Simulation-based e-communication as a reflective learning tool for nursing students

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Abstract

Simulation-based training in e-communication offers nursing students a valuable opportunity to develop critical competencies for contemporary healthcare practice. At the University College of Northern Denmark (UCN), this training incorporates realistic scenarios such as telemedicine consultations and virtual interprofessional collab-oration, enabling students to engage in experiential, reflective learning. Grounded in a pedagogical approach emphasizing iterative cycles of action, reflection, and feedback, the training supports the development of effective digital communication strategies. Structured debriefing sessions foster self-assessment, empathy, and professional accountability, deepening students' understanding of their roles in virtual care settings.

This qualitative study explores students' experiences of e-communication simulation through open-ended survey responses, analysed using Braun and Clarke's thematic analysis. Five overarching themes emerged: (1) navigating digital communication and relationship-building; (2) simulation as a catalyst for experiential learning; (3) technological uncertainty as authentic disturbance; (4) the role of preparation and psychological safety; and (5) role exploration and interprofessional perspective-taking. These themes reflect how the simulations fostered adaptive communication, critical thinking, and collaboration. Moreover, the design effectively operationalized pedagogical principles of learning through challenge and exploration, encouraging students to navigate uncertainty and construct knowledge through interaction.

Findings underscore the value of simulation-based e-communication training in preparing nursing students for the complexities of digital healthcare. By promoting reflection, adaptability, and interprofessional

awareness, such training offers a robust framework for cultivating essential competencies in virtual care environments.

Keywords
Reflective practice-based learning, nursing students, simulation-based e-communication, evaluation, interdisciplinary consultation

Background

Simulation-Based Learning (SBL) has gained widespread acceptance in nursing and healthcare education due to its ability to recreate realistic clinical situations in a safe, structured environment. This approach allows learners to apply theoretical knowledge and develop critical thinking without the risk of harm to patients (Chernikova et al., 2020). Particularly in nursing—where clinical competence, judgement, and interpersonal communication are core to effective practice—SBL offers opportunities for experiential learning that enhance both immediate skill acquisition and long-term retention (Steadman et al., 2006). The growing use of simulation reflects a broader pedagogical shift towards active and reflective learning strategies that centre the student experience.

One of the key strengths of SBL lies in its capacity to support reflective practice—a process in which learners critically examine their actions, decisions, and emotional responses to enhance professional development. In nursing education, reflective practice is widely recognised for fostering deeper learning, improved clinical reasoning, empathy, and professional accountability. When paired with structured debriefing, simulations become more than technical exercises; they serve as reflective spaces where students analyse communication strategies, assess outcomes, and consider how their actions align with professional standards (Alharbi et al., 2024).

While traditional SBL has focused largely on high-stakes clinical procedures such as resuscitation or managing patient deterioration (Mcgaghie et al., 2014), there is a growing need to apply simulation-based approaches to communication training. Effective communication is a fundamental skill for nurses, with direct implications for patient safety, interprofessional collaboration, and quality of care (Chien et al., 2024). The Situation, Back-ground, Assessment, Recommendation (SBAR) framework has become a widely used structured communica-tion tool

in both education and practice (Shahid & Thomas, 2018), yet nursing students often lack active, reflective opportunities to practice these skills in clinical placements, where their roles may be observational and passive (Li et al., 2019). Simulation can fill this gap by providing repeated, immersive communication experiences coupled with reflective feedback.

More recently, the digital transformation of healthcare—through telemedicine, electronic documentation, and virtual care platforms—has expanded the communication landscape, making e-communication an essential competency for nurses. However, many traditional communication training programs do not adequately prepare students for the challenges of interacting through digital media, where indications may be reduced, and the complexity of information exchange heightened. This has created a critical pedagogical need for simulation-based e-communication training, which allows students to rehearse digital interactions in realistic, scenario-based environments (Alharbi et al., 2024; Yun et al., 2023).

