, there are also visible differences. The OECD approach (Ananiadou & Claro, 2009) focuses on broad skill categories while Metz (2011) emphasizes subject knowledge in particular science. The Partnership for 21st Century learning (2007) incorporates skills like civic literacy and environmental literacy in addition to the more often cited skills like collaboration and critical thinking. These differences may show the different goals and contexts that each framework aims to address. Despite the differences between the frameworks, there is a common shown importance of skills like critical thinking, problem-solving, communication, and adaptability. This highlights the necessity of acquiring these skills in the 21st century.

Table 1*21st century skills overview*

Ananiadou and Claro (2009)	Metz (2011)	Soland et al., (2013)	P21CL (2007)
Non-routine problem solving	Non-routine problem solving	Learning how to learn	Problem solving
Critical thinking and systems thinking	Critical thinking and systems thinking	Critical thinking	Critical thinking
Self-management	Self-direction	Growth mindset	Initiative and self-direction
Entrepreneurial skills	Innovation		Responsibility
Time management	Productivity	Intrinsic motivation	Productivity
Self-development, Self-regulation	Accountability		Accountability
Adaptability and executive functioning	Creativity	Creativity	Creativity
Research skills	Adaptability		Financial and other literacy
	Flexibility		Flexibility
	Complex communication	Communication	Communication
	Collaboration	Collaboration	Collaboration
Financial literacy	Social and cross-cultural skills	Global awareness	Global awareness
		Leadership	Leadership

Griffin et al. (2018) considered only skills beyond disciplinary knowledge. Here, 21st century skills can be divided into four categories: ways of thinking, ways of working, tools for working and skills for living in the world. The category of ways of thinking contains creativity and innovation, critical thinking and problem solving, and learning to learn and metacognition. Creativity and innovation are about the creation of new ideas and the ability to evaluate one's ideas to improve creative efforts. Critical thinking and problem solving emphasizes for example if an individual understands strategies for tackling unfamiliar problems and identifies certain gaps in knowledge. Learning to learn and metacognition emphasizes the effective self-management of learning and the understanding of one's preferred learning methods.

The category of ways of working contains communication and collaboration and teamwork. Communication emphasizes the ability to communicate, in written or oral form, and understand, or make others understand, different messages in varying situations. Collaboration and teamwork emphasize knowing the team's individual roles and each other's strengths and weaknesses and responding open-mindedly to different ideas and values.

The category of tools for working contains information literacy and ICT literacy. Information literacy is the ability to use presentations, graphs, charts and maps to understand complex information and use the right information for the problem at hand. ICT literacy is the ability to use ICT accurately for certain issues and being aware of the opportunities given by ICT.

The category of living in the world contains citizenship, life and career and personal and social responsibilities. Citizenship is the knowledge of civil rights and the participation in the community. Life and career are being aware of the changing priorities, opportunities and expectations in the 21st century and operate in this changing environment. Finally, personal and social responsibility is the knowledge of how to maintain health, care for another person and show interest and respect to others. The skills belonging to the categories are presented in Table 2. In this research, the definition of Griffin et al. (2018) will be used as it gives the most organized overview of the 21st century skills aligned with already existing literature and these skills are most applicable for the nursing context.

Table 2

Overview of 21st century skills by Griffin et al. (2018)

Ways of thinking	Ways of working	Tools for working	Living in the world
Creativity and Innovation	Communication	Information literacy	Citizenship
Critical thinking and problem solving	Collaboration and teamwork	ICT literacy	Life and career
Learning to learn and metacognition			Personal and social responsibility

As the healthcare sector is changing rapidly, nurses must be competent to make decisions and act independently while also collaborating with other healthcare professionals in interdisciplinary teams (Bartels, 2005). In addition, nurses are required to be competent with all the new technology that is introduced in 21st century healthcare. It is common for them to find this challenging, highlighting the necessity to be able to acquire new skills in their work to tackle these obstacles (Frenk et al., 2022). By acquiring new skills and supporting nurses in developing these, it is important to have insights in what learning strategies nurses use to develop these 21st century skills.

2.2 Learning strategies

As the medical profession is now facing changing demographics, disease patterns, new technologies and changing professional roles (Towle, 1998), there is a need to continuously improve the skills, knowledge and competences of the 21st century's employees (Mawas & Muntean, 2018). Therefore, individuals must learn to remain updated and continuously develop themselves. Due to the rapid changes of the 21st century, companies have also changed what they expect from their employees. To succeed in a job, it is important for employees to be open to new learning ideas and maintaining this attitude during their career (Mawas & Muntean, 2018). Especially in healthcare, where learning plays a key role (Skår, 2009).

In the nursing profession, nurses view themselves as lifelong learners and are encouraged to keep learning continuously (Jensen, 2007; Gerrish, 2000). To improve on-the-job learning, it is crucial for nurses to be aware of their learning strategies. Existing literature has recognized learning strategies as the methods individuals use to advance the acquisition and development of knowledge in any context (Kardash & Amlund, 1991). Additionally, learning strategies are defined as the process which learners use to improve their own learning (Hattie & Donoghue, 2016). Furthermore, learning strategies are viewed as how an individual adjusts their learning activities to each specific situation (Berings et al., 2005). While all three definitions recognize learning strategies as methods used by individuals to enhance their learning, there is a difference in their focus. Whereas the definition of Kardash and Amlund (1991) covers learning strategies used for knowledge development in any context, the definition of Hattie and Donoghue (2016) shows a more learner view by defining learning strategies used by learners. The definition of Berings et al. (2005) shows the use of learning strategies to specific situations, highlighting the

necessity for learners to adjust their learning activities based on the learning context. Despite the differences, all definitions provide the common idea of learning strategies as methods used by individuals to optimize their learning.

Holman et al. (2001) examined that six learning strategies derived from the educational sector, are also applicable to organizational context. These strategies contain three cognitive and three behavioral learning strategies. The cognitive learning strategies existed of reproduction; an intention to reproduce information without reflection on its meaning, extrinsic work reflection; formulating mental structures that connect work to other aspects of the company and intrinsic work reflection; formulating mental structures which interrelate the component elements of work. The behavioral learning strategies existed of interpersonal help seeking; receiving assistance from other people, written help seeking; searching documents, manuals, databases, books and other nonsocial sources and practical application; experimentation, trying things out in practice (Holman et al., 2001). These strategies show a difference between the cognitive and behavioral use of learning strategies of individuals. The cognitive learning strategies show that cognitive learning is not only about memorizing, but also about making connections between one's work and relationships to others. The behavioral learning strategies show that individuals not only learn by receiving assistance from other individuals but also by providing themselves with documents or experiments.

Previous research has identified another eight learning strategies specifically for the nursing context (Qalehsari et al., 2017). Like intrinsic work reflection (Holman et al., 2001), intellectual and practical independence are identified emphasizing developing skills, problem-solving abilities, flexible thinking, and openness to learning independently. Additionally, like interpersonal help seeking (Holman et al., 2001), collaborative learning is identified emphasizing group learning, interaction with peers and learning from others. Furthermore, a similarity can be found between practical implication (Holman et al., 2001), and the identified research thinking emphasizing searching for new solutions and skills and acquiring exploration skills to stimulate knowledge transfer. The differences in the learning strategies identified by Qalehsari et al. (2017) in comparison to the learning strategies defined by Holman et al. (2001), lie in the strategies focused on personal attributes like persistence in learning emphasizing continuing education, despite challenges such as financial constraints, time shortages or family

responsibilities. Additionally, the need-based learning strategy as well as the learning management learning strategy emphasize the focusing on individual learning needs and personal commitment which are not identified in the learning strategies for the working context (Holman et al., 2001). Identified learning strategies concerning the learning environment and external factors emphasize creating conducive environments and promoting individual growth.

Even though some learning strategies align related to reflection, help seeking and practical application, Qalehsari et al. (2007) provided a broader range of learning strategies including personal attributes, self-regulation, and environmental factors. A visual overview of the identified learning strategies for the working context and the nursing context can be found in Table 3, where the similar learning strategies are placed together and the strategies not aligning are placed underneath.

Table 3

Overview of learning strategies in different contexts

Learning strategies working context (Holman et al., 2001)	Learning strategies nursing context (Qalehsari et al., 2017)
Intrinsic work reflection	Intellectual and Practical Independence
Interpersonal help seeking	Collaborative Learning
Practical application	Researcher Thinking
Written help seeking	Persistence in Learning
Extrinsic work reflection	Need-Based Learning
Reproduction	Learning Management
	Learning Environment
	Inclusive Growth

The use of various learning strategies together with self-regulated learning could be enhanced by a strong professional identity (Matsuyama et al., 2017). For instance, if an

individual's professional identity is developed in a responsible position that emphasizes the importance of learning tasks, individuals will start using learning strategies sooner (Matsumaya et al., 2017). Additionally, professional identity could also contribute to a greater learning engagement (Goodolf, 2018).

2.3 Professional identity

The role of being a professional in the 21st century and identifying one's self with this has changed alongside the skills required for this century. Being a professional is no longer just about acquiring knowledge and following protocols. E-health, complex health conditions and advances in medical technology have shifted the definition of being a professional and feeling like one (Trede, 2009). The concept of professional identity is the way individuals view themselves in their professional roles as well as one's motivations, values and how an individual feels in their chosen career (Slay & Smith, 2011; Skorikov & Vondracek 2011). This suggests that professional identity can be seen as a personal definition of what it means to be a professional in a certain work context. It is a professional self-concept based on attributes, beliefs, values, motives and experiences (Ibarra, 1999). In the nursing sector, the professional identity is viewed as having the feeling of being someone who is able to practice the nursing profession with skill and responsibility (Öhlén & Segesten, 1998). Considering these definitions, a nurse's professional identity is not only about knowing medical procedures but also about one's belief in the importance of quality healthcare and caring for others. A professional identity influences employees' attitudes, emotions and behaviors within and outside of the workplace (Slay & Smith, 2011). Moreover, it is seen as an indicator of a person's work and often represents the specialized skills and knowledge they have (Pratt et al., 2006). Despite the differences in the definitions, they show the multifaced nature of professional identity reflecting on how individuals perceive themselves in relation to their profession influencing behavior and mindset. From now on when discussing professional identity, the given definition of Öhlén and Segesten (1998), emphasizing the feeling of being someone who is able to practice the nursing profession with skill and responsibility will be considered as this definition can encompass all aspects of other definitions in the specific nursing context.

