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Nursing Students' Experiences with VR Language Simulations

Metropolia University of Applied Sciences

Master of Healthcare

Creativity and Arts in Social and Health Fields

Master Thesis

July 21, 2025

Abstract

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Title:	Nursing Students Experiences with VR Language simulations
Number of Pages:	55 pages + 4 appendices
Date:	21 July 2025
Degree:	Master of Healthcare
Degree Programme:	Creativity and Arts in Social and Health Fields
Specialisation option:	Registered Nurse
Instructor(s):	Dr Sanna Kivijärvi, Dr Margarida Baltazar (thesis supervisors)

This master's thesis explores the experiences of immigrant nursing students who participated in Virtual Reality (VR) simulations as part of their Finnish language education in healthcare settings. The research aims at analysing an innovative approach in language acquisition for immigrants in purpose to facilitate the integration of immigrants into the Finnish healthcare settings. On a broader level the research aims to contribute to the CultureExpert project, and by extension, to support national efforts to explore creative approaches in language learning. The research question guiding this study is: What kinds of experiences may immigrant nursing students have in learning Finnish through virtual reality simulations?

The conceptual framework includes the core concepts of the language learning approach in VR simulations, such as contextualized language learning, gamification and playfulness in language learning, student-centredness, as well as agency and affordances in VR language learning simulations. The data was gathered from 6 individual online interviews and analysed by means of qualitative content analyses.

The findings revealed that students' experiences with VR-based language learning varied based on their language proficiency levels and emotional responses. Despite challenges such as limitations in speech recognition and time constraints, many participants described the learning approach as fun, motivating, futuristic and supportive of autonomous learning. The students also reflected on cultural insights, as well as perceived the method as innovative, engaging and creative. The study demonstrates that such a creative and innovative approach in language learning for healthcare workers has overall positive impact on learners' confidence, resilience and cultural well-being.

Keywords: virtual reality, immigrant students, qualitative research, contextualized language learning, student-centeredness, gamification, playfulness

Contents

1 Introduction

As globalization continues to advance, the field of language education has experienced significant growth (Chen et al., 2022). In the specific context of healthcare, globalization is influencing Finland as well. According to the Finnish National Agency for Education, the number of nursing students is going to grow in the nearest future (Kamau et al., 2022). It is also established, that culturally and linguistically diverse students are experiencing challenges while assimilating in Finnish healthcare as nursing professionals (Kamau et al., 2022). The research findings suggest that Virtual Reality (VR) technology holds significant promise as an educational approach or enhancing language acquisition (Chen et al., 2022). In particular, the user is not only able to engage in direct language practice, but also to test the scenarios and environments which might be challenging or even impossible to access in real life (Zammit, 2023). This is particularly relevant in the healthcare field, since communication is crucial for the patient's safety and high-quality medical care (Vikström Dahl et al., 2024). By integrating VR for language acquisition into healthcare field, the users can immerse themselves into realistic medical settings and acquire both linguistic competence and practical communication skills at the same time. This concept, where this type of innovative approach for education – is being created, is very much needed and now being applied in the healthcare field.

As a nurse with an immigrant background who pursued studies at a Finnish university and continues to build a career in the Finnish healthcare system, I have a personal motivation to explore creative and technology-enhanced approaches for learning the Finnish language in healthcare education. Based on my own experience, integrating into working life without possessing a sufficiently high level of Finnish language proficiency has left a significant imprint on me: misunderstandings with patients and colleagues, as well as difficulties in expressing myself, have caused both frustration and obstacles in progressing with my studies. Therefore, my inspiration for conducting this research comes from my personal initiative to contribute to education in the Finnish healthcare field.

Although the Internet is full of systematic reviews and countless articles describing VR as innovative, technology-enhanced educational approach (Tan et al., 2022), it remains unclear how healthcare students perceive this approach specifically for learning language. Therefore, this thesis aims to fill the gap in existing research by exploring the experiences of nursing students with an immigrant background in Finland who participated in a pilot version of Finnish language studies using VR technology. This study will specifically analyse how nursing students perceive this educational approach by conducting thematic analyses of six individual interviews.

In this master thesis I discuss how contextualized learning, embodiment, student-centeredness, playfulness and gamification are applied in the language learning process within frames of CultureExpert project and how VR supports the creative approaches for learning language and culture. The main concepts and their underlying literature review will first be presented in chapter 2, providing the theoretical foundation for the study. The research methodology and methods will then be described. This will be followed by the findings resulting from thematic analyses. Finally, the conclusions and discussion based on the findings will be presented.

2 Research environment: CultureExpert project

The research was conducted out of a strong academic and personal interest in exploring innovative and creative approaches to learning, particularly within the context of technology-enhanced language education for nursing students with immigrant backgrounds. This study focuses on the use of Virtual Reality (VR) simulations as an innovational and immersive method for learning Finnish language skills in authentic healthcare scenarios. The integration of VR into language education reflects a shift toward more student-centred, experiential learning models that prioritize engagement, realism, and autonomy.

The study took place in Finland as part of the CultureExpert project (see Photo 1), which is coordinated by the University of Oulu. The project is designed to strengthen the relationship between higher education institutions and the integration processes of Culturally and Linguistically Diverse (CALD) nursing students into the Finnish healthcare system. By using VR simulations, the CultureExpert project supports the development of language competences, cultural awareness, and professional readiness among immigrant nursing students. In addition, the project aims to enhance cooperation among key stakeholders, including educators, healthcare professionals, and potential employers, contributing to a more inclusive and culturally competent workforce. This context provides a rich foundation for examining how immersive technologies can not only enhance language learning but also facilitate smoother social and professional assimilation. (University of Oulu, n.d.)

The gesture presented in Photo 1 can be interpreted as a symbol of cultural awareness, connection and sense of belonging. In the context of this thesis, it reflects the values of inclusion, intercultural awareness, and the importance of developing learning approaches in supporting immigrant students' smooth integration into both educational and professional healthcare environments.

The implementation of the project was led by the University of Oulu in collaboration with three partners: Oulu University Hospital, Diakonia University of Applied Sciences, and Centria University of Applied Sciences. These

collaborators were selected based on their sufficient experience in educating immigrant nursing students with diverse cultural backgrounds. The institutions listed above played a crucial role by organising the pilot version simulations for nursing students.

Photo 1. Photo taken from the Oulu University website, presenting the CultureExpert project.

The students recruited for the study were first-year degree students in a Nursing Degree program at the universities listed above. All students came from diverse immigrant backgrounds. The participants' initial proficiency in Finnish was at a beginner level, indicating no prior exposure to the language. None of the participants had ever resided in Finland before, however, a few of them had visited the country as tourists for short-term vacations. Participation in the simulations occurred in hundred percent of cases before real-life working practice, meaning that participants had no experience in communication with real Finnish-speaking patients during their studies. The data for the master's thesis was collected as part of the CultureExpert project, described above. This research was conducted independently, meaning that the author was not directly

involved in the project, but was granted the permission to collect qualitative data to voluntarily contribute to project and for own research.

3 Conceptual framework

In this chapter I will introduce the main concepts of the study. The framework of this study includes the concepts of contextualized language learning, gamification and playfulness in language learning, student-centredness, as well as agency and affordances in VR (Virtual Reality) language learning simulations. Moreover, I will briefly explore the language learning approach from the perspective of psychological point of view, particularly Krashens´ (year) Affective Filter Hypothesis.

3.1 Contextualised language learning

According to the Stanford Report (2019), language is cultural and psychological phenomena. This is the primary tool which we use to connect to the society as well as express ourselves (Shashkevich, 2019). Linguistic competence plays a vital role in shaping overall well-being in modern society. It is not just about language skills, but about how individuals connect and interact with the world. Language influences how people understand information, express identity, and engage with others. Improving linguistic competence across professions and institutions can therefore enhance communication and contribute to a higher quality of life for everyone. Linguistic competence plays a vital role in shaping overall well-being (Shevchenko, 2022, p. 648). According to the American Hospital Association (2013, p. 3) language competence is one of the essential components of cultural competency in healthcare, which is defined as following: “Cultural competency in health care describes the ability of systems to provide care to patients with diverse values, beliefs and behaviours, including the tailoring of health care delivery to meet patients' social, cultural and linguistic needs."

As a healthcare professional, I recognize the critical role that communication plays in daily practice. Effective interaction with both patients and colleagues are fundamental aspects of the professional environment. Language serves not only as a practical tool for conveying information but also as a key component in

building powerful connections and creating a sense of belonging within the surrounding world. As language without sufficient level of Finnish language proficiency, I would struggle to feel a sense of belonging in daily routines, as a lack of understanding of ongoing processes could create a sense of disconnection.

One of the possibilities of Virtual Reality (VR) is to immerse students into the certain context, for instance, into the hospital surrounding. Research on the psychological effects of VR, especially its visual, emotional, and situational features-has shown interesting results related to memory. Studies suggest that being in a relevant environment helps improve vocabulary learning. This happens because the brain uses cues from what it sees, feels, and experiences in the situation to better organize and store information (Ober, 2022). People learn better when the learning is connected to real-life situations: "…if any variety of language is to be learned and used, it has to be situated" (Gee, 2004, p. 106).

When it comes to engagements and motivation, VR feels like real life, and therefore it can help people to form emotional connection. Emotional connections may become stronger when the virtual experience has a more detailed story and follows real-life limits like time, place, and physical rules. The emotional connections are turning into more active engagement, which afterwards lead to increased motivation. (Herrera et al., 2018.) Therefore, contextualization and creating the environments which would represent the settings outside the typical classroom increase motivation (Lepper & Henderlong, 2000, p. 291).