Simulation-based e-communication training introduces students to common digital communication tasks such as virtual consultations, electronic patient handovers, and interprofessional email or messaging exchanges. When integrated with reflective learning practices—particularly through structured debriefings—these simula-tions enable students to critically analyse their digital interactions, identify strengths and gaps, and continuously refine their approach. Reflective debriefing facilitates not only technical skill improvement but also development of empathy, situational awareness, and accountability—essential attributes in digitally mediated care (Husebø et al., 2024; Lervik et al., 2025). Despite the theoretical and pedagogical promise of simulation-based e-communication training, its effectiveness as a reflective learning tool remains underexplored in nursing education. Previous research has shown that incorporating structured communication models like SBAR into simulation can improve communication clarity and learner confidence (Noh & Park, 2022; Roso-Bas et al., 2020). However, results across studies remain inconsistent due to variations in program design, fidelity, and assessment methods(Müller et al., 2018; Oner et al., 2018). Furthermore, few studies have examined how simulation-based communication training—particularly in digital formats—supports students' reflective capacities and long-term professional development. This study seeks to address these gaps by presenting an evaluation of a simulation-based e-communica-

tion training program implemented at the University College of Northern Den-mark (UCN).

Aim

The aim of this study is to assess the efficacy of simulation-based e-communication training as a reflective learning tool for nursing students based on student evaluations. Specifically, the research seeks to:

1. Investigate how simulation-based training enhances nursing students' competence and confidence in digital communication.

2. Examine the role of reflective practice in improving decision-making, empathy, and professional ac-countability in e-communication settings.

3. Analyse the impact of structured debriefing sessions on students' ability to critically assess and refine their communication strategies.

By addressing these objectives, this study contributes to the ongoing discourse on innovative nursing education strategies, demonstrating how simulation-based e-communication can prepare students for the evolving demands of the digital healthcare landscape.

Methods

The e-simulation course

The e-simulation course combined theoretical knowledge with practical training to enhance communication, individualised care, and clinical application. The course was implemented as part of the fourth-semester technology curriculum in the nursing education program at UCN. It consisted of five lessons and was delivered across four different student cohorts during the autumn of 2024 and the spring of 2025. The course was developed by the authors of this article, guided by principles of reflective practice-based learning (RPL) (Horn et al., 2020).

Participants

A total of 89 nursing students participated in the e-simulation course. Participants were divided into small groups of 4 to 7 individuals to ensure an interactive and manageable training environment. Inclusion criteria required students to have prior coursework in communication and pedagogical theory and presentation of a technological framework (including introduction to telemedicine) to foster understanding and critical reflection. Further, the students have some clinical experience and previous experience with using technological solutions like for instance telemedicine. Before participation, students were required to review key concepts, including communication strategies, patientcentred care etc.

Structure and setting of the e-simulation course

The teaching activities were centred around a simulated telemedicine conference, designed to train students in professional, empathetic, and effective communication using digital platforms. The training included both theoretical and practical components, with an emphasis on ethical, legal, and technical aspects of telemedicine. The core simulation involved two distinct scenarios. Students were divided into groups, each working with either **scenario 1** or **scenario 2**:

Scenario 1 focused on a one-on-one video consultation with a patient diagnosed with chronic obstructive pulmonary disease (COPD) and hypertension. The aim was to support the patient in using home monitoring equipment and to help her and her relative manage their anxiety related to worsening symptoms. The simulation emphasized empathic communication, patient guidance, and clinical decision-making in a virtual environment.

Scenario 2 involved an interdisciplinary telemedical consultation with a patient managing type 2 diabetes and chronic kidney disease (CKD). Students collaborated with a physician and a dietitian to develop a coordinated care plan, integrating diverse professional perspectives in a virtual setting. The focus was on nursing care, clinical coordination, communication strategies, and patient engagement in a digital context.
Each simulation was followed by structured feedback and reflection sessions, allowing students to critically assess their communication, technological handling, and interprofessional collaboration skills. These sessions aimed to enhance students' competencies in navigating remote care settings and using telemedicine tools effectively.

Steps in the e-simulation course (the simulation procedure)

Step 1: Case (scenario) development

Realistic patient cases were developed, focusing on scenarios involving individuals with COPD or CKD. The cases were tailored to reflect real-world virtual clinical settings and designed to challenge students' ability to apply e-communication strategies effectively. Each case outlined the patient's background, symptoms, and specific communication challenges.