The formation of a professional identity is an on-going process of self-reflectiveness involving thinking, feeling and acting (Wear & Castellani, 2000). Individuals discover their

professional identity by seeing themselves in the eyes of others (Roberts et al., 2005). In healthcare, developing a professional identity is just as crucial as learning technical skills and knowledge (Monrouxe, 2009). It gives meaning to individuals and shapes their work attitudes and individual behavior (Siebert and Siebert, 2005) as well as explaining how they contribute to society (Slay & Smith, 2011). For nurses entering the medical work environment, the process of developing a professional identity happens by working alongside other healthcare professionals responsible for patient care. This results in acquiring the skills, norms and values of this environment (Mann, 2010). Immersing themselves in this work setting allows nurses to increase the exploration of a professional identity (Andrew et al., 2009).

The concept of a professional identity is an ongoing process that emphasizes the way individuals view themselves in their professional roles. As the 21st century healthcare sector constantly evolves around technology and complex healthcare needs, the nurses' professional identity is becoming more important. Especially because professional identity can influence learning strategies and behavior. With this understanding of professional identity and its importance in the nursing field, this research aims to answer the following research question: *"What learning strategies do Dutch nurses working in hospitals use to develop 21st century skills, and what role does their professional identity play in shaping these strategies?"* To address this question, a qualitative research method will be performed. The following chapters will outline this study's methodology, the findings and a discussion along with recommendations for future research.

3. Methodology

3.1 Design

In order to address the research question, a qualitative narrative research design was conducted through semi-structured interviews. Narrative research focuses on the lived experiences of individuals through the stories they tell. It provides detailed information of unique experiences of individuals. This offers insights into the behavior and perceptions of these individuals by looking for similar themes in the data gathered (Overcash, 2003). The interviews' purpose was to acquire insight into the learning strategies nurses use to develop 21st century skills in their workplace, as well as their professional identity. Semi-structured interviews are suitable for this context as they allow the researcher to stray from the script and allow

participants to discuss points of interest and viewpoints on what is found important. Furthermore, semi-structured interviewing offers flexibility, enabling the researcher to adapt to the direction that participants take during the interview (McGrath et al., 2018), and gather all the necessary information from respondents to address the research question effectively.

3.2 Setting

This study was part of the EUVECA project. This project is co-funded by the European Union and is designed to support the development of future oriented skills within the health and care sector. The aim of this project is to create seven European Regional Vocational Excellence Hubs, which will collaborate through a European platform for vocational excellence. To examine the use of learning strategies as well as professional identity, the EUVECA project can use the outcomes of this study as a foundation for designing the hubs.

3.3 Participants

The participants of this study were nurses at Ziekenhuis Groep Twente (ZGT), Almelo and Hengelo, The Netherlands. This research focused on nurses with at least two years' on-the-job experience from seven departments with varying responsibilities, to get a comprehensive view of the hospital. Nurses were interviewed from various departments including surgical, internal, obstetrics, intensive care, geriatrics, palliative care and geriatric psychiatry. The two-year work experience requirement stems from the fact that nurses with less than two years work experience tend to have higher stress levels, as they worry about medical mistakes, insufficient assessments, and occupational injuries more than nurses with over two years of experience (Labrague & McEnroe-Petite, 2017). The stress then experienced can be a negative influence for learning (Lindau et al., 2016). Therefore, nurses with over two years of work experience were selected. The participants from several departments were interviewed during the period between March 6, 2024, and April 12, 2024.

3.4 Procedure

Permission for this study has been granted via the Ethical Committee rules of the EUVECA project arranged through the Ethical Committee of Saxion University of Applied Sciences as the EUVECA project works together with Saxion for research projects of students. After this permission was acquired, the learning and development department of the hospital,

called the ZGT academy, was contacted via the external supervisor from EUVECA. Together with two employees of the ZGT academy, several departments within the hospital were contacted. This was done by sending an e-mail to the department heads of the hospital with an invitation for participation of the research. An informal overview of the research was attached to this e-mail. Before sending the e-mail, employees of the ZGT academy checked whether this overview was clear enough for sending it to the departments. This overview contained information about 21st century skills, learning strategies and professional identity. To make it understandable for the nurses, the concepts were explained in a clear way and an additional link to explanatory videos was added to the overview. Also, the overview showed exactly what would be expected from participants and how they could contact the researcher. This overview can be found in Appendix I.

Additionally, the invitation to participate was sent in WhatsApp groups by one of the ZGT academy employees. Once nurses signed up for participation, they received a consent form which they had to fill in to give permission to use the data received out of the interview. By signing, they provided consent to the processing of the data collected from them during the study. Also, a preparation document in which the elements of the interview (professional identity, learning strategies and 21st century skills) were explained was sent to the participants as well as they were asked to read it at least before the start of the interview. Before the first interview, employees of the ZGT academy checked the preparation document and decided whether the concepts were explained clear enough for the nurses to understand. In this preparation document, there was a summary of what will be discussed in the interview and a short explanation of the concepts to give the participants a small amount of preparation and expectation of the interview. The preparation document can be found in Appendix II. All interviews were held online via Microsoft Teams and participants who were not familiar with Microsoft Teams were provided with a manual on how to attend the online meeting to arrange the interview.

Before the first interview, an interview guide was written to guide the researcher during the upcoming interviews. The guide entailed three themes which are in line with the research question. It entailed the perception of 21st century skills among nurses, their learning strategies

and their professional identity. To get more in depth understanding of these concepts in the nursing profession, questions were asked like:

‘What do you think are the most important (21st century) skills that nurses should have?’

‘Can you share moments of steps you took when you wanted to learn a new skill?’

‘To what extent have you clarified for yourself what value you have as a professional within your work?’

The first version of this guide was checked by the supervisor of the UT and EUVECA and was used in the first three interviews. After three interviews, the interview guide was revised by removing questions that were not useful and adding questions that could lead to useful answers. The second version of the interview guide was also checked by both supervisors. In the interview guide, questions necessary to be answered were written together with additional questions that could help the researcher guide the interview and get more depth out of the conversation. The revised interview guide in Dutch and English can be found in Appendix III and Appendix IV. In total, 11 nurses were interviewed. The interviews lasted between 41 and 64 minutes, resulting in 541 minutes (about 9 hours) of recordings. All interviews were recorded by Microsoft Teams which also transcribed the interview live. An additional audio recording of the Microsoft Teams meeting was made by Dictaphone on a smartphone. An overview of the interviews can be found in Table 4. After all interviews were held, the data gathered from the interviews was analyzed.

Table 4*Overview of interviews*

Interview:	Time:	Pages:	Department:
1	51 minutes	17	Chirurgical
2	47 minutes	23	Chirurgical
3	45 minutes	23	Chirurgical
4	46 minutes	18	Intensive care
5	41 minutes	23	Palliative care
6	51 minutes	35	Obstetrics
7	64 minutes	43	Intensive care
8	52 minutes	38	Intensive care
9	53 minutes	30	Geriatric
10	41 minutes	32	Internal
11	50 minutes	30	Geriatric psychiatry
Total:	541 minutes	312	

3.5 Data analysis

For the data analysis, all written transcripts by Microsoft Teams were checked and revised with the audio file from Dictaphone and were anonymized by removing the name of the participants out of the transcripts. This resulted in 312 pages of transcripts which were coded using the qualitative data analysis software ATLAS.ti. The coding process combined both inductive and deductive coding and after the coding process, the data was analyzed by making use of composite narratives which is a way of presenting data from several interviews as if it were an interview with a single individual (Willis, 2018).

Firstly, deductive coding was used by predefining a set of codes based on the theoretical framework and the research question. These predefined set of codes were divided into the three concepts of the research question; learning strategies, 21st century skills and professional identity. Since it was uncertain whether nurses' learning strategies aligned with existing literature (Holman et al., 2001; Qalehsari et al., 2017), the codes for learning strategies were initially categorized as either formal or informal. This distinction can also be made in the learning strategies emphasized in earlier studies. These two codes were initially used to understand how these nurses acquired knowledge regarding 21st century skills. For the 21st century skills, initially all the 21st skills defined by Griffin et al. (2018), which are presented in

Table 2, were used in the first version of the deductive codebook. For professional identity, role perception and values in nursing were used for the deductive codebook and were based on the definition of professional identity as the way individuals view themselves in their professional roles as well as one's motivations, values and how an individual feels in their chosen career (Slay & Smith, 2011; Skorikov & Vondracek 2011). In addition, individual growth was added since professional identity formation is an on-going process of self-reflectiveness (Wear & Castellani, 2000). Furthermore, awareness of action was added to the deductive codebook as individuals will discover their professional identity by seeing themselves in the eyes of others and awareness of action plays a significant role in this (Roberts et al., 2005). The initial deductive codes are in the codebook indicated by a (D) from deductive and can be found in Appendix V.

