

Maximizing Nursing Students' Engagement in Distance Learning: Strategies and Insights

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The increase of online nursing education, driven by technology and the demand for flexible learning, has emphasized the importance of student engagement. Participation plays a key role in shaping both academic achievement and the acquisition of crucial nursing skills. This chapter explores the impact of technological factors such as audio and video quality, as well as internet speed, on student engagement. Moreover, it delves into how the ERR framework – a teaching approach that includes *Evocation*, *Realization of Meaning* and *Reflection*, along with other interactive tools can be used in online learning settings to improve nursing students' participation. This work aims to provide educators with practical insights for improving online nursing education by combining technological considerations with innovative teaching strategies.

Keywords: nursing education, distance learning, student engagement, ERR framework, Technological factors

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Introduction

Recent technological advancements have significantly changed the educational field, with online learning becoming an important part of nursing education (O'Doherty et al., 2018). The worldwide COVID-19 outbreak hastened

this change by requiring remote learning choices to address health and safety worries (Huang et al., 2020). In this new setting, it is crucial to prioritize keeping students engaged, as instructor-learner interaction significantly influences student satisfaction and perceived learning outcomes in online education (Kang & Im, 2013).

Participation in education involves various aspects like behavior, emotions, and thinking (Fredricks et al., 2004). *Behavioral engagement* involves participation in academic activities, *emotional engagement* refers to students' feelings and attitudes towards learning, and *cognitive engagement* relates to the investment in understanding complex ideas. Engaging individuals in online settings can be more challenging because there is no physical presence and immediate feedback (Hrastinski, 2009).

Nevertheless, there are specific challenges to involving students in a virtual setting. Students may feel isolated when they lack face-to-face interaction, causing disengagement and decreased motivation (Brown et al., 2015). Technical problems such as low-quality audio and video or unreliable internet can interrupt the learning process and worsen these emotions. Hence, educators must comprehend the factors that impact engagement in online nursing education to provide effective distance learning.

This chapter seeks to investigate the impacts of both technological and pedagogical elements on student involvement in remote education. It examines the roles of audio and video quality and internet connection speeds, relying on empirical studies for an objective assessment. Furthermore, it explores how the ERR framework – a teaching approach that includes *Evocation*, *Realization of Meaning*, and *Reflection* – can be used to boost engagement in online learning settings.

Factors Affecting Engagement in Distance Learning

Technological Factors

From a technological standpoint, investing in high-quality audio and video equipment for recording lectures and demonstrations ensures that students receive clear visuals and sound, which enhances comprehension and keeps them engaged. Institutions should aim to provide faculty with training and resources to produce professional-quality content.

Sun and Chen (2016) emphasize that effective online education depends on well-structured courses that integrate interactive content, strong instructor presence, and active learning communities. These findings are consistent with those of Clark and Mayer (2016), who highlight the importance of applying multimedia design principles to reduce cognitive load and improve

learning outcomes in digital instruction. While technology, such as LMS and multimedia, supports engagement, student interaction and instructor facilitation remain central to success. Research highlights that peer collaboration and structured discussions are essential for fostering meaningful learning experiences (Sun & Chen, 2016). Features such as progress tracking and gamification elements can further enhance engagement.

Offering technical assistance to assist students in enhancing their internet connections and resolving problems reduces interruptions and guarantees that technical issues do not impede involvement (O'Doherty et al., 2018). Providing extended virtual office hours for IT support or developing FAQs and tutorials can enable students to address typical problems independently.

Making sure all content is accessible to students with disabilities by including captions, transcripts, and compatibility with assistive technologies, promotes inclusivity and equal participation. Universal Design for Learning (UDL) principles can guide the creation of accessible materials (CAST, 2018).

Audio and Video Quality

The quality of audio and video content is essential in distance learning. High-quality sound enables students to comprehend lessons easily, avoiding mental strain, lowering cognitive burden, and minimizing misinterpretations. According to Clark and Mayer (2016), well-designed multimedia materials – particularly when audio and visual elements are properly aligned – can significantly enhance understanding and retention while minimizing extraneous cognitive processing. High-definition video may help keeping students visually engaged and aiding them in picking up on non-verbal cues, which are crucial for grasping complex material and maintaining attention.

While some studies suggest that high-quality video production enhances student engagement, research findings remain mixed. Guo et al. (2014) found that shorter, more interactive videos and informal settings often led to higher engagement than highly polished, studio-produced content (Guo et al., 2014). This highlights the need for further investigation into the specific factors that influence student interaction with educational videos.

Some studies noted that issues with media quality could result in irritation and reduced drive, potentially leading students to become less engaged. Clear audio and visuals are considered especially crucial in nursing education, where a strong grasp of detailed procedures and concepts is crucial.