Step 2: Learning objectives

The simulation training aimed to enhance students' ability to:

- Apply effective communication techniques with patient, their families and professionals.
- Identify and accommodate challenges in developing a relation and making nursing patient-centred care in digital context.
- Utilize a patient-centred approach in clinical interactions.
- Reflect on and improve their communication strategies.

Step 3: Simulation setup

The simulations were conducted in a controlled setting designed to replicate a virtual clinical environment. Stu-dents had access to audiovisual equipment (TEAMS and internet connection) for real-time observation. In scenario 1, the nurse and observers (representing the clinical environment) were placed in one room, and the patient and her relative (representing the patient's home) were placed in another room. In scenario 2, the nurse and observers were placed in one room, while the patient and each member of the interdisciplinary team were placed in separate rooms. The training sessions were structured to include role-playing exercises, where each group member assumed one of the following roles:

- **Nurse/healthcare professional** – Responsible for leading the interaction and applying communication strategies.
- **Patient** – Portrayed a person with COPD or CDK, requiring careful communication.
- **Relative** – Represented an anxious family member assisting with the conversation.

- **Observers (1 to 4 per group)** – Focused on specific aspects of communication, such as verbal and non-verbal cues (use of professional jargon), didactic approach, and patient-centred approach.

Step 4: Briefing

Prior to simulation execution, students participated in a prebriefing session to familiarize themselves with the case details, learning objectives, and simulation procedures. Instructions were provided regarding their roles, expected behaviours, and evaluation criteria. These criteria included ensuring that the patient understood what was being communicated, using language that was accessible to both the patient and the relative, and avoiding medical jargon. It was also emphasized that, in their role as nurses, students could beneficially apply a communication model such as the Calgary-Cambridge Guide (Kurtz & Silverman, 1996), which they had previously been introduced to during their fourth-semester coursework.

Step 5: Simulation execution

Each group conducted a full role-play session, simulating a real patient encounter or interdisciplinary interactions. The interactions were designed to mimic authentic virtual clinical settings, requiring students to apply theoretical knowledge in practice. Students were encouraged to engage naturally while maintaining a professional and patient-centred approach. The sessions were observed live by instructors.

Step 6: Debriefing and reflection

Immediately following the simulation, a structured debriefing session was conducted. Students reflected on their performance, discussing both strengths and areas for improvement. The debriefing followed a guided discussion format based on the PEARLS Healthcare Debriefing Tool (Eppich & Cheng, 2015). In the debriefing, both students and the instructor focused on the instructor's facilitating role, drawing inspiration from Ib Ravn's work on facilitation (Ravn, 2023). The instructor's role was to explore how students experienced being assigned different roles, such as nurse, patient, relative, or doctor. Additionally, the instructor asked students with ob-server roles about their observations, particular-

ly regarding the relationship and communication between the nurse, the patient, and the relative.

The debriefing was structured around the following elements:

Reactions: Exploring feelings by asking questions such as, "How did you feel in your role as the nurse?", "How did you feel as the patient?", "How did you feel as the relative?", "How did you feel as the doctor?", and "What did you observe in terms of the relationship and communication between the nurse, patient, and relative?"

Description: Clarifying the facts and developing a shared understanding of the case (e.g., "Can you please share a short summary of the case?")

Analysis: Exploring various domains of performance. Students were encouraged to self-assess and reflect on their own performance. The instructor used focused facilitation to highlight key aspects, address any knowledge gaps as they emerged, and provide directive feedback when necessary.

Application/Summary: Identifying key "take-aways" from the discussion (e.g., "What are some take-aways for our future clinical practice?"). The instructor also summarized the key learning points from the case.