In this study, contextualized learning means that knowledge is not taught in isolation but is used directly in a specific environment through immersing a student into virtual world. According to Kalchik and Oertle (2010, p. 1) contextualized teaching and learning is defined as "diverse family of instructional strategies designed to more seamlessly link the learning of foundational skills and academic or occupational content by focusing teaching and learning squarely on concrete applications in a specific context that is of interest to the student". In this thesis, meaningful contextualization applies to the experiences of immigrant

nursing students, who were offered to learn Finnish language through VR simulations in hospital settings.

Psychological studies show that immersive VR often uses a technique called embodiment, where users are placed into a virtual body, known as an avatar. The embodiment illusion is the feeling of being inside and controlling that virtual body. This creates a sense of embodiment – a feeling that the virtual body is part of your own, as if it were your real body (Zhu et al., 2024). Guy et al. (2023, p. 1) states): "The sense of embodiment refers to the sensations of being inside".

When it comes to CultureExpert project, as it was mentioned before, the simulation was designed in a hospital setting, which means the vocabulary and the dialogues were created in purpose to acquire medical vocabulary. The realistic interpretation of environment (see Figure 1), for instance, of a hospital is a smooth step between theoretical language learning in classes and professional practice in hospital (Dooly et al., 2023). Student were able to read, pronounce and practice the words right away while talking to the virtual patient, seeing hospital environment around and talking to the patient from nurse perspective. According to Gee (2004) people learn best when they can apply new knowledge right away in real contexts where it makes sense. Therefore, the hospital simulation becomes more than just language learning - it becomes a safe environment where students can experience what it feels like to be a nurse in Finland and learn how to communicate in Finnish language in a way that it fits the local healthcare norms.

One of the greatest benefits of this teaching and learning method is focusing on concrete thematic vocabulary and language skills needed for certain occupation, meaning that this approach is highly useful for applied sciences. According to Kalchik and Oertle (2010), the method supposed to give an immediate idea of abstract sense, as it turns academic knowledge into the practice. In other words, the contextualization of learning process is being a "bridge" between theoretical background and workplace application. For instance, in this thesis instead of learning medical vocabulary from textbooks or classrooms (academically), students get to practice the language in real-time situations: seeing hospital

environment and interacting and talking with virtual patient on a medical topic (See figure 1).

The CultureExpert project is an example of the implementation of creative and innovative approaches for language and culture learning which government is trying to implement and adopt in purpose to help nursing students with immigrant background to smoothly assimilate into Finnish working life. Immigrant students, who moved to Finland without understanding or feeling belong to the local culture can immerse into Finnish environment by putting VR glasses on.

Figure 1. The hospital environment, the virtual patient and thematic vocabulary (on the right). (Screenshot is from frostbit website.)

3.2 Gamification and playfulness in learning language

Language plays a fundamental role in human life, serving as a primary tool for communication and connection (Cruaud, 2019). In today's globalized world, the ability to speak multiple languages has become increasingly important, both for personal development and professional opportunities. As international communication becomes more common, many countries have recognized the value of multilingualism and have adapted their educational policies to include foreign language learning as an essential component (Liubashenko & Drahinda, 2024, p. 81).

It is established that there is a growing need to develop more creative[1] and engaging approaches to language learning. Traditional methods in education often rely on repetitive tasks such as memorizing grammar rules, identifying sentence structures, or writing on topics that lack personal interest or practical value. These practices tend to focus on grammar, rather than on use of language or student engagement. Learners are often expected to complete exercises that do not reflect real-life communication (Drahinda & Liubashenko, 2024, p. 81). As a result, both students and future educators express the need for teaching materials and methods that support creativity in listening, speaking and reading. There is a clear demand for structured and at the same time flexible tools that allow learners to develop their language skills through realistic interaction. In this context, creative language learning is seen as an essential part of effective and student-centered education (Liubashenko & Drahinda, 2024, p. 82). The significance of promoting creativity in language education is increasingly emphasized in academic discussions. Digital technologies are one of the greatest options to achieve the endeavor and offer meaningful opportunities to support creative learning processes and enhance student engagement (Selfa-Sastre et al., 2022).

I strongly believe that all listed above characteristics are applicable to learning through Virtual reality simulations. This approach provides a powerful opportunity for developing cultural awareness by immersing learners in realistic, culturally rich environments. These digital simulations allow students to experience local customs, social norms, and everyday interactions in a way that traditional media cannot offer. By engaging directly with culturally embedded scenarios, students begin to understand both visible and invisible aspects of a foreign culture, feeling the process of embodiment while being present in certain conceptualized environment during the learning process. As this technology becomes more

[1] The term “creativity” originates from the Latin word *creare*, meaning “to make,” and the Greek word *krainein*, meaning “to fulfill.” In essence, creativity refers to the ability to produce something new and meaningful - whether it’s a new idea, an innovative method, or a unique solution to a problem (Siddiqi, 2022).

accessible, VR holds great promise not just for language acquisition, but also for enhancing learners' ability to navigate multicultural settings with full understanding. (Berti, 2021.)

This collage (Figure 2) visualizes the central terms discussed in the conceptual framework of this thesis. At the heart is creativity, which is explored through its connections to surrounding concepts: gamification, embodiment, playfulness, contextualization, and student-centeredness. These elements collectively represent the learning dimensions in immersive, learner-centered experiences in VR-based language education.

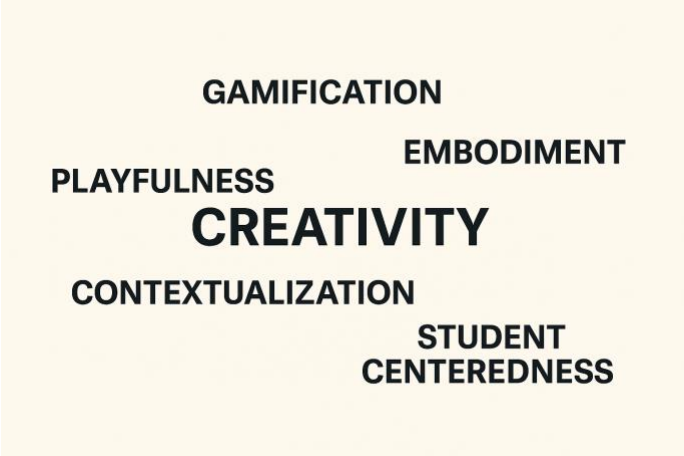

Figure 2. The core concepts related to creativity in Virtual Reality language learning.

According to the Cambridge Dictionary (n.d.), the term of "Gamification" is defined as "…the practice of making activities more like games in order to make them more interesting or enjoyable." In the context of this study, the activities in question are language and cultural learning. While the central focus of this thesis is on how students perceive the use of VR in language learning, this subchapter explores a related but distinct topic: to what extent language learning in VR can be considered as gamification, and how much users engage in playful behaviors during VR language learning.

Historically, learning through games has been an integral part of human development in both formal and informal settings (Protopsaltis et al., 2011, p. 1).

It is usually considered that VR primarily as an entertainment tool, used for playing video games (Khuhalenko et al., 2022). However, in recent years, this technology has also been actively applied in educational settings (Chen et al., 2019). According to Lampropoulos and Kinshuk (2024), the gamified nature of VR has the potential to enrich and reshape traditional language learning. As discussed earlier, digital tools offer excellent ways to help students learn in fun and engaging ways (Selfa-Sastre et al., 2022). Over the past decades, language education has been transformed by technological innovations such as voice recognition, real-time feedback, automated grammar correction, and personalized content customization (Luo, 2023). However, this raises the question of whether the technology- enhanced tools and gamification are equivalent concepts?

Within the CultureExpert project, gamification can be considered from several perspectives. One key element is the interactive environment, which plays a significant role in making the learning process more engaging and enjoyable. Unlike a traditional classroom, the VR setting offers learners a sense of immersion in another reality, which can be both visual entertaining, and where learning happens not in the traditional classrooms but through observation, interaction, and embodied experience.

However, while reflecting the concept of the language learning simulation within frames of CultureExpert project, the simulation is missing one of the key components of gamification: there are no motivational triggers. For instance, in this language learning simulation the student is not able to gain the score, unlock the next level, or win the game. On the other hand, the simulation offered by CultureExpert project is aimed at learning Finnish language through reading and pronouncing Finnish texts written by authors in a correct way to achieve the interaction with the virtual patient. In the case, the student has a certain task: to follow the text, to talk with the patient in purpose to build the dialogue and achieve the response from the avatar (the virtual patient). The hidden task in this case is reading and pronouncing Finnish words correctly. Therefore, in my opinion, this simulation cannot be considered as gamifying rather than goal-oriented language

learning activity, where the immersing in virtual world plays more as an entertaining aspect.

VR applications in education draw on various educational theories, including ubiquitous learning, self-directed learning, constructivist and situated learning, inquiry-based learning, game-based learning, and engagement theory (Chen et al., 2019). When viewed through the lens of gamification, emerging research suggests that VR-based language learning environments do more than just deliver learning content - they actively promote motivation, playful experimentation, engagement and interactivity (Lin et al., 2024).

In the context of language learning, playfulness emerges as a vital element that fosters student engagement and motivation, especially when traditional methods often struggle to captivate learners. Within VR environments, playfulness can be understood as an attitude and designed experience – creating a playful environment that offers learners to interact with language materials in a flexible and exploratory manner. Playfulness in foreign language learning is not about game concept but about enabling students to interpret and interact with content playfully, promoting autonomy, and active engagement. This correlates with the opportunities of VR, where learners are placed in interactive settings that simulate real-life situations, inviting them to experiment with language through observation and interaction. Unlike traditional classrooms, VR's capacity for playful engagement helps reduce anxiety and promotes deeper cognitive involvement, making the learning process both enjoyable and effective. Therefore, playfulness in VR acts as a trigger that transforms language acquisition from a formal task into a motivating exploration. (Cruaud, 2019.)