Secondly, inductive coding was used to capture new themes and concepts not covered by the original coding scheme. This coding process involved reading over the interview transcripts, identifying themes and patterns and revising the coding scheme. For the category learning strategies, learning needs and desires together with stimulus for learning were added. For 21st century skills, codes were removed as certain skills were not discussed in the interviews. The removed skills are information literacy, citizenship, life and career and personal and social responsibility. In addition, learning to learn was also removed as learning was extensively discussed and coded in the category of learning strategies. For the category professional identity, non-awareness of actions, setting boundaries and personal insecurities were added. For the category organizational facility, the code missing training opportunities was added. Through the inductive coding process, a new category 'other factors' was added as other useful concepts were identified that could not be placed in the existing categories. This category contains of time constraints, expectations of nurses, difference in generation, difficulties in the workplace, collegial relationships and changing society. The inductive codes are in the codebook indicated by a (I) from inductive.

Lastly, to establish the codebooks' reliability, another researcher from the EUVECA project viewed two transcripts using the original codebook that allowed for additional codes. Some changes were noted in the codebook with two codes being revised. The remaining interviews were coded using these revised codes. The initial code: "peer-collaboration" was

changed to “collaboration” as collaboration in the workplace does not occur only among peers. A new code “reflective ability” was added within the professional identity category. These codes are indicated by a (+) in the codebook to identify these were changed after a second researcher used the codebook. The coding process involved carefully reading through the transcripts and assigning codes to the pieces of text that represent meaningful concepts. By using ATLAS.ti, the codes given to the text were easily organized and categorized for each participant. This coding process facilitated a deeper understanding of the experiences from the participants and the underlying patterns.

After all data was coded, the composite narrative approach was used to further analyze the data. Composite narratives involve information from multiple interviews to provide a story presented as if it is from a single individual (Creese et al., 2021). They enable the voices of groups with unique experiences, allowing readers to connect and understand these experiences deeply while maintaining the participants’ anonymity. Using composite narratives is an effective way for summarizing important concepts of a study in an enjoyable manner for the reader (Creese et al., 2021). To begin developing the composite narratives, the data was examined for matching experiences. This was first done schematically by looking at the quantities of codes per participant. If matching code quantities appeared, the data was reanalyzed to identify commonalities among the participants, even beyond the initially matched codes. Here, a distinction has been made between the learning strategies that participants used to develop 21st century skills and their professional identity rather than characteristics such as age or current work department. In the case that the common experiences did not align, other participants were analyzed to find other matching experiences.

Some participants were placed together from the start as there were clearly overlapping experiences and thoughts on learning strategies and professional identity. This was the case for participants 2 and 5, participants 3 and 6 and for participants 9 and 11. The other participants were more difficult to combine as their experiences in learning strategies and professional identity differed from each other. To make this process more fluid, the learning strategies and professional identities found in the data were first written down without any corresponding participants. This process revealed that there were three types of learning strategies and three types of professional identity. From clarifying these concepts, the participants were matched with

their corresponding type of learning strategies and professional identity. Based on the combinations that emerged, it was determined which participants were put together to develop the composite narratives. The visual table used for identifying the learning strategies and professional identities and combining the participants can be found in Appendix VI. The production of the composite narratives was a process of writing, re-reading the data and re-writing the narratives again. The final narratives include a mixture of descriptive sentences and direct quotations from the data, using a combination of quotations of all participants that were used to create that specific narrative. The outcome of the narratives represents stories that help readers better understand the learning strategies nurses use to develop 21st century skills and the influence of their professional identity on this. Table 5 provides a visual overview of which participants were combined and what name was given to the composite narratives. In the following section, the four composite narratives developed from the data will be presented.

Table 5

Combination of composite narratives

Participants:	Composite narrative:
2,5,7	Agnes
3,6	Alex
1,8,10	Debby
4,9,11	Esther

4. Results

From the data, four narratives were created: ‘Agnes’, a compassionate nurse who prioritizes relationships with patients and learning together and who is satisfied with her current role; ‘Alex’, a nurse who prioritizes patient recovery, clinical reasoning, communication skills and maintaining a strong commitment to ongoing professional development; ‘Debby’, a nurse who focuses on patient care and collaboration with colleagues while maintaining a reflective approach to her practice and her educational role and ‘Esther’ a nurse who prioritizes teamwork, communication and self-reflection to enhance patient care and adapt to evolving roles in healthcare.

The narratives are only based on the interview data and the quotes come directly from the interviewees which are indicated by the number at the end of the cited quotes. The combination of these narratives is chosen this way to give a clear picture of the differences between nurses in the hospital. For each narrative, results about learning strategies and results about professional are discussed.

4.1 Narrative 1, Agnes (2,5,7)

Professional identity: caring and collaborative with fulfillment in patient care, yet lacking continuous growth and skill development drive

Agnes is a narrative of three interviewees, is 57 years old, has completed the old in-service education and has been employed at ZGT for nearly 35 years. She is an experienced nurse who works in a hospital department where patients who need a longer stay are accommodated in places such as palliative care surgical departments, allowing for the development of strong patient relationships. Throughout her 35 years of employment, she engaged in numerous additional internships and educational programs.

Agnes emphasizes that her biggest value as a nurse is having contact with the patient and getting to build a bond with them. She sees herself as a patient-centered nurse who mentally and physically supports the patient in their recovery or current sickness:

“You hope that your patient from admission to discharge, just that they get through it as smoothly as possible, you try to contribute to that.” (2)

“Well, you are the one who is the linchpin in whom the patient or family should be able to trust and rely on, knowing that you are the one who ensures that he is taken care of and can recover as best as possible in a suitable place.” (5)

Agnes highlights the significance of being present by the patient's side as crucial in providing quality care. Therefore, she asserts that possessing empathy and strong communication skills are essential for nurses. She emphasizes that these ‘social skills’ are much more crucial than the technical skills that nurses are required to have, which she frequently does not like the technical skills:

“Your knowledge of people and interaction with people cannot be summed up in a PDF file or a PowerPoint or whatever you want to call it.” (5)

“I think so too, that is also part of being a nurse, providing attitude and trust, yes.” (7)

“Then you have to do a lot digitally, I don't like that at all. Yeah, things like that, I really don't like that.” (2)

Agnes emphasizes that she might not be competent with all 21st century skills. Where she points out the importance of communication, technology use is a struggle for Agnes. She thinks she views technology this way due to her lack of exposure to it during her upbringing. She can do only what is essential with it and nothing beyond that. She is also concerned that healthcare is increasingly centered on technology:

“They [Younger nurses] must do a lot with technology. But you can't solve everything with that, then you also get a bit of false security and I find that sometimes worrying.” (5)

“I didn't grow up with it either [Technology] and my interest doesn't lie there, so I only know exactly what I need to know about it and that's where it ends.” (2)

Having worked for so many years, Agnes no longer feels motivated to acquire additional skills beyond what is required. Finding enjoyment and happiness in her job is currently the most vital aspect for her, and it is also her main priority:

“At some point, you also have a moment of realization. Okay, I have already done a lot and worked in many different departments, taken many trainings and courses. At some point, you know, I think that's enough.” (5)

“But I'm not going to do that anymore. [A new education] I'm fine with it. I like once a day like that [Schooling day] I like it very much, But I don't need to do all the training again.” (2)

At this stage, Agnes is also not very involved in being conscious of herself at the hospital. She also notes she does not actively consider her identity as a nurse or consciously look at her behaviors. She thinks it goes on the autopilot and she is content with that. However, she believes that taking the time to reflect on herself and her values could be beneficial. The fact that Agnes is not very interested in more education or great development is also reflected in her use of learning strategies.

Learning strategies: emphasizing collaboration and informal and practice-based approaches"

As Agnes' interest may lie in other facets than technology, she is not always proficient in using the necessary technological devices, she frequently seeks assistance from her colleagues which is extremely beneficial for her, and she learns a lot from her colleagues:

“But you know, if I don't know something or I'm not proficient in it, I will ask my colleague who has more knowledge about it.” (7)

“You can always spar with each other and really get concrete feedback. Yes, how do you do that? How do you approach that? Or do you want me to look and listen along with you to see how you do it?” (5)

“You also prefer to watch together rather than alone because yes. Or during the handover where you still have a little discussion. Yes, I found this today. Look along, what do you think?” (2)

Agnes values maintaining positive relationships with coworkers and being collaborative with them. She strongly believes that having this in your job is essential for learning, and new nurses also require the support of knowledgeable colleagues to receive proper education. Working together with colleagues and exchanging thoughts on cases is the primary method through which Agnes learns at work. She also notes that she learns a lot from teaching students and emphasizes that communication skills are important in this process:

“You learn from it [Guiding students] because you consciously take up a case and the person who is watching or listening with you, they learn by how you do things.” (5)

“If you can explain why you do it, then it can be the other way around that she also tells me I do it this way or that if she can also explain to me why, then I can also think about that.” (7)

Agnes mentions that she has no problem in acquiring mandatory skills by following training, e-learning, and education offered by ZGT. She frequently mentions that she occasionally feels the need for more guidance and repetition when learning new things. Ideally, she would have a healthcare professional like a doctor by her side to provide necessary education:

“My vision would be that you, well, definitely get more on the job experience and that you have someone with you who can fully support you in that.” (5)

“Well, coincidentally we just had a department meeting and it was mentioned that nowadays there can be an extra person assisting the students for a few days. This service has a specific name. I wouldn't mind having that service next to me sometimes as well.” (2)

After many years of work, Agnes feels like an experienced nurse who likes to build a bond with her patients. She sees the value of learning in practice and collaborating with colleagues to gain 21st century skills.