Application of RPL principles in the e-simulation course

The learning environment where knowledge was developed has been shaped by the six core principles of RPL (Horn et al., 2020):

1. The students' own experiences are incorporated into teaching and learning activities.

2. Teaching and learning activities are designed to include appropriate disturbances.

3. Teaching and learning activities are organized as exploration.

4. The content of teaching and learning activities is based on exemplary models.

5. Lecturers and students collaborate on learning processes.

6. Lecturers and students create space for dialogue.

The simulation-based telemedicine training for nursing students was structured around three of the core principles of RPL: (2) designing learning activities with appropriate disturbances, (3) organizing learning as exploration, and (4) basing learning activities on exemplary models. These principles were strategically embedded into both the theoretical and practical components of the training, which emphasized ethical, legal, and technical considerations in telemedicine, alongside professional, empathetic, and effective communication in digital healthcare environments.

Principle 2: Teaching and learning activities are designed to include appropriate disturbances

To simulate the complexity and unpredictability of real-life telemedicine practice, each scenario included deliberate challenges that required students to engage in critical thinking and adaptive communication strategies. In scenario 1, the emotional distress and technological inexperience of the patient with COPD and hypertension created a realistic tension, prompting students to navigate both clinical support and empathetic reassurance in a one-on-one digital setting. In scenario 2, the interdisciplinary nature of the consultation introduced potential for role ambiguity and communication misalignment, compelling students to negotiate professional boundaries and collaboratively construct a care plan in a dynamic virtual environment.

Principle 3: Teaching and learning activities are organized as exploration

Students were encouraged to actively engage with each scenario through a problem-based learning approach, where they assumed responsibility for managing evolving patient situations. In both scenarios, students were given opportunities to explore digital communication tools, adapt clinical protocols to virtual contexts, and reflect on their decisions through post-simulation debriefings. These exploratory tasks enabled students to make autonomous decisions, receive feedback, and iteratively refine their approach to digital care delivery.

Principle 4: The content of teaching and learning activities is based on exemplary models

All simulated interactions were grounded in current best practices and evidence-based guidelines for telemedicine, including communication frameworks for digital health, interprofessional collaboration models, and clinical protocols for managing chronic diseases remotely. Prior to the simulations, students received preparatory instruction based on these models, which served as reference points during practice. Instructors reinforced these standards during feedback sessions, linking student performance to established benchmarks in tele-health professionalism and patient-centred communication.

By integrating these principles into the simulation design, the training promoted reflective, situated learning that prepared students for the complexities of contemporary digital healthcare environments.

Study design (assessment of the efficacy of simulation-based e-communication)

This study employed a simulation-based training approach to enhance communication skills among students. The simulations were designed to provide students with a structured, realistic learning experience that integrat-ed theoretical knowledge with practical application. The study followed a stepwise methodology, including case (scenario) development, participant briefing, scenario execution, and structured debriefing.

Data collection and analysis

Qualitative data were collected from nursing student reflections through an open-ended qualitative survey. A post-simulation questionnaire assessed nursing student confidence and perceived competency in clinical communication before and after the training. Thematic analysis, focusing on key communication themes, barri-ers, and improvement strategies. Based on Clark and Braun's thematic analysis, the following six steps were followed. (1) Transcriptions were read and re-read to familiarise with the data and note initial ideas; (2) Codes were generated from these ideas, and relevant text phrases were collected for each code; (3) Codes were sort-ed into potential themes; (4) Themes were reviewed to ensure they worked with the coded extracts and the en-tire data set, creating a thematic map; (5) Themes were defined and named, refining the

specifics and generat-ing clear definitions and names; (6) Results were presented (Braun & Clarke, 2022).

Ethical considerations

Informed consent was obtained from all participants, and anonymity was ensured in data reporting. The simula-tion was designed to minimize psychological stress, and participants were given the option to withdraw at any stage.

Results

Out of 89 possible respondents, 71 (79.8 %) completed the qualitative survey.

The thematic analysis of qualitative reflections and survey responses revealed five overarching themes that reflect nursing students' experiences and learning outcomes from participating in simulation-based training in e-communication. The five overarching themes: (1) navigating digital communication and relationship-building; (2) simulation as a catalyst for experiential learning; (3) technological uncertainty as authentic disturbance; (4) the role of preparation and psychological safety; and (5) role exploration and interprofessional perspective-taking. The results illustrate how the simulation design supported the development of digital communication compe-tencies, fostered reflective practice, and operationalized key pedagogical principles—particularly those aimed at promoting learning through challenge (principle 2) and exploration (principle 3).