3.3 Student-centeredness in VR language learning

In this subchapter of the conceptual framework, I discuss one of the key elements of Virtual Reality (VR) educational concepts, about Student-centeredness. VR is offering the autonomous learning approach, where student is leading and "owning" the process of language learning and interacting with virtual patients

independently, in other words one-on-one without direct involvement of the teacher. Student-centered learning is an approach in education that focuses on the needs, abilities, and interests of the students rather than the teacher's delivery of content. In this approach, the teacher is playing the supporting role, meanwhile students are taking the “ownership” and leading the whole process. (Bhardwaj, et al., 2025.)

In the context of this thesis, student-centeredness is demonstrated through the autonomous use of VR simulation as a language learning tool. During the simulations, students were able to engage with the virtual environment independently, without constant guidance from a teacher. The structure of the VR sessions allowed learners to interact directly with virtual patients, navigate dialogue at their own pace, and repeat tasks as needed to improve their pronunciation and understanding. This created an opportunity for students to take leadership of their learning process, making decisions about how to respond, when to repeat phrases, and how to manage moments of misunderstanding or uncertainty. The role of the teacher in this process is minimal: mainly providing technical guidance and organizing the general processes of scheduling, introducing the simulation structure, and offering occasional support if technical issues arise. Rather than leading the learning, the teacher takes on a background role, allowing students to navigate the simulation independently. During the Virtual Reality simulation, the student is being placed in the center of the process, being the main character who is leading the interaction process with virtual patient. For instance, the conversation with virtual patient is fully dependent on how the student is reading, pronouncing and talking while the simulation is only reflecting on students’ speech. Therefore, the student is the key character in the simulation, as well as self-autonomous figure when it comes to language learning. (Alizeh & Cowie, 2021).

As a relatively new educational tool for learning languages, VR is only beginning to gain attention in the field of language learning, with growing interest in its potential to create immersive and student-centered experiences. However, several key aspects already stand out - particularly those related to learning style, self-autonomy, self-direction, and the ability of students to make independent

decisions during the learning process. These characteristics are closely linked to the broader concept of student-centeredness. In the case of VR simulations, student-centeredness is not just a supporting feature but rather the core principle of the entire learning model. The technology allows learners to engage actively, take initiative, and navigate learning situations on their own. It makes the experience autonomous, learner-driven and unique. (Parmaxi, 2022).

The student-centered approach is in many cases upheld over teacher centered approach. According to Tang, nursing students from China reported demonstrated increase in resilience in self-directed learning method. However, the lack of framework for implementation of the approach into the learning methods are making the student centeredness controversial topic. (Tang, 2023, p. 74.)

3.3.1 Agency and autonomy in VR language learning

Agency, defined as the ability to take intentional actions, is one of the key advantages of virtual reality in educational contexts. Virtual Reality (VR) is believed to enhance learners' agency by enabling interaction from a first-person viewpoint, offering new ways to engage with the digital environment. Agency is impacting learning processes by giving a strong sense of presence and allowing student the innovational form of interactivity while studying (McGivney, 2024). Agency is the key aspect of motivation of self-regulated learning, as it involves the internal methods of control, such as self-evaluation, while traditional schooling methods offer the external methods of control (Lepper & Henderlong, 2000).

The agency in the context of language learning in Virtual Reality refers to users' ability to actively regulate the strategy for the learning path by him or herself. While taking the control over the process student can adjust independently the pace of language learning process, focus, and depth of engagement according to their individual needs and goals. Another critical dimension of learner autonomy within the context of language learning in VR simulations is the process of self-evaluation. The technology functions as an immediate feedback

mechanism, effectively acting as a mirror that reflects the learner's current level of language proficiency. This "mirroring" is however a controversial mechanism when it comes to autonomy.

One one hand, the technology is mirroring and estimating the level of language proficiency. For instance, when pronunciation of Finnish words is poor, the system may fail to register the input correctly, resulting in the virtual patient either remaining unresponsive or asking the learner to repeat the phrase. This automatic response highlights gaps in performance and encourages the student to repeat and to polish the pronunciation as well as to evaluate own language skills (see Figure 3). As a result, learners engage in continuous self-monitoring and make real-time adjustments, which support the development of pronunciation and overall communicative competence.

Figure 3. The user is communicating to the virtual patient.

On the other hand, the autonomy is dependent on the "opponent" whether it's a virtual patient or technology itself (speech recognition system). The interactive process, therefore, introduces a level of unpredictability that can either support or supress the learner's autonomy. When the technology functions smoothly, it offers an environment where students feel in control of their learning process, so students are receiving immediate feedback and experiencing a sense of

accomplishment. While thinking about the speech recognition system, I was wondering what if the Artificial Intelligence fails to recognize speech correctly due to technical limitations or due to the learner's low language proficiency: will it have any impact on students' experiences? If yes, what are the consequences and impact on their language learning process and perception of usage? Does it create frustration and reduce the sense of agency? This aspect is going to be discussed more in the next chapter.

3.3.2 Affordances of VR for student-centered learning

Virtual reality (VR) in the context of language learning offers a variety of affordances that support the learner's engagement, motivation, and skill development (Cowie & Alizadeh, 2022). One of the most important affordances is the sense of presence and immersion. VR places the learner in a three-dimensional environment that, although artificial, is designed to simulate real-life situations relevant to specific learning goals. This creates a feeling of authenticity and presence, which allows learners to emotionally connect with the subject and engage more deeply in the learning process (Alqahtani et al., 2017).

Another important aspect of affordances in language learning approach is contextualization. VR enables language learners to practice communication in realistic scenarios, which can increase situational interest and improve the retention of new vocabulary (Cowie & Alizadeh, 2022). Research has shown that learners using VR in language education not only improve their vocabulary, particularly in translation and recognition tasks, but also express a strong interest in continuing to use the tool for further learning. Interacting with avatars (in this study with virtual patient) can also help reduce language anxiety and support more confident communication (Alfadil, 2024).

Additionally, VR supports embodied learning, where learners use movement and exploration to acquire new vocabulary and understand topics more meaningfully. One important advantage of language learning in VR is how it connects to real-life experiences. Research on young children has shown that interacting

physically with their environment plays a key role in how they develop thinking and language skills (Johnson, 2017). From personal experience, when I had an opportunity to test the VR glasses and to immerse into hospital settings, I have noticed that embodying myself with the hospital environment had an emotional impact on me. Even though physically I was in the office, the “teleportation” with the help of VR glasses into ward settings put the psychological impact on me be increasing the concentration and making me feel present, interestingly, without any tactile elements. Visual perceiving of surrounding connected myself with hospital setting not only mentally but also in some sense physically.

Figure 4 represents presence, immersion, contextualization, embodied learning, intercultural awareness, and real-time feedback with flexibility – this is how VR creates a student-centred learning approach that enhances engagement, motivation, and practical language use in healthcare-related scenarios.

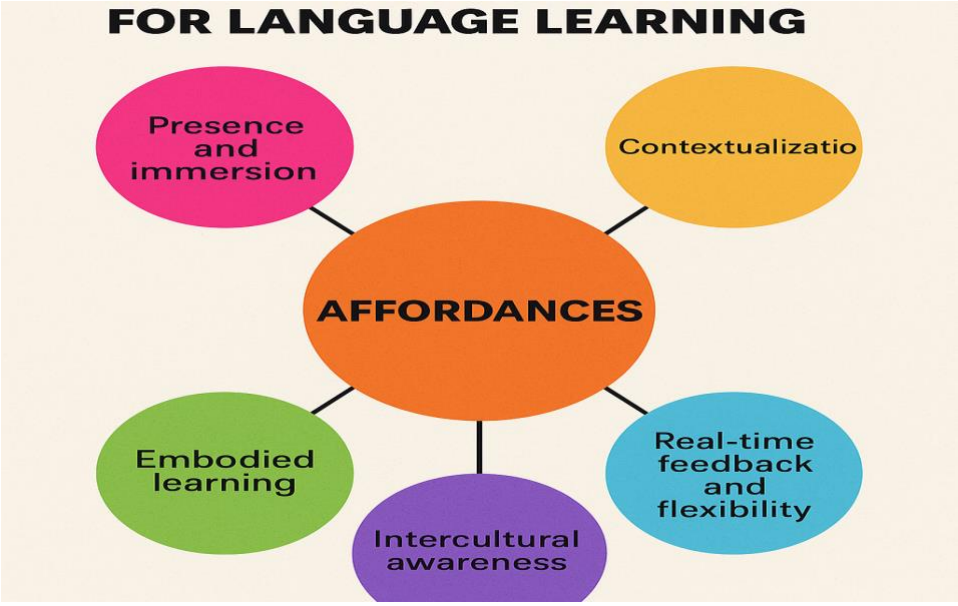

Figure 4. Key affordances of Virtual Reality in the context of the CultureExpert project.

Embodiment also helps to develop intercultural and intracultural awareness by placing users in simulated multicultural environments that mirror certain environments. Students can navigate through different scenarios, interact with local customs, and gain cultural sensitivity in a meaningful way. As immersive VR becomes more accessible, it is expected that student do not only learn the

language but also better understand the cultural background that shapes it. (Berti, 2021, p. 65.)

Furthermore, VR provides real-time feedback and flexibility in access. Virtual reality for language learning is all about interactive communication with avatar (of a virtual patient) which guides the learner during practice and promote self-correction. This affordance creates a great platform and opportunity for the learner to create own unique path in language learning. VR offers flexibility in access, allowing students to learn at their own pace and revisit scenarios as needed, making it a supportive and adaptable tool for language development.