4.2 Narrative 2, Alex (3,6)

Professional identity: skill focused dedication with low focus on personal development

Alex is a dedicated nurse, 40 years old and has been employed at the ZGT for 20 years. He works in a hospital unit where patients undergo surgery and need recovery. Like other narratives, his priority in nursing is to personally pay attention to the patient and help them recover on their way home. In this point of view, he really wants to give the patient a nice experience in the time they are in the hospital. In doing so, he finds true fulfillment in exceeding expectations for a patient:

“Actually, it is such that when people are sick, right, that you can help them so that they can go back home and deal with that, whether they are better or not.” (6)

“If you can indeed do just a little extra for a patient or if you think of something that another colleague has not thought of yet, which also greatly helps the patient” (3)

Alex emphasizes that as a nurse, besides having the ability to have good clinical reasoning, communication is one of the most important 21st century skills:

“Yes, the clinical reasoning we can of course not do without if you talk about that. But that is also somewhat connected of course, because you must communicate for that as well”. (3)

Alex believes that as a nurse, it is crucial to be able to argue what you do, highlighting the significance of communication. He emphasizes the importance of good communication with both colleagues and patients. Especially in acute situations, not being able to communicate well with colleagues can be very problematic. Additionally, he expresses concern about nurses' communication skills being affected by technology, leading to doubts about technology's role in healthcare and doubts about the overall communication skills of newer nurses:

“That your communication skills may well age or fade away, so to speak. Maybe because of a lot of communication through social media, right?” (3)

“All young people and all know exactly how everything works, which is not the case with us, but they think everything will go as they want, so you really have to communicate very well.” (6)

Alex’s focus in his job lies primarily on nursing skill development and less on his development as a person. For him, getting educated and skilled is the most important. Even though Alex likes collaboration with colleagues, up doing his skills is more of an individual process for him:

“But I don’t necessarily need my team to learn my new skills. Or to really develop myself as a nurse. But it is of course very useful and very enjoyable.” (3)

Currently, Alex is content with the progress of his career. Regarding his personal development or professional identity, he stated that he does not consider it. He mentions that he will consider thinking about this but is more willing to put effort into continuing to develop and preparing himself for future healthcare with professional nursing skills while also thinking it will be useful to reflect on his personal circumstances:

“Well, I think in general it’s not a bad thing to think about what you’re doing and whether you’re satisfied with it.” (3)

“I think you should sometimes stand still and think about that. In that case, I think that’s a good one. Yes.” (6)

As Alex’ focus lies primarily on developing his nursing skills he often uses learning strategies that fit to this focus.

Learning strategies: formal learning, collaborative learning and continuous professional development

Even though Alex sees his skill development as an individual process, providing high-quality care depends on collaboration with his colleagues. He seeks feedback from colleagues when he is unsure of his clinical reasoning to ensure optimal delivery of care. Where Agnes preferred this collaboration to learn, Alex sees it as a way to provide high quality care:

“If you don’t know something, you know, then you always consult. That’s much more pleasant.” (6)

“Then you quickly ask a colleague, take a look, what do you think of this situation?” (3)

Alex is highly motivated to maintain his nursing abilities and get ready for future healthcare. He believes the most effective approach is to stay educated. To improve as a nurse, he consistently takes mandatory courses, looks for extra educational chances, tries to see care from a new perspective, and makes thoughtful choices. He indicates that the only purpose is to achieve professional advancement:

“And yes, I don't actually do that [Education] out of pure interest, but more to be able to further develop in the future.” (3)

In contrast to other narratives, for Alex this is primarily what he likes to learn on the job. He is engaged in mandatory courses and training but not in optional voluntary development opportunities provided by the hospital. He is aware of numerous e-learning options for personal growth, but he chooses to concentrate on enhancing his (technical) nursing abilities. He strongly believes this is the appropriate course of action for a nurse, and it is his own responsibility to stay updated as he sees this as part of the nursing profession:

“I believe that is appropriate to our profession as nurses, that we are responsible for ourselves and our learning process.” (3)

“There are many things that change quickly. And then I think yes, then I will do things wrong or differently which is not right anymore. Yes, I find that annoying, if I don't know that.” (6)

Alex is a dedicated nurse who likes to stay educated and improves his work ability. Like other narratives, it is important for him to support the patient on their way home. Even though Alex is very engaged in his skill development, he is not very active in his professional identity development in the hospital:

4.3 Narrative 3, Debby (1,8,10)

Professional identity: empathetic and self-reflective

Debby is an empathetic, 50-year-old nurse who has completed her in-service education and has been employed at ZGT for over 30 years. She has experience in both the internal department and in intensive care. Like the other narratives, her top priority in her role as a nurse

is ensuring the well-being of individuals and witnessing their successful discharge to return home:

“I really enjoy taking care of a patient now and seeing that everything is going well.” (10)

“In the end, that's what you do it for. Yes, when you see a patient leave who has still made it.” (8)

To perform her job, she believes it is essential to have compassion, flexibility, strong empathy, and effective communication abilities. Like Agnes, she believes that while technical skills can be learned, social skills should be inherent to your personality. Communication is important for her as dealing with different disciplines requires everyone to be on the same page:

“You have to be able to explain very well. You have to be able to convey in accordance with certain methods what you see in a patient. That the other person understands it too. Yes, so communication is very important, yes.” (8)

“I think you need to be much more assertive now. Yes, much more communication skills are needed.” (1)

“When it comes to communication skills, I think that's just super important, and I also really think there's a lot to be gained there.” (10)

In contrast to the previous narratives Agnes and Alex, Debby is very active in being mindful of her actions and reflecting on them. Because of this, she has the courage to question herself about the level of care she maintains and whether she can justify all her actions. She thinks it is important to keep doing it so that you can keep looking at yourself in the mirror. Therefore, she also likes to think about herself as a professional and who she aspires to be. She also believes that it is her own responsibility to maintain this mindset and remain aware in your job:

“I am not someone who just checks off my to-do list as a standard, like, oh well, I've had my workday again. But I like to be able to argue why I do the things I do, so that keeps you sharp and keeps me learning.” (10)

“Yes, sincerity and in everything you do, I always say if you can look yourself straight in the mirror, then you are on the right track.” (8)

“I had to think about that, huh? What am I then and what am I really? You know? What do I want to be?” (1)

Debby is conscious of her actions, identity, and goals in her career. She truly believes she can be authentic at work, but also realizes her responsibilities are changing:

“I became a nurse to care, and I do notice that I am becoming more and more the manager of the patient.” (10)

Noticing this, she enjoys maintaining diversity in her job and constantly questions if this is the nurse she aspires to be. Currently, Debby enjoys sharing her knowledge with others in different ways. Helping students provides her with some additional versatility in her job that she continues to find enjoyable next to the part of nursing she still loves:

“I still enjoy it and yes, it is very positive, useful work, even though things often don't go well, but even then, you can still mean a lot to the patient.” (8)

“But I think it is even more fun to train young nurses to become a nurse who truly goes for it and who also stands for something.” (10)

In general, Debby currently enjoys her job but also has some uncertainties about the future. She attempts to remain conscious of her desires, determine if she supports her actions, and assess her ability to succeed in her job. As a result of the professional identity of Debby, she uses learning strategies that help her keep educated and reflective on her own work.

Learning strategies: practice based, collaborative and reflective

When talking about the patients' health with coworkers, she appreciates how important collaborating with peers is in her job. Debby views her colleagues as a safety net that she can depend on in times of trouble or when she is at a loss for words. She believes you must enjoy working together as it is a big part of the job. She highly values the strong bond she has with her colleagues:

“You can always rely on each other and have a close relationship with colleagues, because you really need to be able to rely on each other in acute situations. And yes, then you have a different bond than with regular colleagues, I always say.” (8)

“Well, if there are indeed things we do not know, that we already instruct and inform each other about them.” (10)

“That you also consult a lot with each other and do double checks and things like that, and that you also really work together that day and that you distribute the workload, yes.” (1)

Debby has a good understanding of her learning process. She first mentions that it is crucial for her to maintain a mindset focused on learning and openness while working. Like Agnes, she thinks the best way to learn is through hands-on experience. But she adds, to learn, one must observe and take note of the valuable things in their environment. She enjoys researching and reading to understand what she is doing but also desires additional guidance in her learning process. In addition to Agnes, Debby emphasizes she also learns herself from guiding students:

“Yes, I learn a lot from guiding students because they ask questions, which means you can't just work on autopilot, but you have to really think about it.” (10)

“Now I also learn again from the students who do the training with us.” (8)

Debby is a caring, collaborative nurse who enjoys reflecting on her own work and aspires to deliver high quality patient care. Debby is active in professional identity development and therefore differs from the narratives of Alex and Agnes, but she is consistent with Agnes in her view of learning by preferring to learn from practice.

4.4 Narrative 4, Esther (4,9,11)

Professional identity: self-reflective, clarity around values, collaborative

Esther is a collaborative, 42-year-old nurse and has been employed at the ZGT for 15 years. In these years she did some intern education and now works in a department with a substantial senior population. Like the other narratives, providing patient care holds great significance in her role, but she also highlights that collaborating with coworkers is a key aspect of nursing:

“That you really want to take care of everything for that patient.” (9)

“Yes, my satisfaction really lies in the contact, I think with the other person, right? If you were to put me alone in a room in an office, I wouldn't thrive very well there.” (11)

“I think that is really great for my job, being able to collaborate and really getting to know each other. Trusting each other.” (4)

Esther believes that listening is a crucial skill in nursing. She mentions that sometimes patients have a lot of complaints but are not open to assistance, so then the complaint should not be answered, but you must go even further, listening is for her the most important skill as the patient often expresses their care request:

“Listening to the patient and listening to the family and listening to what is being said and how it is being said. And especially what the care question and complaint actually are.” (9) ‘

“Well, which for me is a very important skill as a nurse, right? That's also the question, who are you as a human being? And do you actually see or hear that other human being? And not just the condition.” (11)

Besides looking at her working method, Esther is also interested in her personality in the workplace, unlike other narratives. She enjoys continuously developing and questioning her desires for her job. She accomplishes this by becoming a member of committees and working groups. Therefore, she takes pleasure in sharing the knowledge she acquired with her coworkers:

“I also really enjoyed telling other colleagues about that.” (4)

Esther also believes it is crucial to continuously develop yourself as an important aspect of your work. She emphasizes that it is important to stay informed about the latest developments in the healthcare industry due to its constant changes. She is very conscious that it is her own responsibility, and she enjoys having that:

“Yes, I think, I really enjoy being innovative and developing myself.” (4)

“Developments are happening so quickly, you really have to keep up, otherwise you will fall behind. Yes, you will simply fall short.” (9)

“Within your work, the developments that are happening there, right? I think it is important that everyone is open to becoming skilled in that again. “ (11)

Even with all the activities Esther incorporates into her job for diversity, she occasionally questions her role as a nurse. She realizes that her role is evolving in today's healthcare

landscape. Her favorite moments are when she stands by her patient's bedside and making connections with them. Now, she realizes she needs to handle many administrative tasks and has less interaction with her patients. Esther says this makes her question her career, but she is content with where she is currently.