1. Navigating digital communication and relationship-building

A central theme across responses was the challenge of forming and maintaining therapeutic relationships in a digital environment. Students reported that the lack of physical presence, limited access to non-verbal cues, and the potential for distractions demanded a heightened awareness of how they communicated. This aligns with Martinsen's emphasis on presence and relational attention, which are challenged yet not impossible in digi-tal interactions (Martinsen, 1994). Students emphasized a need for increased intentionality in their speech (clear articulation, summarizing key points), the use of explicit summarization, and the ver-

ification of mutual under-standing (and verifying patient understanding to maintain mutual engagement)—techniques that mirror Bonne-vie's articulation of empathy as an active, situated, and professional capacity (Bonnevie, 2023). This theme strongly aligns with principle 2, as students were placed in situations where familiar communication strategies were insufficient, requiring them to adapt and develop new techniques for digital rapport-building. The simula-tion thus functioned as a *designed disturbance*, shifting the context and prompting critical reflection on what constitutes effective communication in a virtual setting.

> *"I realized how much I rely on nods, facial expressions, and body language—over video, I had to be much more deliberate with my words and tone."*

2. Simulation as a catalyst for experiential learning

Students described the simulations as valuable because they provided a safe and structured context for apply-ing theoretical knowledge to realistic virtual clinical scenarios. Many noted that while the exercise was initially anxiety-provoking—particularly when performed in front of peers—it ultimately offered a space where errors could be made without consequences, and learning could occur through trial, error, and guided reflection. While initial discomfort was common—especially under peer observation—this unease fostered learning through what Dau & Nielsby describe as 'reflective competence', where professional identity is shaped in dia-logical and experiential contexts (Dau & Nielsby, 2018). The structured unpredictability of the simulations is an example of principle 2 in action. The complexity of the tasks, combined with role-playing and time constraints, introduced productive discomfort, which students had to navigate. This also created conditions for principle 3, as students actively constructed meaning through action, feedback, and peer discussion. The simulated nature of the environment allowed for what Martinsen refers to as "the room for hesitation", where nurses can pause, reflect, and choose ethically grounded actions without fear of harming real patients (Martinsen, 1994).

"It was uncomfortable at first, but the moment something didn't go as planned, we had to figure it out together—and that's where the learning really happened."

3. Technological uncertainty as authentic disturbance

Technology played a dual role in the simulation: it was both the medium of communication and a source of disruption. Students encountered issues such as unstable internet connections, delayed audio, and unfamiliar interfaces, which sometimes interrupted the flow of the session. However, these experiences were not seen purely as obstacles; rather, many students viewed them as realistic challenges that reflect the complexities of telehealth in actual practice. These scenarios exemplify Dau & Nielsby's concept of professional resilience and adaptive leadership, where future nurses must navigate ambiguity and maintain composure under technological strain (Dau & Nielsby, 2018). These moments required professional judgment in Martinsen's sense—not just technical skill, but also the moral and relational tact needed to maintain the integrity of the patient encounter under imperfect conditions. Simultaneously, students were prompted to engage empathically with the patient experience of disconnection or misunderstanding, thus drawing on Bonnevie's notion of empathy as practical, cognitive, and emotional attunement (Bonnevie, 2023; Martinsen, 1994). This theme clearly reflects principle 2, as the technological issues served as authentic disturbances embedded in the simulation design. Rather than being controlled out of the learning experience, these challenges encouraged students to think critically, adjust their approaches, and develop contingency strategies—core skills in professional practice. At the same time, principle 3 was operationalized as students explored how to maintain structure and connection under less-than-ideal conditions.

"When the audio started glitching, we had to stop and re-centre the conversation. It taught me how to calmly manage unexpected problems during a patient call."