3.3.3 Affective filter hypothesis

Learning foreign languages involves experiencing emotions. Affective filter hypothesis is suggesting that experiencing positive emotions while language learning, such as relaxation, confidence and motivation have a beneficial impact on acquiring new language skills. Oppositely, while a student is overwhelmed with negative emotions, for instance fear of failure, stress and anxiety, the learning process is reducing the engagement or even blocking the cognitive processes. (Wang, 2024, p. 38.)

When thinking back on my own experiences of using Finnish in real hospital environments, I often felt uncertain and stressed about my language level. During my university studies, the fear of making grammar mistakes in front of the patient or being misunderstood by colleagues sometimes lowered my motivation to speak Finnish. As a result, I often switched to English, because the discomfort and lack of confidence in speaking Finnish gradually turned into a language barrier and complete refusal to acquire new language skills.

In general, second language learners are often reluctant to interact on target language due to variety of socio-cultural, linguistic and individual factors (Yudintseva, 2023). “Language is best taught when it is being used to transmit messages, not when it is explicitly taught for conscious learning.” The quote is

closely correlating with the master thesis topic, regarding learning language while interacting with virtual patient and delivering messages to someone, meaning the language learning process is going through the natural flow, where a student is not only thinking of grammar but also practicing the meaningful expressions and engages in delivering the message.

The Virtual Reality simulations used in the CultureExpert project were developed with the support of an Artificial Intelligence (AI)-based speech recognition system. This technology enables users (nursing students) to engage in verbal interaction with a virtual patient who responds in real time. Therefore, the users can practice language by talking to virtual patient. While thinking about interaction with virtual patients through the lenses of Affective Filter hypothesis, one of the key learning approaches of communicating with an AI-driven virtual patient is the absence of judgment or emotional response from the virtual partner. Unlike human interlocutors, the virtual patient does not express anger, disapproval, or confusion. This creates a psychologically safe space for language practice, where learners can speak freely, repeat phrases, and polish pronunciation without the fear of being misunderstood or causing harm. In line with Krashen's (1986) Affective Filter Hypothesis, such low-stress environments are known to enhance language acquisition by reducing anxiety and increasing learners' willingness to communicate.

4 Implementation of the study

In this chapter, I describe how the study was carried out in practice. I explain the main steps of the research process, including how the participants were involved and how the data was collected and analysed. Since this is a qualitative study, the focus is on understanding the personal experiences and viewpoints of the students who took part in the VR simulation. I also describe the ethical considerations that were important during the research. Finally, the chapter ends with reflections on how the data was interpreted and what guided my analysis, especially the role of hermeneutics in making sense of the participants' perspectives.

4.1 Research task and question

This master´s thesis can be seen as serving two interrelated purposes. On a broader level, as a personal motivation of author this study aims to contribute to the CultureExpert project, and by extension, to support national efforts to explore creative approaches in language learning. The research aims at analysing an innovative approach in language acquisition for immigrants in purpose to facilitate the integration of immigrants into the Finnish healthcare settings. Meanwhile the primary research task is to explore and analyse the perspectives of Culturally and Linguistically Diverse (CALD) students who participated in the pilot phase of the CultureExpert project, with a specific focus on their reflections and perceived outcomes of using immersive VR as a language learning tool. This master´s thesis is aiming at analysing the data, which was collected within frames of CultureExpert project, particularly through individual interviews. The goal of the research is to identify students' insights, outcomes and explore students´ reflections regarding simulations they participated in. The research question guiding this study is: What kinds of experiences may immigrant nursing students have in learning Finnish through virtual reality simulations?

4.2 Methodological starting points

This study follows a qualitative research approach as it seeks to understand in-depth experiences and subjective perceptions of the participants regarding immigrant nursing students' experiences of the pilot version of Virtual Reality simulations (Leavy, 2022). A qualitative content analysis framework was chosen to interpret the data, allowing patterns and themes to emerge from the participants' narratives.

The analyses and interpretation of the data for this research was inspired by Paul Ricoeur (Tariq, 2019, p. 1) hermeneutical approach, which focuses on deep understanding of students' experiences. This approach of interpretation of qualitative data is gaining popularity nowadays in social sciences, as it seeks of the deep meaning of patients/other interviewees experiences and underlying the significance behind their words (Simony et al., 2018).

Hermeneutical approach for data interpretation in this master thesis plays a crucial role, as the data was co-created through dialogue (interview) with the student and researcher, meaning that researcher actively engaged in the conversation. The inductive interview question organization of each interview played a significant role in analyses. For instance, each interview was rich with probes and markers, meaning the researcher while actively listening was interfering in the interview and interacting with each student by asking additional questions, in purpose to gather richer information. (Leavy, 2022.) Therefore, the final understanding of the interview includes both students' descriptions regarding their experiences and researchers' active participation in the dialogue.

4.3 Data collection

The data collection process started with recruitment of the participants. Participant recruitment for this study was conducted in collaboration with two universities of applied sciences and one university hospital that took part in the pilot phase of the CultureExpert virtual reality simulation project. The researcher

received access to these institutions through project coordination, and designated contact persons, typically teaching staff, provided confidential information regarding eligible participants. Specifically, the researcher was given access to the names of students who had engaged in at least one virtual reality simulation session, which served as the minimum criteria for participation in the study. This information was shared via secure email communication, adhering to confidentiality protocols. Following this, the researcher-initiated recruitment (Leavy, 2022) by sending formal email invitations (See Appendix 2) to the identified students, inviting them to participate in semi-structured interviews.

The researcher coordinated the interview schedule individually with each participant, agreeing on a suitable day and time through direct communication. The participants were informed in advance about the expected duration of the interview, which was at least one hour, to ensure they could allocate sufficient time. This was necessary to allow for in-depth discussion and to collect detailed data that would support the production of high-quality research outcomes. In total, six participants agreed to take part and were present for their scheduled interviews.

To schedule the interviews, each participant was invited for the interview via e-mail, with invitation letter. The invitation was written in a friendly non-official manner, to decrease the possible tension while participating in the project (see Appendix 2). I strongly believe that relaxed environment and friendly attitude from the interviewer help build trust, reduce the tension and makes it easier for participants to disclose potential uncomfortable and sensitive experiences. It also reduces the burden of responsibility, thereby enhancing participants ‘willingness to contribute openly, without fear or judgment.

The interview questions (See Appendix 1) were developed collaboratively with other researchers involved in the broader project. The scope and thematic areas of the interview, as well as its structure and overall number of questions, were discussed and refined in consultation with the project managers. The final interview guide included 17 questions (see Appendix 1), designed to gather

detailed insights into how the participants experienced learning Finnish through virtual reality simulation.

The raw data was collected through individual online semi-structured interviews with six nursing students from immigrant backgrounds as it was mentioned before. The interviews were conducted in Teams and were recorded using build-in transcription feature, which automatically generated written transcripts of the conversations. However, as the automatic transcription did not capture all content accurately, each interview was manually corrected and transcribed for more reliable analyses by author.

As it was mentioned before, the data for this study was collected through semi-structured interviews, which allowed flexible, open-ended conversations with each participant. The nature of these interviews means that the material is quite broad and unframed, filled with individual details unique to each participant.

In this study, an inductive approach of qualitative content analysis was chosen, as the nature of the interview questions allowed participants to freely describe their experiences without being restricted by predefined frameworks. The questions were designed to be open-ended and exploratory, encouraging students to reflect on their personal journeys in their own words. For instance, a question such as, "Could you share your overall experience: what did you expect, like, and dislike about it?" provided unlimited space for participants to express their thoughts.

All interviews were conducted in English to ensure clarity and comfort for participants. Each interview lasted approximately sixty minutes.

4.4 Data analysis

The research material was analysed using qualitative content analysis. This method was selected based on the nature of the data, which consisted of interview transcripts, in total 36 pages. Qualitative content analysis is a flexible

method that can be used for working with many types of data, such as interviews or any other written texts (Bengtsson, 2016, p. 10).

As discussed earlier, the total size of raw data was thirty-six pages. Every transcribed interview had variable length, but in average one interview was the size of six pages consisting of both questions of the interviewer and full answers of participants. As noted earlier, automatic build-in option initially recorded and partially transcribed the data, meaning that the text for analyses required manual rewriting (Leavy, 2022).

Therefore, preliminary analyses of material started while re-transcribing the interviews. Obviously, while re-transcribing the interviews I was carefully reading the material several times, getting familiarized with the data and making notes: however, not to find the answer to my research question yet, but to immerse myself in the content and begin to recognize potential patterns and visible passages or recurring themes that could guide the later stages of analysis. According to Leavy (2022, p. 160), the initial immersion into material always gives an understanding of the “big picture” as well as overall understanding of how next step called “coding” is going to be organised.

Following the initial phases of analysis, coding was undertaken as the next step. Coding is a fundamental component of qualitative research, allowing the researcher to extract key themes from the data and relate them to the research question (Elliott, 2018, p. 2850). The research question in this thesis is “What kinds of experiences of immigrant nursing students may have in learning Finnish through virtual reality simulations”. Therefore, in the beginning of the process I was first seeking and highlighting the passages, which would be directly linked to my research question. For instance, I was looking for the feedback regarding the: language learning approach; their feelings during and after the simulations; how did they perceive this type of learning approach personally; feedback regarding practicalities of the process; if approach had an impact on their resilience or not and why; all other possible insights as well as future expectations from the learning approach.

The process of highlighting the passages from the interviews was very important, as I aimed to ensure that no data were overlooked and that all participant feedback was carefully considered. Moreover, as I was looking into the depth of the interviews data and trying to seek for the hidden insights, I also highlighted the ideas and reflections that participants shared beyond the direct interview questions. These were comments that came up naturally during the conversation, often alongside their main answers. For example, when I asked how convenient the intervention was for language practice, some participants not only answered the question but also described the method as futuristic or innovative. These spontaneous insights added extra value to the data and were included as separate themes in the analysis.