“If my shift lasts 8 hours, then I spend almost 6 hours of that in front of the computer, and I really had a different view of that when I graduated.” (9)

“I notice that I am now being forced to take on a different role, because the person I am caring for can hardly feed themselves anymore. I no longer have conversations about what they would like to eat, because I have to either be a student mentor or I have to keep up with that stupid computer system.” (9)

Esther is aware of how she likes to learn and for her it is important to learn in collaborative forms. The learning strategies she uses also show this.

Learning strategies: collaborative, reflective, responsible

Esther believes the key to success lies in working with her coworkers and possessing this ability. Esther perceives this collaboration as a way of learning as well. She believes that by communicating and collaborating with colleagues, knowledge on the work floor can be shared effectively:

“You always work in a team and you always work multidisciplinary. So, I think the skills that are important in that as well, how can you collaborate?” (11)

“I think that is a very nice way of learning, also occasionally looking at each other and saying, oh, how do you do that?” (4)

It is essential for Esther to feel secure when working collaboratively with a team. She requires a setting where individuals feel comfortable asking questions, giving feedback, and making mistakes is not a problem. This safe environment also contains a way of thinking that you can use each other's knowledge instead of relying on yourself only.

“I think it is important, let's just say that we also give our colleagues the impression that they shouldn't hesitate to ask if they have insecurities or questions, right?” (11)

“That we really do have a collaboration in that respect and that there is quite a lot of openness to ask each other questions, so that the threshold is not too high, that it is quite low.” (4)

“Because I also want to be a safe colleague for the entire team, where you also think, well, I can ask her for feedback, because I can learn from that. “ (9)

In addition to other narratives, she believes that it is up to you to take responsibility for your own learning and growth. She attempts to achieve this by closely monitoring her own work techniques and engaging in frequent self-reflection.

“So now I find it very nice to put my own work under a magnifying glass. And then to see, huh? What can I possibly improve in there?” (4)

“How are you doing? How do you receive someone? So, awareness in that. That is also a component of learning and development. I think that is very important.” (11)

Esther emphasizes that effective listening is crucial for your learning path. She mentions that you will hear various stories from patients' family and colleagues, and you will gain knowledge from them. Like Debby, she is highly engaged in her learning progress, striving to constantly monitor her actions and behavior. Esther has similarities with other narratives according to her learning strategies as she likes to learn in practice, from collaboration but also from personal development.

4.5 summary of results

All narratives emphasize that taking care of the patient and providing quality patient care is the most important aspect of their work. Examining the narratives presented in the findings, various learning strategies used to gain 21st century skills can be identified. Agnes and Debby prefer learning from practice and collaborating with peers, whereas Alex prefers formal ways of learning and Esther emphasizes the significance of learning together and personal development. The identified strategies will be discussed for each narrative followed on the professional identity of each narrative.

A distinction can be made between which narrative uses which learning strategies. Agnes and Debby, somewhat older nurses, prefer learning through practice and collaborations with colleagues. This demonstrates a preference for informal learning more than formal learning. In contrary, Alex prefers formal learning and values independent learning to maintain his skill level. Looking at Esther, she has a broader use of learning strategies. She emphasizes learning by working together and the importance of communication and listening in her work.

The narrative of Agnes has reached a point in her career where she feels content with her current skills and roles and does not feel the need for further professional or personal development beyond what is necessary. Agnes' somewhat stagnation in her professional identity could indicate a feeling of fulfillment and accomplishment in her career. Even though Debby and Esther use different learning strategies, their professional identity is very similar. They are conscious of their behavior, highly engaged in personal growth and often reflect on their satisfaction with their current roles and responsibilities. Alex differs from the other narratives as he is really into skill development but not so much into personal development. In the discussion section, all these findings will be discussed considering existing literature.

In addition to all these findings, this research demonstrates that nurses also learn from guiding students. This is due to their tendency to closely examine their own work and the necessity of being able to justify their actions. Even though this may not be considered as a learning strategy, this finding is valuable for gaining insight into the learning behaviors of these nurses. Moreover, all narratives emphasize that learning is mostly their own responsibility and think this is part of the nursing profession. A visual display of the similarities and differences between the narratives is presented in Table 6. In the following chapter, the findings from this study and its implications will be discussed and recommendations for further research are given.

Table 6*Overview of composite narratives*

Composite narrative	Learning strategies	Professional identity
Agnes 2,5,7	Agnes prefers to learn from practice . Hereby she uses more informal learning strategies in which learning from collaboration plays a crucial role.	Agnes is an experienced nurse who likes to build a close bond with her patients. In her work she tries to be empathetic and collaborative . She is content with her current skills and knowledge and is not looking for much further personal or professional development.
Alex 3,6	Alex prefers to learn through formal education. He likes to collaborate with his colleagues to provide high quality care. He uses courses and education to prepare himself for future healthcare and tries to learn continuously .	Alex is a dedicated nurse who highly focuses on skill development and is professionally oriented . Even though he develops as a professional, his personal development is not in attention.
Debby 1,8,10	Debby prefers to learn from practice and collaboration with colleagues. To learn, she likes to look reflect on her own behavior and keep on learning.	Debby is an empathetic nurse who dares to question herself and reflect on her own behavior. She knows what she values in this job and gives her joy. She likes thinking about this and adjusts her work context to this.
Esther 4,9,11	Esther prefers to learn together with people around her. For her learning is about a combination of collaboration , reflection and being responsible for your own learning path.	Esther is very active in professional identity development . She likes to reflect on herself, thinks about what she wants and knows what she finds most valuable in her job. Her working environment is important to her, and she is aware of this.

5. Discussion and Conclusion

5.1 Discussion

This study aimed to investigate the learning strategies of nurses and their professional identity in this. The main research question was *“How do Dutch nurses working in hospitals use different learning strategies to develop 21st century skills, and what role does their professional identity play in shaping these strategies?”* The research has been performed, using a qualitative approach by semi-structured interviews with 11 nurses from Ziekenhuis Groep Twente. The results were given in the way of composite narratives which showed the diverse use of learning

strategies among nurses and their professional identity. Finalizing this study, this chapter will discuss the results, limitations, suggest further research and practical implications, ending with a conclusion.

21st century skills

In the different frameworks of 21st century skills there is a common shown importance of skills like critical thinking, communication, problem solving, creativity and collaboration (Ananiadou & Claro, 2009; Metz, 2011; Soland et al., 2013; P21CL, 2007; Griffin et al., 2018). When looking at the findings of this study, common skills are highlighted by nurses as important. Communication, collaboration, critical thinking and problem solving and ICT use were the 21st century skills that nurses emphasized they used the most. The alignment between the outcome of this study and the 21st century skills that were mentioned in all frameworks, shows that the nurses of the 21st century indeed need to efficiently select and apply knowledge, handle complex tasks and have sufficient technical skills to adapt to their changing work environment (Van Laar et al., 2017).

Learning strategies

The learning strategies used by the nurses in this study seem to align with the learning strategies identified in existing literature in nursing and organizational contexts (Qalehsari et al., 2017; Holman et al., 2001). The preference of using practice-based learning strategies as highlighted by Agnes and Debby, aligns with strategies like practical application (Holman et al., 2001) and intellectual/practical independence (Qalehsari et al., 2017). The preference for informal learning activities could have to do with the age of these narratives. Older nursing professionals participate more often in informal learning activities such as seeking feedback and mentoring (Lammintakanen & Kivinen, 2012). Also, older nurses have the expectation for them to take on additional responsibilities by mentoring students (Beck, 2012), in which they find themselves earlier in informal learning situations. This is also shown in this study where Agnes and Debby point out they learn themselves by guiding students. Furthermore, informal learning may help older nurses overcome the disadvantageous position they may face compared to formal learning opportunities. (Jeske & Roßnagel, 2016). Older nurses with longer work experience tend to have more current skills and knowledge to apply in informal settings than in more formal settings where, for example, new technology systems are being used.

In addition, all composite narratives highlight collaborative learning as a crucial learning strategy which aligns with collaborative learning and interpersonal help-seeking, emphasized in previous studies (Holman et al., 2001; Qalehsari et al., 2017). This finding is expected since nursing is viewed as a group activity. All nurses in this study seem to also perceive their profession like this. Existing literature shows that collaboration in healthcare leads to improved patient safety, quality of care and job satisfaction for healthcare providers (Emich, 2018; Makowsky et al., 2009). These findings are all confirmed by the narratives in this study. They emphasize that collaboration gives them joy in their work, helps them in resolving challenging cases and provides a sense of safety and confidence in performing their job. This shows that collaboration plays a significant role in the nursing profession and therefore is also a frequently learning strategy.