4. The role of preparation and psychological safety

Students' engagement with the simulation was highly influenced by the degree of preparation, clarity of role assignments, and sense of psychological safety within their groups. When students felt prepared and support-ed, they reported greater willingness to participate actively. Conversely, lack of guidance, last-minute role allo-cation, or unclear expectations led to uncertainty and performance anxiety. This aligns with Dau & Nielsby's emphasis on pedagogical scaffolding as a prerequisite for enabling reflective practice (Dau & Nielsby, 2018). Too much ambiguity, however, could result in counterproductive anxiety, suggesting the need for calibrated challenge. The role of psychological safety echoes Martinsen's ethical insistence on care as foundational to both patient and peer relationships - a care that includes the space to falter, reflect, and grow. Peer collabora-tion and joint problem-solving, when supported, created spaces of shared professional formation, enabling students to discover solutions rather than merely execute predetermined plans (Martinsen, 1994). These are key aspects of principle 3, which centres learning as co-constructed and emergent.

> *"We agreed in the group to spend a few extra minutes preparing for the consultation based on each person's role focus, which created a sense of security."*

> *"The assignment of roles was quite fine as we were in a safe group, but it can also be challenging for some if they do not fully trust their own abilities."*

5. Role exploration and interdisciplinary perspective-taking

Many students reflected on the value of engaging in unfamiliar professional roles, such as playing a physician, dietitian, or patient. This allowed them to experience consultations from different vantage points, deepening their understanding of team-based care and communication responsibilities across roles. Students expressed that stepping into these new perspectives was initially uncomfortable but ultimately fostered empathy and in-sight. This role-shifting facilitated empathic insight, resonating deeply with Bonnevie's argument that empathy is cultivated through perspective-taking and active listening. Playing the patient role

revealed the communica-tive burdens patients face and underscored the importance of clarity and compassion in healthcare communi-cation (Bonnevie, 2023). This experience also activated Martinsen's idea of ethical imagination, whereby pro-fessionals must envision the patient's perspective and act accordingly (Martinsen, 1994). Role-playing not only disrupted existing professional assumptions (principle 2) but also expanded students' understanding of healthcare as a collaborative, dialogic space (principle 3). These simulations supported the development of ethical and clinical judgement, moving students toward becoming reflexive practitioners capable of nuanced relational care.

Here, principle 2 was activated by introducing cognitive dissonance — students had to navigate a role they were not formally trained for, prompting reflection and adaptation. Simultaneously, principle 3 was clearly at play: students were not passively receiving information but actively constructing understanding through role-taking, collaboration, and reflective dialogue.

> *"Being the patient was surprisingly difficult. I now understand how confusing it can be when professionals use too much jargon."*

Discussion

The findings of this study highlight the significant role of simulation-based e-communication training in enhanc-ing nursing students' digital communication skills. By integrating reflective practice into these simulations, the study demonstrates how this approach not only improves nursing students' competence and confidence but also helps them navigate the complexities of virtual care settings. The study showed that the inclusion of dis-turbances, such as technological challenges and role ambiguity, created realistic scenarios that required nurs-ing students to adapt and develop effective communication strategies.

A key aspect of this simulation-based training was the use of PEARLS (Eppich & Cheng, 2015); a structured debriefing tool aimed at improving clinical practice. This tool proved essential in helping instructors tailor de-briefing sessions to meet specific learning objectives, such as skills enhancement and team training. During these debriefing sessions, students had the opportunity to critically evaluate their communication strategies in a safe and supportive environment. This process not only en-

hanced their communication skills but also fos-tered a culture of continuous learning and self-improvement. Creating a psychologically safe environment for students is another crucial challenge in simulation-based training. Psychological safety—where students feel comfortable speaking up and taking risks without fear of ridicule or embarrassment —is essential for effective learning. Instructors must foster this environment through pre-briefing, setting clear expectations, and cultivat-ing mutual respect and trust. Despite its importance, establishing psychological safety can be difficult due to factors such as pre-existing team dynamics, learner characteristics, and organizational culture. Nonetheless, maintaining this safe environment is vital for ensuring that students remain engaged and willing to participate fully in the learning process (Purdy et al., 2022; Rudolph et al., 2014).