In several cases, individual sentences were divided into multiple passages because they contained distinct meanings, each potentially corresponding to different code groups. This careful segmentation allowed for a more nuanced and comprehensive analysis of the data. For instance, here is a quote from the interview, which was highlighted as a passage: "…I learned basically nothing during the simulation, except the only thing: Finnish people are very calm, and they talk slow." This passage was divided into two segments: the part, which is referring to inefficient language learning approach, the language learning outcome from the simulation was poor. The other passage is linked to cultural behavior patterns which student noticed/identified during the interaction with virtual patient. All in all, I had more than seventy passages and over 100 codes to them (See Figure 6).

After the passages were identified, it was time for labelling them, in other words – to code them by giving them short names or phrases (Elliott, 2018, p. 2855). While going through the process of coding, I created a table (see below), where passages (quotations from the interview) are on the left and codes are on the right. The table visually reduced the amount of data and made it more structured and clarified.

Here is the table to exemplify how passages were coded:

Figure 6. The table where coding stage of data analyses process is represented. Passages are classified into the codes.

Examples of passages from the interview	**Codes**
Simulation did not respond without correct pronunciation, causing frustration	Feeling frustration
sHelps understand how Finnish patient interactions differ from home country	Improving cultural well-being
Creative language learning approach	Creative approach
Had trouble reading full sentences and felt stressed	Feeling stressed
Simulation was effective due to repetition of the same sentences	Effective
Found the learning experience fun and unexpectedly creative	Fun and Creative
Motivating because computer allowed mistakes without judgment	Motivative
Struggled with speech recognition and had to repeat words	Difficulties with technology
Was limited in time so couldn't build the productive dialogue	Lack of time /Inefficient
Simulation required correct pronunciation to proceed	Pronunciation practice benefit
I learned nothing except that Finnish people are calm and talk slowly	Focus on Cultural behaviour Inefficient approach

4.5 Research ethics

In Finland, all researchers are expected to follow fundamental ethical principles across disciplines (TENK 2019; TENK 2023). Ethical considerations were integral to this research and were systematically applied throughout the processes of data collection, storage, and analysis. Even though the data was gathered through individual online interviews, the process involved gathering and storing the personal information of each participant. Contact information of the interviewees was provided by the project managers to facilitate the interaction between research team and scheduling of interviews. Consequently, ethical protocols were primarily implemented to ensure the confidentiality of participant contact

information and the secure handling of data throughout the research process. These measures were crucial in maintaining the integrity of the study and safeguarding the privacy and rights of the participants.

As part of the ethical considerations in this study, participants were provided with a data protection notice (See Appendix 4) which detailed the procedures for collecting, processing, and storing personal data as well as giving the overview of research purpose. According to Leavy's book (2022) its primary role is to inform participants about how their personal data will be collected, processed, stored, and protected throughout the study. By including the roles and responsibilities of the research team, the document assured participants that their personal data would be handled with confidentiality and respect for their privacy. The data protection notices also informed participants of their rights, such as the right to access and withdraw consent.

The participation in interviews was completely voluntary. All students who participated in at least one simulation were offered an equal opportunity to share their experiences and contribute to the project willingly. At the onset of each interview, oral consent was obtained from participants to transcribe the data using the in-built transcription tool within the interview platform. Participants were given the autonomy to decide whether to keep their camera on or off during the interview. Notably, the interviews were neither audio nor video recorded.

"Informed consent to participate in research is a central principle in research with human participants" (TENK 2019). Prior to data collection (interviews) each student was provided with online consent form (See Appendix 3) created by Oulu University.

5 Findings

This chapter presents the key findings from six qualitative interviews conducted with nursing students with immigrant backgrounds who participated in the pilot version of Virtual Reality simulations for learning the Finnish language in the context of healthcare education. The chapter is presenting the findings answering the key research question: What kinds of experiences may immigrant nursing students have in learning Finnish through virtual reality simulations? Through a careful coding process, key topics and patterns were identified, allowing four main themes (Figure 7) to emerge from the students' experiences.

Figure 7. The collage representing four main themes emerged from the qualitative analyses of 6 interviews: usefulness, resilience (motivation), cultural awareness, creativity and innovation.

These themes reflect the variety of ways participants made sense of their learning process, highlighting both practical and emotional aspects of engaging with VR in language education:

- Educational value and usefulness

- Resilience, motivation, confidence and emotional response
- Cultural insights and cross-cultural awareness
- Creativity and innovation

The themes represent different angles from which the students made sense of their learning experiences. These categories reflect not only what and how they learned Finnish language, but how they felt, how they adapted, and how they envisioned future use of the technology. I chose these specific groupings because they represent the diverse concerns: from the practical (language proficiency and system usability), to the personal (emotional responses and confidence), to the intercultural (learning about Finnish communication norms), and finally to the imaginative (how VR could evolve as a tool for education).

All in all, in this chapter, I will not only present and discuss the key findings but also include direct quotations from participants to provide deeper insight and help the reader to connect more closely with their lived experiences.

5.1 Educational value and usefulness

Upon analyzing the interview data, it became evident that the participants' experiences of language learning within the simulation were strongly influenced by their varying levels of Finnish language proficiency. Specifically, students who were at the early stages of their Finnish studies encountered considerable challenges in understanding the core content of the dialogues. One participant admitted*: "*…I couldn't understand 90 percent of the text," and later added, "…I haven't learned anything," Participant A. By saying this, it was obvious that it was highlighted the difficulty of engaging with the material without sufficient language skills.

In contrast, another participant who had slightly more experience with the Finnish language described the simulation as both helpful and motivating. Despite still struggling with vocabulary, she emphasized the benefits of repetition, explaining that the need to pronounce words correctly for the system to respond made her

focus more. Participant B reflected: “…for me that was effective, because if you repeat the same word so many times it sticks to your mind, and you remember it.” (Participant B.)

These contrasting reflections illustrate how language proficiency directly shapes the learning outcomes in VR simulations. While some students felt lost and discouraged due to the language barrier, others found value in the practice, especially for pronunciation and vocabulary retention. Overall, the findings suggest that learners’ linguistic readiness plays a significant role in how effectively they can benefit from such immersive learning tools.

Another insight which was mentioned in every interview was following: the speech recognition system (artificial intelligence) often failed to capture the participants’ speech accurately. According to several interviewees, the AI frequently failed to register their words, requiring them to repeat the same phrases multiple times to be understood. As one of the participants explain the difficulty: “…sometimes it couldn’t understand me…” (Participant C.)

This technological mismatch impeded the natural flow of conversation with the virtual patient and often made participants to seek assistance from supervising teachers, asking whether they were performing the interactions correctly. The lack of AI responsiveness not only disrupted the learning process but also brought stress for users.

A strong point that came up from several interviews was the preparation simulation: almost all participants wished they could get the texts or dialogues in advance, so they could get the idea of themes and prepare their vocabulary in advance. One of the participants asked for the simulation text later after the simulation. Participant C commented:

> …I asked my finish teacher for texts, and she sent us the conversation later, but it was later. So, in my opinion, if it continues, maybe would be better if we could get the conversation before so that I know what I am saying.

They felt like if they could study the words before the simulation, they would feel much more confident and could focus on practicing pronunciation and real conversation flow instead of just wondering what they are talking about. Moreover, one of the students gave an example regarding the lack of translation and how essential it is during language learning. Here is how Participant G expressed thoughts: “...I didn’t know what word KIPU mean, and I asked help from the teacher, and he explained me the meaning in English, so I understood what it means. And now I know what KIPU is.” Additionally, the suggestions of several students for the future simulation for language learning were to add translation to the conversation, so they understand the meaning and learn new vocabulary.

Limited time of simulation also played a critical role in their language learning experiences: almost all participants expressed dissatisfaction resulted from too short simulation session and lack of time to improve their reading skills. As participant C explained: “…the time was limited, we only had 20 minutes”

In conclusion, the educational value of the VR simulation depended a lot on the students' level of Finnish, how well they could prepare, and how the speech recognition system worked. Some students found the simulation helpful, especially for practicing pronunciation, while others struggled because of the language barrier or technical issues. Many participants felt that if they had more time, translations, or the chance to read the dialogues in advance, they would have learned more. The results show that the VR simulation has good potential for language learning, but it needs some improvements to fully support all students: especially those who are just starting to learn Finnish.

5.2 Resilience, motivation, confidence and emotional responses

When it comes to participants (nursing students) of pilot version of the virtual reality simulation for language learning in the CultureExpert project, once the nursing students put on the virtual reality glasses, they were immediately immersed in a simulation where the learning took place entirely between them

and the virtual patient, in hospital environment (see Figure 3). From the moment the simulation began, students found themselves alone in the virtual environment - no one was there to guide them, correct them, or interfere. The interaction was happening from the first-person viewpoint, meaning the participants were in the role of the nurse interacting with the patient. This process made it clear that the use of VR glasses was not just a technological tool – it was an autonomous learning method that placed full responsibility on the student.

The emotional journey of the participants was something I found very touching. Many of them described moments of stress, even frustration, when the system didn't understand them. Some said they were nervous going into the simulation because they already knew their Finnish was not strong enough. Being an immigrant myself, I can feel it. In overall, positive emotions out-weighted negative ones. For instance, participant B said: "After the simulation I felt really happy!". When it comes to another participant, he expressed the following insight: "…the simulation boosted my energy to learn Finnish!" (Participant C.)

Interestingly, many students shared their thoughts about gaining self-confidence during and after the simulation. For example. One participant said, "Now I know what to expect from my working practice in hospital!" (Participant C.) One of the students also explained that just the act of speaking helped her feel braver for the future working practices.