The findings of the narrative of Alex, who is highly motivated to get certified or grow in his career, could be explained with the literature that shows that nurses may prefer formal education, resulting in acknowledged qualifications. This can enhance professional reputation and provide more opportunities for career growth (Bahn, 2007). Additionally, this learning strategy may stem from personal aims to develop skills and higher levels of academic knowledge which lead to better patient outcomes. Furthermore, another reason for preference of this learning strategy may be the requirement to stay updated in the evolving healthcare industry (Bahn, 2007).

The literature highlights the benefits of using a variety of learning strategies as it contributes to self-directed learning and becoming a more skilled learner (Kolb, 1984 as cited in Berings, 2005). The narrative of Esther shows a usage of a combination of all learning strategies mentioned above. The finding of this study show that Esther has a high level of learning due to her use of these multiple strategies. To gain more nursing skills, she applies for new education, she highlights the necessity of learning in practice and learning from her colleagues and she uses self-reflective learning strategies to reflect on her own behavior and working method to improve this afterwards. Her usage of learning strategies and the benefits she mentions to have from it is confirmed by previous studies. When having a repertoire of learning strategies, individuals can apply several strategies when their current strategy might not be working which makes them very self-regulated learners (Hattie & Donoghue, 2016; Berings, 2005). This is reflected in the

findings of Esther where she emphasizes her use of diverse learning strategies, and the effect it is having on her personal and professional development.

Another valuable finding of this study demonstrates that nurses also learn from guiding students. This is due to their tendency to closely look at their own work and the necessity of being able to justify their actions. Even though this may not be considered as a learning strategy in previous studies, this finding is valuable to gain insight into the learning behaviors of these nurses. This finding aligns with Lopez-Real and Kwan's (2005) research, where they indicate that self-reflection appears when mentoring students. Due to this self-reflection, the mentor can develop a deeper understanding of their own methods, strategies and attitudes. Furthermore, mentors can learn from students who introduce innovative ideas which can be considered as direct learning. Knowledge is indirectly acquired through collaborating and exchanging ideas. This study complements and explains the findings pointed out by the narratives. However, the existing literature seems to have a stronger focus on the learning strategies of nursing students or nurses in educational settings, while this study specifically explores the learning strategies of nurses in a hospital setting. This workplace context may introduce additional factors or nuances not fully captured in the existing literature.

Professional identity

Looking at the findings on professional identity, the existing literature provides insights and understanding in the dynamic nature of nurses' professional identities. The literature highlights that professional identity is not static but constantly evolving throughout one's career (MacIntosh, 2003). This aligns with the narratives of nurses who are all at different stages of their career and show diverse levels of growth and development. Literature shows that professional identity is shaped through personal factors like beliefs, motivations and social interactions (Slay & Smith, 2011; Ibarra, 1999). This is reflected in the findings. Agnes' contentment with her current role and lack of desire for further development could be influenced by personal factors like her career stage and motivations. While younger nurses may consider various career and personal developments, older nurses prefer to stay in their current job if they are physically capable (Pool et al., 2015). Moreover, younger individuals may view time as unlimited and therefore make goals focused on knowledge development, but whereas they age, they perceive time as more restricted and emotional goals like finding satisfaction in their career

get greater importance (Pool et al., 2015). The goals of older adults are more focused on maintenance and loss prevention (Ebner et al., 2006).

In contrast, Debby and Esther's active attitude in personal growth may stem from their career stage or interpersonal interactions. Debby and Esther find themselves in a consolidation phase, where nurses have great commitment to ongoing learning and try to contribute to care and society (Donner & Wheeler, 2001). Their similar professional identity shows how individuals actively make meaning and shape their learning processes to align with personal interests and goals (Billet, 2010).

While the existing literature highlights the connection of skill development and professional identity formation (Matsuyama et al., 2021; Goodolf, 2018), one of the narratives in this study presents a contrasting outcome. The narrative of Alex shows a nurse who is highly motivated to acquire certifications and enhance his skill level but a low interest in his personal development and professional identity beyond this skill development. This finding is inconsistent with the existing literature that emphasizes that the process of gaining new skills influences professional identity development. Alex' view on formal education for the purpose of skill development also seems to not align with the meaning-making aspect of professional identity formation (Wear & Castellani, 2000; Siebert & Siebert, 2005). The narrative of Alex suggests that a strong motivation to skill development does not necessarily results in a higher level of professional identity formation. This divergence from the literature raises questions about potential variations in the relationship between professional identity, learning strategies and skill development. Further investigation is needed to examine the factors that could lead to separation between these elements.

The narratives of the nurses in this study show a diversity of learning strategies used to develop 21st century skills in the hospital. These include informal approaches like learning from practice and collaboration (Agnes and Debby), as well as more formal strategies such as education (Alex). Additionally, some nurses demonstrate a combination of these strategies, like interpersonal learning, personal development, self-study and the strategies mentioned above (Esther). The findings show that nurses' professional identity plays a significant role in shaping the learning strategies of these nurses. Career stages, workplace contexts and self-concepts seem to influence these strategies. For instance, Agnes and Debby, seen as more experienced nurses,

prefer more informal collaborative learning which is in line with the literature (Lammintakanen & Kivinen, 2012; Clarke, 2006).

This study contributes to the existing literature on learning strategies for 21st century skills and professional identity among nurses in a hospital. By looking at the experiences of working nurses, it offers a comprehensive understanding of the relationship between these learning strategies and their professional identity development. Besides the influence of professional identity, this study indicates that other factors like reflecting on practice, mentoring students, career stage and organizational factors also might have an influence on learning strategies and the relationship with professional identity (Lopez-Real & Kwan, 2005). However, the narrative of Alex shows a contrasting finding where a high motivation on skill development does not necessarily increase the level of professional identity development. This does not align with existing literature that shows that skill development should activate professional identity development (Matsuyama et al., 2021; Goodolf, 2018). The discrepancy in these findings may have come to existence due to the different samples. Where this study focuses on nurses working in hospitals, existing literature focuses more often on nursing students (Matsuyama et al., 2021; Goodolf, 2018). This raises the question if the relationship between skill development and professional identity changes when nurses enter the work environment.

Implications

Overall, the study findings suggest that Dutch nurses working in a hospital use diverse learning strategies to develop 21st century skills, and their professional identities play a significant role in shaping these strategies. The findings also highlight potential variation in this relationship, requiring further research into the factors that might cause a disconnection between skill development and professional identity. It raises questions like how do nurses' learning strategies and professional identity change over time? Or how do organizational factors influence the relationship between learning strategies and professional identity?

5.2 Limitations and suggestions for further research

While this study has provided valuable insights in the learning strategies and professional identities of nurses, it is important to recognize the limitations that could have impacted the

research process and the interpretation of the findings. In this section, the limitations of the study together with approaches to further research will be discussed.

To begin with, the research results are based on a relatively small sample of 11 nurses. The small sample size may restrict the generalizability to a larger population of nurses working in hospitals. This limited sample could result in a limited understanding of the learning strategies and professional identity among Dutch nurses. Future research with a sample of more participants would be advised to contain a more comprehensive understanding of the learning strategies used to obtain 21st century skills and the influence of professional identity. This future research could also consider examining nurses from various hospitals to even get a broader understanding.

Second, this study captures both the learning strategies and professional identity at a single point in time. Both concepts are not static but can constantly develop throughout the working lives of nurses (MacIntosh, 2003; Qalehsari et al., 2017). Therefore, the findings might not reflect future dynamics or the impact of ongoing professional development and changes in the healthcare sector. Future research involving multiple examination points could be considered to analyze differences, similarities and developments in the learning strategies and professional identity of nurses to gain a comprehensive understanding of this development.

Another suggestion for future research regards the inclusion of nurses from six diverse departments within the hospital. Even though this has obtained useful variability in the experiences of participants, there is a possibility that institutional policies or unique cultures within each department may have impacted the learning strategies and professional identity of nurses. Moreover, the organizational context of the ZGT may also have a role in shaping the professional identity and learning strategies of nurses. Previous studies have shown that organizational factors like the hospital management or salary level could have an influence on the professional identity development of nurses (Mao et al., 2021; He et al., 2024; Qalehsari et al., 2017). Therefore, future research could consider examining organizational factors influencing learning strategies and professional identities. This could be done by a comparative study where nurses from different departments and hospitals are examined at their learning strategies and professional identity and to determine if certain organizational factors impact this connection.

Lastly, because of the contradictory finding of narrative Alex which shows us that skill development not always necessarily encourages professional identity development, future research should explore the impact of other contextual factors to understand how these contribute the distinction that is seen in Alex' narrative. This could for example be done by looking at the workplace context, organizational factors or individual characteristics of nurses. In addition, future research could examine whether the relationship between skill development and professional identity changes when nurses enter the working environment as previous studies focused primarily on nursing students (Matsuyama et al., 2021; Goodolf, 2018).

5.3 Conclusion

In conclusion, this study provides valuable insight into the relationship between learning strategies used to develop 21st century skills and professional identity. Based on the research question: "What learning strategies do Dutch nurses working in hospitals use to develop 21st century skills, and what role does their professional identity play in shaping these strategies?", it can be concluded that nurses use collaboration, learning from practice, formal education, interpersonal learning and self-study mechanisms as learning strategies. The nurses' professional identity plays a significant role in shaping these learning strategies. The composite narratives show how career stage and workplace experience influence the nurses' preferences towards various learning strategies. However, the study also found a contrasting finding where high motivation on skill development does not necessarily lead to higher development of professional identity. This finding raises questions about other factors that influence the relationship between learning strategies used for 21st century skill development and professional identity. In addition, the findings also indicate the need for further research to understand how and if this relationship changes over time, what the influence of organizational factors is and investigate potential other factors on this relationship. Overall, this study shows valuable findings that can contribute to the understanding of this relationship among nurses in a hospital setting and can be used as input for further development of learning innovations aiming to prepare nurses for the healthcare of the 21st century.