The concept of transfer of learning, as outlined by Knud Illeris (Illeris, 2016), offers a useful framework for un-derstanding how students apply skills learned in one context to different, often unpredictable, settings. Illeris addresses the challenge of bridging the gap between formal education and practical application, stressing the importance of overcoming barriers between different learning environments. His work emphasizes the need for a balance between assimilative learning, which integrates new information into existing frameworks, and ac-commodative learning, which requires adapting one's existing knowledge to incorporate new insights. This bal-ance is critical for the successful transfer of skills, particularly in simulation-based training where students must adapt learned communication strategies to diverse remote care scenarios (Illeris, 2016).

A central element of this study was the use of RPL, which played a crucial role in enhancing nursing students' decision-making, empathy, and professional accountability within e-communication contexts. RPL, as an ap-proach to learning, encourages students to critically reflect on their experiences in practice, thereby deepening their understanding of the theoretical concepts they encounter. In the context of simulation-based training, RPL allowed students to examine their communication strategies after each scenario, fostering a deeper under-standing of both their strengths and areas for improvement. Through structured debriefing sessions, which incorporated principles of RPL, students had the opportunity to assess their communication decisions, refine their strategies, and explore alternative approaches. This reflective process

is particularly significant in nursing education, where professional accountability and interprofessional collaboration are crucial. By reflecting on their experiences in a safe environment, students gained insights into how their actions impact patient care and team dynamics. RPL encouraged a deeper commitment to professional growth and ethical practice, helping students develop the critical thinking and clinical judgment necessary for effective nursing practice.

In line with Illeris's theory on the transfer of learning, the study confirms that structured debriefing, as a key element of RPL, plays a vital role in facilitating the transfer of skills and knowledge from simulation to real-world practice. By engaging in reflective practice, students are better able to apply their learning to diverse and unpredictable clinical situations. The ability to reflect critically on one's actions not only supports the develop-ment of communication skills but also strengthens empathy, decision-making, and professional accountabil-ity—competencies that are foundational to modern nursing practice.

Contribution to existing body of knowledge

This study contributes to the existing body of knowledge by providing empirical evidence on the effectiveness of simulation-based e-communication training in nursing education. It builds on previous research that high-lights the value of simulation in developing clinical skills and critical thinking (Alharbi et al., 2024). This study shows that e-simulation in nursing extends beyond technical training to foster relational, ethical, and reflective capacities. Students developed deliberate strategies to navigate digital therapeutic communication, thereby extending theories of presence and empathic professionalism into virtual contexts. Simulations acted as struc-tured disturbances where discomfort, uncertainty, and error became productive spaces for reflection and pro-fessional identity-building, resonating with Martinsen's notion of a "room for hesitation" and Dau & Nielsby's concept of reflective competence. Even technological breakdowns proved valuable, prompting adaptive lead-ership, professional judgment, and relational tact in ways that mirror telehealth practice. Preparation and psy-chological safety were crucial for engagement, enabling trust, collaboration, and shared professional identity. Role exploration, including taking the patient perspective, further strengthened empathic imagination and ethi-cal awareness. Together, these findings position e-simulation as a pedagogical space where tech-

nical, relation-al, and ethical competencies intersect, underscoring the need for designs that balance challenge with safety and embed strong theoretical frameworks.

Conclusion

This study highlights the effectiveness of simulation-based e-communication training as a reflective learning tool for nursing students, enhancing their competence and confidence in digital communication. By incorporat-ing designed disturbances like technological challenges and role ambiguity, the training provided authentic and constructive disruptions that improved students' ability to adapt, reflect, and engage empathetically in remote care settings. Through experiential learning and structured debriefing, students gained a deeper understanding of professional accountability, interprofessional collaboration, and patient-centred digital communication.

The findings confirm that reflective practice, when integrated into realistic and challenging simulation scenarios, boosts critical thinking, clinical judgment, and empathy—essential competencies for modern nursing practice. Additionally, the simulation design, rooted in pedagogical principles of disturbance, exploration, and model-ling, aligns well with practice-oriented educational frameworks and offers a scalable approach for inclusion in broader healthcare education curricula. As digital communication becomes increasingly central to healthcare delivery, this training is a crucial step in preparing nursing students for the complexities of telemedicine and interdisciplinary care in the digital age.

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