According to the students' experiences, teachers encouraged them not to be afraid of making mistakes, which helped them relax. This aspect of safe practice space seems important: students could do mistakes as many times as they needed to get better results. This helped students to demonstrate their language skills without fear of being embarrassed in front of real person or teacher.

Even though there were moments of disappointment and feeling misunderstood, many participants also described developing a kind of resilience. They said that facing these challenges made them more determined to improve, and that they left the simulations feeling motivated and determinate to keep practicing Finnish. During the interview, participant C. expressed: "I was first scared that I can poorly

read Finnish letters, but simulation made me try my best to improve pronunciation".

For immigrant nursing students who just arrived in the country and didn't have enough time to build connections with local Finnish speaking people, the VR simulations seemed to offer a unique chance where they could push past some of their fears, break the language barrier and start building confidence. Here is a quote from an interview with immigrant nursing student who arrived in Finland a couple of months before the simulation: "...I didn't have much opportunity to practice Finnish language outside Finnish language classes, and Virtual patient was one of the first ones who I was talking Finnish to..." (Participant A).

5.3 Cultural insights and cross-cultural awareness

For many immigrant students, the VR simulations gave them not only vocabulary and language practice, but also insights into Finnish cultural norms, especially in healthcare settings. One of the most inspiring insights when talking about cultural awareness was that many participants discovered Finnish behavioral patterns while communicating to the virtual patient. For some participants, it was the first experience in talking to a Finnish "person". Several students noted that Finnish communication tends to be calm, polite, and maybe a bit more formal or reserved than what they are used to in their home countries. One participant said that realized how important it is in Finland for nurses to ask about patient's feelings and pain - and that this polite, careful approach is something she might not have seen as strongly emphasized in her own culture. Participant A commented: "…here in Finland, you keep conversation to a minimum and just agree with the patient and respect his wishes…".

There was also a shared sense that for many of these students, it's hard to get cultural immersion in daily life, because they don't yet have Finnish friends or a wide social circle. The simulation, even though artificial, became a valuable window into Finnish work culture. It helped them observe how Finnish healthcare workers communicate, how they show care, and how they structure patient interactions. For immigrant students, these little cultural lessons are probably just as important as the language practice itself. In one of the interviews, one of the

insights regarding cultural understanding was following: "…in my country people are more open and talkative…": said Participant C. Based on quotation above simulation offered more than just language practice: it provided students with cultural insights that might otherwise be difficult to access in daily life.

For many participants, the VR experience served as their first interaction with Finnish communication styles, especially within the context of healthcare. These moments allowed them to observe and reflect on values such as calmness, politeness, and respect for patient autonomy, which are central in Finnish professional culture.

5.4 Creativity and innovation

While going through the interviews, students repeatedly described the VR experience using words such as "fun," "creative," and "unusual". All of participants found learning language in Virtual reality engaging and mind entertaining. Interestingly, none of the participants haven't used the technology enhanced tool before the simulation, so the approach was innovative for all of student. When it comes to gamifying one participant commented that the simulation felt like a game. It was noticed that the learning process in immersive reality offered the game elements, particularly the motivational aspect. Participant C expressed: "…you must get this word correctly until virtual patient understands it, and you are very focused".

This gamifying made the process enjoyable and mentally engaging. Another student Participant B echoed this, saying that "…it was very fun and active… it's like mind entertainment."

As it was mentioned before, all students appreciated the innovative nature of the experience. For many, it was their first time encountering VR in an educational setting, and they expressed surprise and excitement at seeing such advanced tools used for nursing education. Participant A noted: "I would never imagine that this could be invented for nursing students…". The students also viewed the

approach as forward-thinking and futuristic. One participant (C) expressed his opinion in following way: “…this is the future of universities,” admiring its advanced and modern breakthrough in language education.

The data analysis provides some indications of increased creativity amidst student who tried VR simulation One of the participants reflected on how the simulation could expand beyond current use, suggesting: “…you can fantasize and do the simulation about antibiotics” inspiringly said Participant G.

All in all, the reflections shared by the students show that the simulation experience did not only serve as a language practice tool but also sparked their imagination and excitement about the future of education. The words they used - such as “futuristic,” “fun,” and “mind entertainment”, highlight how meaningful the creative and innovative aspects of VR were to them. For many participants, it was more than just a lesson - it was a window into how language learning can evolve into something engaging, modern, and inspiring.

6 Conclusions and discussion

In this chapter I will go through main findings and make conclusion based on them. Afterwards, I will also discuss conclusions from different perspectives and suggest the ideas for the future research.

6.1 Conclusions

This master's thesis aimed to explore the experiences of immigrant nursing students who participated in Virtual Reality (VR) simulations as part of their Finnish language education in healthcare settings. The study aimed to contribute to CultureExpert project and examine how technology-enhanced approaches in language learning can be perceived by immigrant students. This goal of the study was to explore the students' experiences regarding their participation in pilot version of VR simulation within the frames of CultureExpert project.

Through the analysis of data produced through qualitative interviews, the research revealed that students' experiences with VR-based language learning varied based on their proficiency levels, emotional response and ability to reflect the usefulness of the approach. Despite challenges such as limitations in speech recognition and time constraints, many participants described the VR environment as fun, motivating, futuristic and supportive of autonomous learning.

When it comes to psychological insights of the experiences, the particularly significant point from the findings is the connection to Krashen's (1986) Affective Filter Hypothesis, which claims that emotional states of the student are directly correlated to the second language learning process. In this master's thesis the filter manifested in different ways and can be considered from two perspectives. On the one hand, students reported that the VR simulations allowed them to engage in language learning without the fear of judgment. The virtual patient offered a non-judgmental response where mistakes could be made without pressure of fear. This non-judgmental environment directly contributed to increased self-confidence and reduced emotional and language barriers, creating optimal conditions for language learning and practice. On the other hand, the

experiences were highly influenced by technological aspects of the simulations process, which lead to uncomfortable feelings and emotions. According to majority of students, the speech recognition system was one of the main factors affecting the learning process. The system often didn't understand their speech correctly, so the students felt frustrated, stressed, and sometimes even discouraged. These repeated issues made them feel more anxious and less confident, which raised their affective filter. As a result, the learning experience became more complicated, and to some extent it had an impact on their motivation and resilience, building barrier between them and the language. This shows how technical problems can unintentionally interfere with affective conditions necessary for optimal language learning. All in all, psychologically students experienced a variety of emotions from stress and frustration to gaining confidence and breaking the language barriers.

Student-centeredness was one of the key aspects of learning outcomes. In this thesis, I explore how the concept of student-centredness and embodiment in VR language learning can be understood through the idea of student agency. While reflecting on students' experiences in the CultureExpert simulation, I started to ask myself whether learners form emotional and cognitive connections with the hospital environment and the virtual patient they interact with. The sense of embodiment, as described by Guy et al. (2023), refers to the feeling of being inside a virtual body. In this simulation, that means the student steps into the avatar of a nurse and communicates with another avatar, the virtual patient. Since the student can communicate with the virtual patient in the first person - they take full control of the process and are able to feel and experience it directly. One of my observations and conclusions from the interviews was that the student can monitor their feelings and progress, their success or failure, and abilities to reflect the preparedness for language learning in VR simulations. In the context of my thesis, the concept of embodiment refers not only to the sense of being present in the hospital setting and context, but also to the ability to track the language learning progress and engage in self-assessment. Embodiment in frames of learning language in VR simulations makes this experience interesting as it goes beyond a technical tool - it becomes something immersive and personal. Students reported that simulation felt like they were the part of the situation and

responsible for how the interaction is happening. This feeling of "being there" supports their agency by letting them make decisions, and react in real time, as they would in a real authentic healthcare setting. At the same time, it supports a contextualized way of learning. Students reported being able to observe the hospital environments, and it gave them the vision of what to expect from upcoming working practice. Contextualized learning also added the meaning for language learning, as instead of studying language in isolation, students practice using Finnish in real, meaningful situations connected to their future profession. This futuristic student-centred approach, as students reflected, might be a fresh look at traditional schooling and add the value to the language learning process.

As shown across all four thematic categories - educational value and usefulness; resilience, motivation, confidence and emotional response; cultural insights and cross-cultural awareness; and creativity and innovation - the students were placed at the heart of the learning process. The structure of the VR simulation allowed students to take ownership of their learning. Students were able to practice at their own pace and interact in real-time without direct teacher intervention during the simulation. This autonomy aligns strongly with the principles of student-centered learning: giving learners the space and responsibility to direct their own progress. The freedom to engage, make mistakes, repeat, and reflect created an environment where individual learning paths could develop naturally. Moreover, students demonstrated agency: not only through their technical interaction with the system, but also emotionally and cognitively. They described how the simulation pushed them to try harder, boosted their motivation, and built confidence. Even when technical barriers such as poor speech recognition caused frustration, students adapted and expressed a willingness to overcome challenges, highlighting the inner resilience that student-centered approaches are designed to foster.

The immersive and interactive nature of the approach introduced the elements of playfulness, which made students experience more engaging. Several students compared the simulation as “game-like” activity, and as a result the overall experience felt like “fun”. Even though learning language with the help of Virtual reality simulations has been already established as” fun”, which is providing the

entertaining and interesting learning environments amidst children and therefore motivating them (Acar & Cavas, 2020), “game-like” experience played a key role in motivating nursing students as well. To sum up, the conclusion of findings regarding student-centeredness of this study clearly highlight that student-centeredness was not only present but central to the experiences of the participants throughout the VR simulation.