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Appendices

Appendix I – Informal overview of study

21-eeuwse vaardigheden & professionele identiteit

Wat is het, waarom is het belangrijk over deze vaardigheden te beschikken en waarom nadenken over professionele identiteit?

Dat ben ik!

Voorstelronde

Mijn naam is Jeske Roerink! Ik ben een Enschedese en ik doe de master Educational Science & Technology aan de Universiteit Twente. Ik ben 22 jaar en vanaf februari begonnen met mijn afstudeeronderzoek.

Wat onderzoek ik?

"Hoe gebruiken Nederlandse verpleegkundigen werkzaam in ziekenhuizen verschillende leerstrategieën om 21-eeuwse vaardigheden te ontwikkelen, en welke rol speelt hun professionele identiteit bij het vormgeven van deze strategieën?"

Wat is dat?!

21-eeuwse vaardigheden

Creativiteit en Innovatie / Kritisch denken en Problemen oplossen / Communicatie / Samenwerking / Informatievaardigheden / ICT-gebruik / Burgerschap / Leven en Carrière / Persoonlijke en Sociale verantwoordelijkheid

[Klik hier voor meer uitleg \(NL\)](#)

Professionele identiteit

Het gevoel hebben een persoon te zijn die het vak verpleegkunde kan beoefenen met vaardigheid en verantwoordelijkheid. / Hoe zie je jezelf als professional?

[Klik hier voor meer uitleg \(EN\)](#)

Waarom onderzoek ik dit?

De huidige gezondheidszorg verandert door nieuwe hervormingen in de zorg, de vraag naar efficiënte diensten en zorg, en nieuwe technologieën. Door al deze veranderingen is het belangrijk dat verpleegkundigen 21-eeuwse skills aanleren en effectief kunnen blijven werken in de 21e eeuw.

De ontwikkeling van een professionele identiteit:

- Niet zo belangrijk als het leren van nieuwe vaardigheden in de zorg
- Een factor in het vermogen om zorg van hoge kwaliteit te leveren en om de resultaten voor patiënten te verbeteren
- Heeft een positief effect op de motivatie om te leren en versterkt het leergedrag

Informatie

Wat vraag ik?

WIE?

15 - 20 verpleegkundigen verdeeld over 4 afdelingen binnen het ZGT met minimaal 2 jaar werkervaring

WAT?

Enmalige 1-op-1 interviews over 21-eeuwse vaardigheden, leren en professionele identiteit

WAAR?

Ik kan fysiek naar je werkplek toe komen voor het interview of we doen het online!

HOE?

Het interview zal ongeveer 45 minuten duren en heeft +/- 15 vragen met ruimte om uit te wijken

WANNEER?

Ik wil de interviews graag in de maanden februari & maart inplannen

GEÏNTERESSEERD??

Stuur een e-mail naar: j.roerink@student.utwente.nl

Bel mij op: 06-30069310

Neem ook bij vragen over het onderzoek gerust contact met mij op!

Hopelijk tot snel!

Appendix II – Preparation document interview

Het interview

Korte introductie in de onderwerpen die ik met je ga bespreken!



Binnenkort gaan wij met elkaar in gesprek. In mijn eerdere mailje kwamen begrippen voor als professionele identiteit, 21-eeuwse vaardigheden en leerstrategieën. Zie hieronder de uitleg om alvast een idee te krijgen van wat dit inhoudt!

- Creativiteit en Innovatie
- Kritisch denken en Problemen oplossen
- Communicatie
- Samenwerking
- Informatievaardigheden
- ICT-gebruik
- Burgerschap
- Leven en Carrière
- Persoonlijke en Sociale verantwoordelijkheid

21-eeuwse vaardigheden

21-eeuwse vaardigheden is een breed begrip. Links is een lijstje opgesteld met wat deze vaardigheden zijn. Ze worden gezien als de overlevingsvaardigheden van vandaag. Ik zou graag over deze vaardigheden binnen het vak verpleegkundige met je in gesprek gaan. Is het nodig om deze vaardigheden aan te leren? Wat zijn belangrijke vaardigheden om over te beschikken? Hoe integreer je bepaalde vaardigheden in je werk?

Leerstrategieën

Als we praten over leerstrategieën ben ik benieuwd naar hoe je leert, waar je dit doet, welke mogelijkheden je hebt om te leren. Je kijkt op leren tijdens je werk.

Professionele identiteit

De professionele identiteit is voor sommigen een onbekend begrip. Het gaat om hoe je jezelf ziet als professional en in jullie geval verpleegkundige. Hoe zou je jezelf als professional omschrijven? Wat is volgens jou de essentie van een verpleegkundige zijn? Wie ben je op je werk?

Tot snel!



Ik kijk erg uit naar ons gesprek. Mocht je op voorhand nog vragen en/of opmerkingen hebben, neem vooral contact met mij op!

Appendix III – Interview guide (NL)

Interview guide Verpleegkundigen ZGT

Dit document toont de interviewleidraad voor de interviews met verpleegkundigen die momenteel bij ZGT werken. De gids zal worden gebruikt voor fysieke en online interviews om de onderzoeker enige structuur te bieden tijdens het interview.

Introductie

- Welkomswoord en een bedank voor deelname
- Informatie over de rechten en het opnemen van audio
 - o Deelnemers hebben het recht om elk moment te stoppen met het interview zonder reden
 - o De audio opname van het interview wordt getranscribeerd
 - o De transcriptie wordt geheel anoniem
- Introductie van de onderzoeker en de deelnemer
- De onderzoeker zal vragen of de deelnemer het informatieblad voorafgaand aan het interview heeft gelezen.
 - o Zo ja, dan vraagt de onderzoeker of er onduidelijkheden waren en licht de kernbegrippen kort toe.
 - o Zo nee, dan legt de onderzoeker alle concepten uit en de informatie die op het informatieblad voor het interview stond.
 - o In beide gevallen mag de deelnemer het informatieblad bij zich houden tijdens het interview

Deel I : 21-eeuwse vaardigheden

In dit deel zal de onderzoeker de deelnemers vragen naar 21e eeuwse vaardigheden op hun werk en hoe zij dit ervaren. De volgende vragen kunnen worden gesteld:

- In hoeverre vind je dat verpleegkundigen nieuwe (21-eeuwse) vaardigheden aan moeten leren om mee te ontwikkelen met de zorg?
- Wat zijn volgens jou de belangrijkste (21e-eeuwse) vaardigheden waarover verpleegkundigen moeten beschikken?
- Kun je momenten delen waarbij er nieuwe vaardigheden van jezelf werden gevraagd op het werk?
- Hoe integreer je vaardigheden zoals .. en .. in je dagelijkse werk?
- In hoeverre vind je dat er genoeg aandacht voor het ontwikkelen van nieuwe (21 eeuwse) vaardigheden op je werk?
- Zijn er momenten die je kan omschrijven waarbij je het gevoel had dat je een bepaalde vaardigheid miste om je werk goed uit te voeren?

Deel II: Leerstrategieën

In dit deel zal de onderzoeker de deelnemers vragen hoe ze leren op het werk en of hun identiteit invloed heeft op hun leren.

- Hoe is het leren en ontwikkelen van vaardigheden georganiseerd binnen het ZGT?
- Wat zijn je wensen en behoeften omtrend leren op de werkvloer?
- In hoeverre heb je het gevoel dat hoe het nu geregeld is, aansluit bij jouw wensen en behoeften omtrend leren?
- Kun je momenten delen van stappen die je hebt ondernomen toen je een nieuwe vaardigheid wilde leren?
- Kun je momenten delen waarop je het gevoel hebt dat je het meest hebt geleerd tijdens je werk?
- Hoe vind jij dat verpleegkundigen nieuwe vaardigheden moeten aanleren?

Deel III : Professionele identiteit

In dit deel zal de onderzoeker de deelnemers vragen naar hun professionele identiteit. De volgende vragen kunnen worden gesteld:

- Kun je beschrijven wat volgens jou de essentie is van het zijn van een verpleegkundige?
- Hoe zou je jezelf als professional beschrijven binnen je beroep?
- In hoeverre heb je het gevoel dat je duidelijk hebt voor welke taken je verantwoordelijk bent?
- In hoeverre besteed je aandacht aan het ontwikkelen van jezelf als professional?
- In hoeverre heb je voor jezelf duidelijk welke waarde je hebt als professional binnen je werk?
- Zijn er momenten waar je nadenkt over wie je bent en wie je zou willen zijn op je werk?
- In hoeverre zou je zeggen dat je rol in dit werk ook echt is wie je bent?
- Kan je vertellen over specifieke ervaringen die jou hebben gevormd als de verpleegkundige die je nu bent?
- Kan je je ontwikkeling als verpleegkundige beschrijven ten opzichte van het begin van je carrière?
- Als je terugkijkt naar je carrière als verpleegkundige, zijn er dan dingen die je echt anders had willen doen?
- Welke dingen had je anders willen zien van je werkgever?

Afronding

- De onderzoeker benoemt dat dit het einde van het interview is
- De onderzoeker bedankt de deelnemer voor de medewerking
- De onderzoeker vraagt hoe de deelnemer het interview heeft ervaren en vraagt om mogelijke feedback
- De onderzoeker meldt dat de opname zal stoppen en dat de resultaten anoniem zullen zijn.

Appendix IV– Interview guide (EN)

Interview guide Nurses ZGT

This document presents the interview guide for interviews with nurses currently working at ZGT. The guide will be used for physical and online interviews to provide the researcher with some structure during the interview.