Based on the feedback from students who experienced this innovative educational approach, language learning through VR simulation is seen as a creative approach, which they repeatedly mentioned in their interviews. Most of the students have not experienced VR simulations before, so the language learning process in VR simulation was something what happened for the first time in their lives. According to students’ reflections, the approach differed from traditional schooling and was unique and unusual. At this point, I would also like to emphasize that the language education approach with using VR simulations initially attracted me with its innovation and it seemed quite unusual to me and differed from my own experience in Finnish language learning path. The approach obviously differed from traditional language lessons: as a student, I was sitting behind the desk and expected to learn grammar from the books. I was inspired and curious of making research on whether student perceive it as a creative approach and contributing to the development of new innovative ways to explore the potential approaches in education and promoting creative approaches for improving cultural well-being.

According to the students, the teacher’s role during the pilot version of VR simulations process was minimal, limited mainly to technical support or helping students start the simulation. However, I would like to reflect more deeply on the teacher’s potential contribution to the process and open a discussion on the extent to which a teacher can be involved: how much they can contribute to the process, as well as support and engage students throughout (see Figure 8). The learning process itself, as previously described, is relatively simple, with the teacher primarily serving as technical support during the simulation. However, in some interviews participants mentioned that the teacher also assisted with translating parts of the text that students did not understand. Another student

expressed the wish for some preparatory work before the simulation, such as the possibility of reviewing vocabulary in advance. Therefore, it would be valuable to further discuss how much the teacher should be involved in the process of developing the simulation (vocabulary, dialogues) and preparation of students for the simulation, and why this might matter.

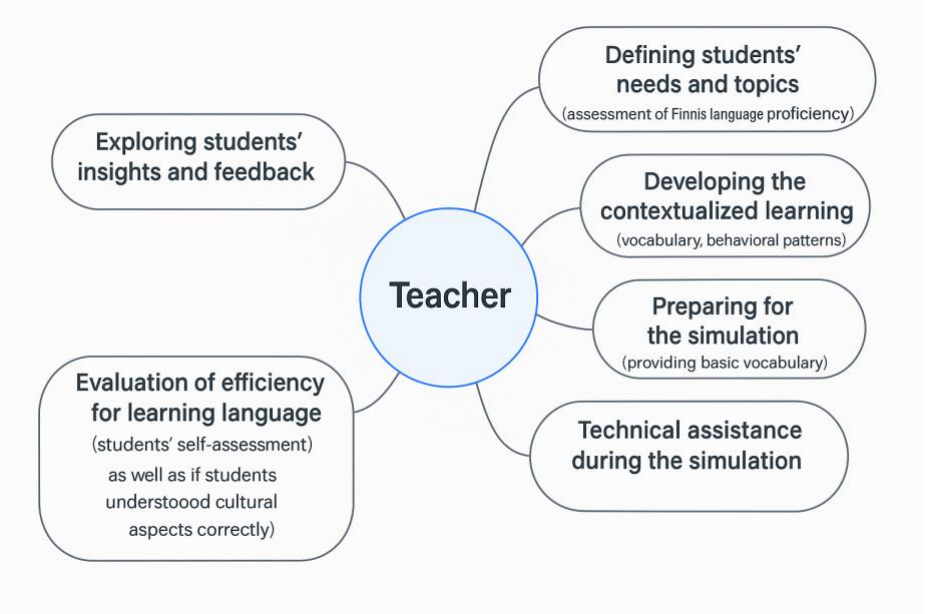

Figure 8. The possible core aspects of teachers´ role behind the experiences of culturally and linguistically diverse nursing students in Finish language learning journey through VR simulations within CultureExpert Project.

The fact that students began suggesting ideas for how VR could be used in other areas of education, such as anatomy, or learning about medications - can also be seen as an indication that innovative educational approaches foster creativity and increase student engagement into language learning process. The teachers´ role while having the dialogue and reflecting the feedback would be to detect students' needs, in other words as a "bridge" between the developers of simulations and students' needs and creative thinking. Since one of the students proposed creating a simulation focused on learning medications, it can be assumed that the teacher's role could include understanding students' needs through discussions about specific topics or subjects they find challenging. In the context of language learning, for example, defining which topics or phrases are particularly difficult for them and whether a VR simulation could help overcome

those difficulties - could also be one of the teacher's contributions to the language learning process and to supporting students in their integration into working life.

Based on the interviews, the teacher's role could also include assessing and assisting whether a student is ready to use the simulation. As the interview results showed, students themselves reflected and evaluated their ability to learn a language through simulation based on their proficiency of Finnish. However, teachers' participation in assessing the preparedness of each student was not identified or clear. For example, many students reported that they didn't learn anything because they lacked the necessary skills to read or understand Finnish words, whereas other students were able to engage with the language through reading and building a dialogue with the virtual patient and assessed their finish language learning as efficient. Therefore, the teacher could also evaluate the student's level of preparedness for the simulation can reflect on and evaluate the potential usefulness and relevance of the simulation for each student.

Moreover, one important aspect is that the teacher could serve as someone who assess how accurately students perform the self-evaluation process. Although the method emphasizes student-centredness and allows learners to reflect on their own language learning journey, plan their next steps, and engage in self-evaluation, it does not mean that teacher feedback or pre-assessment becomes unnecessary. The teacher could provide guidance on whether students' self-evaluation regarding language learning process is sufficient and correct, but also whether they correctly understand the learning process and the cultural aspects involved within it. Since the original intention of the simulation was to enhance the student's cultural competence and cultural well-being and smoothen their assimilation into working life by offering them learning the language, the findings from the interview revealed that the simulation brought plenty insights regarding Finnish culture as well (communication style, the temper of the Finnish people). Therefore, the teacher in this regard could reflect how students are observing and perceiving of the cultural aspects, for instance evaluate and reflect whether students interpretated it correctly, as well as to explain, to discuss or to support their insights, feelings and to be their guide in the exploring the Finnish culture.

It is also important to discuss how this master's thesis research question relates to the theme of the degree program – Creativity and Arts in Social and Health Fields (CRASH). As it was discussed before, the broader purpose of this study is connected to a growing need in Finnish healthcare: improving the cultural competence and supporting the integration of nursing students from culturally and linguistically diverse backgrounds. According to Kamau et al. (2022), these students often face significant challenges in adapting to Finnish working life, especially in terms of language and cultural expectations. From this perspective, VR simulations may offer a supportive, innovative solution. While reflecting on how the faculty promotes cultural well-being and cultural vitality of the population, there are several aspects to consider. The master's thesis is describing and exploring the experiences of students who participated in CultureExpert project, which directly aligns with the core values of my faculty. For instance, immigrants who arrive from distant places and are unfamiliar with Finnish culture are given the opportunity not only to learn the language in VR simulations, but also to become acquainted with the behaviors and communication habits through embodiment, visual observations and building the dialogue with the virtual patient to practice the language and visually explore their upcoming practice environment. This creates a valuable opportunity to develop, enrich, and explore new pathways for assimilation and cultural well-being in society.

Another significant area of discussion within my thesis is that the CRASH program functions as a multidisciplinary platform. In the context of my thesis, this means that two disciplines are combined, such as enriching the language learning with unusual and creative approaches (VR, XR design), as well as supporting and improving students' cultural well-being through improving their immigration process and helping to assimilate in Finnish working environments. Together, they form a strong combination for further experimentation and development.

Building on the points mentioned above, I would like to reflect on the multidisciplinary platform offered by my program, CRASH. The faculty includes students with different backgrounds: many have careers in arts - such as music and theatre - while others come from the social and healthcare sectors.

Therefore, my thesis could serve as an example for exploring other potential combinations to enhancing the well-being of the population. It would also be interesting to involve students with even more diverse backgrounds - for example, from the fields of design or technology. From my point of view, such a combination today could contribute to the development of even more interesting projects that represent completely different disciplines. This could lead to projects that not only enhance education or populations well-being, but also make it more engaging, exciting, and potentially more effective.

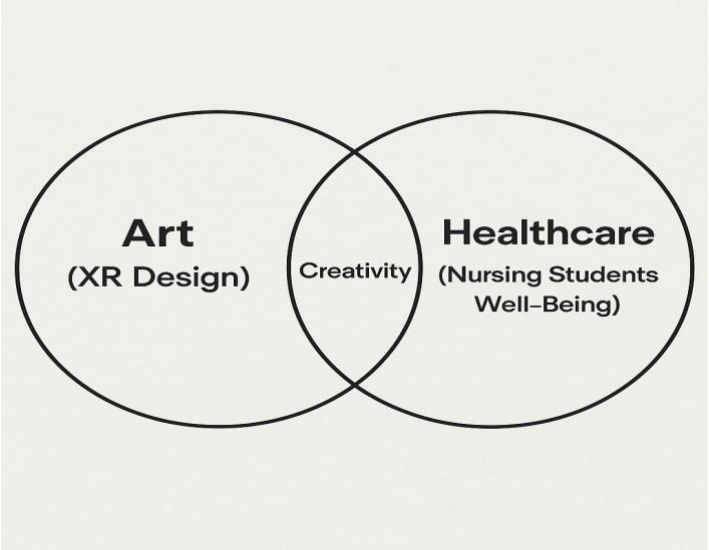

Figure 9. This collage is representing the core values of Creativity and Arts in Social and Health Fields program, within the frames of this master thesis.

Thus, in the context of this master thesis the term of creativity might serve as a link or result between art and field of social and healthcare services (Figure 9). It is a multidisciplinary combination of two elements, which raised unique project called CultureExpert. To sum up, this master's thesis is not only involving the core themes of my faculty - but also reflects two basic aspects that are central to it: multidisciplinary approach which can be seen as creativity, aimed at promotion students´ cultural-wellbeing. In this way, I feel that my work fits fully within the scope of my faculty and makes a meaningful contribution to the development of CRASH platform.

In conclusion, this study demonstrates that VR-based language learning holds significant promise for supporting immigrant nursing students in Finland. The

study demonstrates that such a creative and innovative approach in language learning for healthcare workers has overall positive impact on learners' confidence, resilience and cultural well-being. The findings support the integration into language education design, and suggest that emotionally safe, student-centered technologies as Virtual Reality language learning simulations can play a key role in bridging the gap between language education and smooth professional integration.

6.2 Suggestions for the future research

While creating my master's degree thesis, my research faced some limitations. While thinking about potential opportunity for improving the work or about possibilities to extend the topic, or make future research, it would be beneficial to have full access to all participants, as my thesis faced limitations in this regard. It was challenging to reach out and arrange interviews, because of their studies or personal preference not to participate or share their experiences.

Moreover, the interviews were held online, and it was quite challenging to build a personal connection with the students. Because of this, they might have held back their emotions or feelings, and perhaps didn't feel they could fully trust me. According to my own feelings, it might have impacted them in a way that they were hesitating to share their true opinions and very personal insights.

Another limitation was the significant time gap between the participants' experience and the interview. In my opinion, the participants may not have remembered all the details or emotions they felt at the time, and as a result, some important aspects they might have been forgotten by the time of the interview.

Additionally, it would be valuable to include teachers' perspectives on the students' experiences to gain a broader understanding of their overall experience. According to Keiler (2018, p. 3) within student-centered approach the teachers primary focus should be on assessment. Therefore, further research could explore teachers' opinions on how well students were able to grasp the

essence of learning language and culture in VR, as well as based on the results assess how promising this method is for educating immigrants. While discussing about teacher's reflections and thinking about the broader level regarding language learning process through VR simulations, it would be also interesting to explore the teachers´ role in general in this process. For instance: what is teachers' role in planning and designing the simulation; implementing and facilitating; the level of engagement with students during the simulation; emotional support of students and the role of taking their feedback. As it was discussed above, student-centredness doesn't exclude teachers' involvement in the learning process, so identifying teacher's role, in my opinion, could represent a crucial step in the exploration of the topic.

Also, it would be valuable to explore in the future how the simulations affected the integration of immigrants into the Finnish work environment. It would be interesting to examine the opinions of the previously interviewed students and compare how their impressions of assimilation manifested in real life and how accurately did they assess their own impressions, emotions, and thoughts, and how do those compare to the actual outcomes.

Acknowledgements

I would like to express my heartfelt thanks to everyone who contributed to the writing of my master's thesis. I would like to express my deep gratitude to the CultureExpert project. Thank you not only for supporting my immigrant colleagues in integration to the Finnish working environment, but also for giving me the chance to contribute, in my own small, but hopefully meaningful way, to this important project. I would also like to express my gratitude to Paula Ropponen for being there for me while creating the interview questions and working closely with me during the data collection phase.I am especially grateful to Dr. Kristina Mikkonen for allowing me access to the data, for taking the time to explain and show me the work they are doing, and even letting me try the VR glasses myself. That experience was helpful and inspiring.

My sincere thanks also go to all the students who took part in my research and shared their experiences. I truly appreciate the time, energy, and openness they gave.

I would also like to thank my beloved family, who motivated me to not to give up and were there for me during the whole process.

And finally, I want to thank my wonderful supervisors - especially Dr. Sanna Kivijärvi. Thank you for inspiring me, believing in me and supporting me throughout the entire research process. I am very grateful for the patience, professionalism, wisdom, and very personal approach. It meant a lot to me. Thank you.

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Appendices

Appendix 1 : The list of interview questions

1) Could you share your overall experience: what did you expect, like and dislike about it?
2) How do you perceive effectiveness of this tool for studies overall?
3) Please describe your experience about learning and practicing the Finnish language in the simulation.
4) How did it help you to learn the language?
5) What were the main challenges for you while communicating to the virtual patient?
6) How convenient do you find the intervention for practicing the language?
7) What new cultural aspects did you learn about client service, interactions, and communication in Finnish Healthcare in the simulation?
8) How did the simulation help you to enhance your cultural competence in Finnish working environment?
9) What is your opinion about learning about culture through VR simulations?
10) What kind of impact did the Finnish cultural environment have on your professional performance?
11) How challenging was it for you to make decisions in the simulation?
12) How fun and creative was this type of learning for you?
13) What is your opinion about this tool to increase motivation to study?
14) Which elements of the experience could be improved technology wise?
15) What were the main challenges while using the technology?
16) What is your opinion about self-confidence and preparing nurses for real-world situations through VR simulations?
17) How did the simulation help you to prepare for the real-world situations?
18) How much did the simulation influence your self-confidence?"

Appendix 2: The invitation to the interview

Dear Student,

You are warmly welcome to participate in the interview in which we will ask you about your learning experiences in VR simulation.

We hope to hear your opinion and thoughts about this intervention.

The individual interviews will be conducted online in teams during April/May.

To book the exact date and time for the interview, please contact us by sending the email to

Juliana.Tikhomirova@metropolia.fi

Looking forward to seeing and talking to you!

Appendix 3: Consent form for participants

Cultural competence in social- and healthcare work environments

You are participating in a study conducted by the University of Oulu and Metropolia University of Applied Sciences.

Participation in the study is voluntary. There is no negative impact on your participation and you can suspend your participation in the study.

This study is conducted by collecting qualitative interview study, indirect personal data is collected from you in the consent form.

The aim is to obtain information on your experiences with Virtual Reality learning methods in nursing education.

The University of Oulu (Research Unit of Health Sciences and Technology) is responsible for carrying out the research. The project implementing organizations are the University of Oulu (OY, coordinator), Oulu University of Applied Sciences (OAMK) and Lapland University of Applied Sciences (Lapland University of Applied Sciences). The collaborative partners is Metropolia University of Applied Sciences.

More information:

Appendix 4: Privacy policy notice

OULUN YLIOPISTO

TIETOSUOJAILMOITUS TUTKIMUKSEEN OSALLISTUVALLE
EU:N YLEINEN TIETOSUOJA-ASETUS 12-14 ART.
PÄIVÄYS: [18.6.2020]

Tietoa tutkimukseen osallistuvalle

Olet osallistumassa Oulun yliopiston tekemään tutkimukseen. Tässä selosteessa kuvataan, miten henkilötietojasi käsitellään tutkimuksessa.

Tutkimukseen osallistuminen on vapaaehtoista. Sinuun ei kohdistu mitään negatiivista seuraamusta, jos et osallistu tutkimukseen tai jos keskeytät osallistumisesi tutkimukseen. Jos keskeytät osallistumisesi tutkimukseen, ennen keskeytystä kerättyä aineistoa voidaan kuitenkin käyttää tutkimuksessa. Tämän ilmoituksen kohdassa 17 kerrotaan tarkemmin, mitä oikeuksia sinulla on ja miten voit vaikuttaa tietojesi käsittelyyn.

1. Tutkimuksen rekisterinpitäjä

Oulun yliopisto
Osoite: PL 8000 90014 Oulun yliopisto (Pentti Kaiteran katu 1, Linnanmaa)

2. Kuvaus tutkimushankkeesta ja henkilötietojen käsittelyn tarkoitus

Tämän tutkimuksen tavoitteena on luoda yhteinen toimintamalli sekä digitaalinen verkosto koulutusorganisaatioiden, maahanmuuttajataustaisten sairaanhoitajien ja sairaanhoitajaopiskelijoiden, sosiaali- ja terveysalan opettajien sekä sosiaali- ja terveydenhuollon (sote) sektorilla toimivien

OULUN YLIOPISTO

TIETOSUOJAILMOITUS TUTKIMUKSEEN OSALLISTUVALLE
EU:N YLEINEN TIETOSUOJA-ASETUS 12-14 ART.
PÄIVÄYS: [18.6.2020]

opiskelijaohjaajien ja esimiesten välille. Tämän hankkeen aineisto kerätään haastattelumenetelmää hyödyntäen maahanmuuttajataustaisilta sairaanhoitajilta ja sairaanhoitajaopiskelijoilta, hoitotyön opettajilta sekä terveydenhuollon lähiesimiehiltä ja henkilökunnalta. Tarkoituksena on saada tietoa siitä, miten maahanmuuttajataustaiset sairaanhoitajat ja sairaanhoitajaopiskelijat integroituvat työympäristöön, millaisia kokemuksia hoitotyön opettajilla on maahanmuuttajataustaisten opiskelijoiden tukemisesta ja heidän osaamisensa kehittämisestä sekä hoitotyön lähiesimiesten ja henkilökunnan näkemyksiä maahanmuuttajataustaisen sairaanhoitajien työelämän integraatiosta.

3. Yhteistyöhankkeena tehtävän tutkimuksen osapuolet ja vastuunjako

7. Tutkimuksen nimi, luonne ja tutkimuksen kestoaika

Tutkimuksen nimi: Kulttuurinen osaaminen sote-alan työyhteisöissä - hanke.

X Kertatutkimus ☐ Seurantatutkimus

Tutkimuksen kestoaika (kuinka kauan henkilötietoja käsitellään): Joulukuu 2021-Toukokuu 2023.

8. Henkilötietojen käsittelyn oikeusperuste

Henkilötietoja käsitellään seuraavalla yleisen tietosuoja-asetuksen 6 artiklan 1 kohdan mukaisella perusteella:

☐ tutkittavan suostumus
☐ rekisterinpitäjän lakisääteisen velvoitteen noudattaminen
X yleistä etua koskeva tieteellinen tai historiallinen tutkimus, tilastointi tai julkisen vallan käyttö
☐ rekisterinpitäjän tai kolmannen osapuolen oikeutettu etu (jos oikeutettu etu niin mikä:)

9. Arkaluonteiset henkilötiedot

Tutkimuksessa ei käsitellä arkaluonteisia henkilötietoja.

10. Mitä henkilötietoja tutkimusaineisto sisältää