Introductie

- Welcome and a thank you for participation
- Information about rights and recording audio
 - o Participants have the right to stop the interview at any time without reason
 - o The audio recording of the interview is transcribed
 - o The transcription will be completely anonymous
- Introduction of the researcher and the participant
- The researcher will ask if the participant read the information sheet prior to the interview.
 - o If yes, the researcher will ask if there were any ambiguities and briefly explain the key concepts
 - o If no, the researcher will explain all concepts and the information that was on the information sheet prior to the interview.
 - o In either case, the participant may keep the information sheet with them during the interview

Part I: 21st century skills

In this section, the researcher will ask participants about 21st century skills at work and how they experience it. The following questions may be asked:

- To what extent do you think nurses need to learn new (21st century) skills to evolve along with healthcare?
- What do you think are the most important (21st century) skills that nurses should have?
- Can you share moments when new skills were required of yourself at work?
- How do you integrate skills such as . and . into your daily work?
- To what extent do you feel there is enough focus on developing new (21 century) skills at work?
- Are there times you can describe when you felt you were missing a particular skill to do your job well?

Part II: Learning strategies

In this section, the researcher will ask participants how they learn at work and whether their identity influences their learning.

- How is learning and skill development organized within ZGT?
- What are your wants and needs regarding workplace learning?
- To what extent do you feel that how it is organized now is in line with your wishes and needs regarding learning?
- Can you share moments of steps you took when you wanted to learn a new skill?
- Can you share moments when you feel you learned the most while working?
- How do you think nurses should learn new skills?

Part III : Professional identity

In this section, the researcher will ask participants about their professional identity. The following questions may be asked:

- Can you describe what you think is the essence of being a nurse?
- How would you describe yourself as a professional within your profession?
- To what extent do you feel you are clear about what tasks you are responsible for?
- To what extent do you pay attention to developing yourself as a professional?
- To what extent do you have a clear understanding for yourself what value you have as a professional within your work?
- Are there times when you reflect on who you are and who you would like to be at work?
- To what extent would you say that your role in this work is really who you are?
- Can you talk about specific experiences that have shaped you as the nurse you are today?
- Can you describe your development as a nurse compared to the beginning of your career?
- Looking back at your career as a nurse, are there things you really wish you had done differently?
- What things would you have liked to see different from your employer?

Completion

- The researcher appoints that this is the end of the interview
- The researcher thanks the participant for their cooperation
- The researcher asks how the participant experienced the interview and asks for possible feedback
- The researcher mentions that the recording will stop and that the results will be anonymous.

Appendix V - Codebook

Categories	Codes	Definition	Example
Learning strategies	Informal learning (D)	Learning that occurs spontaneously or incidentally through daily experiences, interactions, and observations, rather than through formal instruction or structured educational programs.	<i>'But yeah, I think you always learn anyway If you just kind of look around you of how do things go, how do things happen? And yes, by seeing things you can also just learn a lot I think.'</i>
	Formal learning (D)	Structured educational activities and programs that are intentionally designed and delivered to develop specific knowledge or skills.	<i>'Right now you see when we need to learn something, it's often through an e-learning or it's often really a hands-on lesson so that a new machine comes into the department and that's how we learn.'</i>
	Learning needs and desires & wishes for learning (I)	Specific areas that individuals identify as desirable for their personal or professional development.	<i>'My vision would be that, well, certainly you go a little bit more on the job more and that you have someone there on that who can fully support you in that as well.'</i>
	Stimulus for learning (I)	Factors or triggers that individuals require before experiencing a desire or willingness to engage in the learning process.	<i>'That they should first run into it from that they can't do it and only then take action'.</i>
21 st century skills	Collaboration (+)	The ability of individuals to effectively collaborate, communicate, and cooperate with colleagues in various learning and professional contexts.	<i>'And I do think it's important that you support and continue to support each other in that, But that you take each other along in that as well. It said a program where you work more or a new way of working and then you look for help from your colleagues of gosh do you know how to do it'.</i>
	Critical thinking & Problem solving (D)	The capacity of individuals to analyze, evaluate, and interpret information critically and creatively to formulate effective solutions to complex problems or challenges	<i>'And then it makes perfect sense that you then have to start reasoning what is going on here? When is the time that I, for example, raise the alarm with a doctor When should I scale up?'</i>
	Communication skills (D)	Skill and effectiveness of individuals in clearly, accurately and persuasively conveying information to others.	<i>'You must be able to explain very well. You must be able to convey well according to certain methods what you see to a patient. That the other also understands? Yes. So communicating is very important, yes.'</i>
	ICT literacy (D)	The ability of individuals to adopt, adapt and use digital devices, applications and services.	<i>'You have to do a lot with technology. But there they don't get everything solved anymore, then you also get a piece of false security and I do find that well sometimes worrying.'</i>
Professional identity	Role perception (D)	Individuals' understanding of their contributions, roles, and responsibilities within their profession.	<i>'Well, the lynchpin you are In the one the patient or family should be able to rely on and build on that you are just the one to make sure he gets back to health in the best possible place to continue his recovery'</i>
	Values in Nursing (D)	The value nurses see in their work by receiving appreciation, having	<i>'Later on I hear from family members how grateful they were for it, how much</i>

		conversations or feeling valuable in their work.	<i>they enjoyed it and how much we were busy and still had time for them. Yes, those are just beautiful moments'</i>
	Reflective ability (+)	The ability to critically review, analyze, and evaluate a situation in order to learn from the experience and apply such insights to future situations.	<i>'Indeed, I think that you are aware of being able to substantiate things better that in that you do grow your reflective ability. And with that you are also more aware of the things that you do.'</i>
	Individual growth (D)	The personal and professional development of nurses as they progress in their careers.	<i>'Yes, well, at some point you know of gosh whatever crazy situation I've found myself in I'll be fine, I've been through so many crazy things.'</i>
	Awareness of actions (D)	Nurses' mindfulness of their behaviors and decisions involving, involves recognizing the impact of their actions.	<i>'I'm not one to check off my work list by default, like. Well, I've had my work day again, But I like to be able to argue Why I do the things I do, so and that that does keep you on your toes and that keeps me learning.'</i>
	Non-awareness (I)	Cases where nurses may lack mindfulness or consciousness regarding their behaviors and decisions.	<i>'For me it makes perfect sense that I work the way I work, so to speak. And if I have to put that into words I think how do I actually work? Yes, just the way I work.'</i>
	Setting boundaries (I)	Nurses establishing clear limits or guidelines regarding their roles, responsibilities, and interactions.	<i>'Learned to set my limits. And that is one of the most important things also in the nursing profession'.</i>
	Personal insecurities (I)	Nurses' feelings of insufficiency or worry about their skills, expertise, or capabilities	<i>'But I. I felt that nurse, other nurses on the team were actually very critical of me, say I always felt that I wasn't always necessarily doing the best thing.'</i>
Organizational facility	Mandatory trainings (D)	Required educational programs or courses that employees must complete as part of their professional development.	<i>'There is also a training. Which we also have to do several times a year. And then we take a patient case and then based on that patient case we go so we want to walk the whole path of that patient'</i>
	Missing training opportunities (I)	Desired educational programs or courses that employees perceive as beneficial for their professional development but are currently unavailable or not offered by the organization	<i>'So I think the knowledge is definitely there, but how best to convey that? Yes, you just need certain preconditions for that and those are not always present.'</i>
	Voluntary trainings (D)	Educational programs or courses that employees have the option to participate in to further develop their skills, knowledge, or competencies beyond mandatory requirements.	<i>'Of everything though if there is a one class, or clinical class by a student I do try to follow it.'</i>
Other factors (I)	Time constrains	The constraints imposed by time considerations on organizational activities, processes or decision-making.	<i>'When I say of gosh, I want to have a few hours to go read through things or develop things, it's always like yes, but it's really busy right now.'</i>

	Expectations of nurses (from others)	The anticipated roles, responsibilities, and performance standards placed on nursing professionals within their professional context.	<i>'It is actually already when you are there, it is already expected that you can do it.'</i>
	Difference in generations	Variations in attitudes, values, preferences, and communication styles among individuals belonging to different generational cohorts.	<i>'What I see a lot with some younger colleagues indeed, that that self-development is at a pretty low ebb. And, I did grow up that you. Yes above all you have to develop yourself'</i>
	Difficulties in the workplace	Various challenges, obstacles or problems that employees encounter while working.	<i>'Yes, you actually hope that that already huh that own responsibility is there so that you grab all the opportunities that are offered, but that does actually a very large group does not do that.'</i>
	Collegial relationships	Interactions, dynamics, and bonds that exist among colleagues.	<i>'That is very nice that you have nice people around you and with whom you can work well and that you have good day Together. Yes, that makes a lot of difference.'</i>
	Changing society	The evolving social, cultural, economic, and demographic trends that impact the internal environment of the hospital.	<i>'The patient category is also much more empowered today than previously.'</i>

Appendix VI - Table for combining narratives

Learning strategies	Participant:	Professional identity	
Really learning from practice, peers have a big role in their current learning. For learning sometimes also like to have a bit more guidance. Also learning from guiding students is a way of learning for them.	2	Really has clear what his/her role is in the hospital, is not aware of this anymore and not very much thinking of this.	2
	5		5
	7		7
	8		
	10		
Learning is all about following the schoolings, e-learning and education. Peers do have a little role in this but not much. It is important to improve clinical skills.	3	Is not standing still with PI at all. Working is just being a nurse and doing your clinical skills. Not very into personal development.	3
	6		6
Learning is all about learning together. This way of learning is quite personal and really to develop yourself as a professional, this also goes beyond all the educational facilities. It also is really your own responsibility to learn.	4	Active in who do I want to be and why do I do the things I do. Is really interested in their own learning way and development	4
	9		9
	11		11
			8
			10
		1	

Appendix VII - Use of Artificial Intelligence

During the preparation of this work the author used ZeroGPT to correctly translate the quotes that were used from the interviews from Dutch to English. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.