Internet Connection Speeds

Another crucial factor is internet connectivity. A fast and reliable internet connection allows for smooth streaming of lectures, real-time interactions, and quick access to resources. Slow or unstable connections can disrupt live sessions, causing students to miss important information and reducing their ability to participate actively. Banna et al. (2015) highlighted that technical difficulties, such as poor internet connections, can hinder engagement in synchronous learning sessions (Banna et al., 2015).

O'Doherty et al. (2018) highlighted multiple barriers to online learning in medical education, including inadequate infrastructure, time constraints, and limited institutional support. While technical issues such as internet connectivity can contribute to disengagement, a comprehensive approach addressing faculty training and strategic support is essential for effective distance learning (O'Doherty et al., 2018). The asynchronous nature of some online courses can mitigate this issue, but it often lacks the immediacy and interactive benefits of synchronous learning (Hrastinski, 2009).

Furthermore, disparities in high-speed internet access can exacerbate educational inequities for some individuals. Students who come from rural areas or low-income families may not have access to dependable internet, which can put them at a disadvantage (Anderson & Perrin, 2018). Educational institutions should acknowledge these discrepancies and offer assistance or options for students experiencing connectivity problems. This could involve giving access to downloadable content, supplying internet allowances, or guaranteeing campus facilities are open with appropriate health and safety protocols.

The digital divide impacts both access and the level of engagement. Kay and Lauricella (2011) stated that students who have improved internet access are more inclined to utilize advanced aspects of online platforms, which enriches their educational experience. Hence, it is crucial to focus on internet connectivity for fair and successful distance education.

Pedagogical Factors

Teaching Strategies and Interactivity

While technology provides the platform for online learning, the teaching methods used play a significant role in how engaged students are. A meta-analysis found that active learning approaches, such as peer discussions and problem-solving exercises, significantly increased exam performance and reduced failure rates compared to traditional lectures (Freeman et al., 2014). Techniques like collaborative projects, discussions, and problem-based

learning prompt students to participate actively rather than passively absorbing information.

Hrastinski (2009) argues that online learning should be seen as an active participatory process rather than passive information transmission (Hrastinski, 2009). This point of view stresses the significance of students and instructors interacting, as well as students interacting with each other. Studies have found that the interaction between students and instructors in online settings was a significant factor in determining how much students believed they had learned.

The *Community of Inquiry* model emphasizes the significance of social, cognitive, and teaching presence in online learning, as proposed by Garrison et al. (2000). *Social presence* refers to participants' capacity to connect with the community, communicate with intention, and foster relationships. *Cognitive presence* refers to how well students can create and validate meaning by engaging in continuous reflection and discussion. *Teaching presence* involves planning, guiding, and leading cognitive and social activities in order to reach desired learning results. Maintaining a balance of these elements is essential for promoting involvement.

Communication and Feedback

Effective communication is key to creating a supportive learning environment. Regular, meaningful interactions between instructors and students can help reduce feelings of isolation that are common in distance learning. Research highlights that instructor availability, timely feedback, and clear communication are the most critical factors in fostering student engagement (Sheridan & Kelly, 2010). Providing prompt and constructive feedback helps students understand how they're doing and where they can improve, which can enhance motivation and engagement (Garrison & Vaughan, 2008).

Feedback should be timely, specific, and actionable. Effective feedback involves more than just giving information to students; it also entails having a conversation with them about their learning. This bidirectional communication can assist students in becoming self-regulated, increasing their ability to oversee and enhance their performance.

Moreover, the use of multimodal communication channels – such as video calls, emails, discussion boards, and instant messaging – can cater to different communication preferences and needs. In addition, instructors who were accessible and responsive across multiple channels played a crucial role in influencing student help-seeking behavior and engagement in online courses (Whipp & Lorentz, 2009).

Strategies to Maximize Engagement

The ERR Framework in Distance Learning

The ERR framework – Evocation, Realization of Meaning, and Reflection – offers a structured approach to learning that promotes deep understanding and engagement (Buehl, 2017). Rooted in constructivist theory, it emphasizes the active role of students in building their own knowledge through experience and reflection.

- *Evocation*: This initial stage involves activating students' prior knowledge and experiences to prepare them for new learning. By connecting new information to what they already know, students can better understand and retain new concepts (Ausubel, 1968).
- *Realization of Meaning*: In this phase, students engage with new content, integrating it with their existing knowledge. Active learning strategies and practical applications are crucial here to help solidify understanding (Bransford et al., 2000). This stage often involves problem-solving, application of theories, and critical analysis.
- *Reflection*: The final stage encourages students to critically analyze what they've learned, consider its implications, and think about how they can apply it in future contexts. This fosters deeper learning and helps students internalize new knowledge. Reflective practice is particularly important in nursing education, where self-awareness and continuous improvement are essential.

Application of ERR in Distance Learning

There are several tools and methods that can be easily implemented into the distance learning, depending on the appropriate phase of the ERR concept, listed in table below, and further discussed in more detail.

Evocation in Online Settings

Utilizing interactive tools in an online setting can engage students' existing knowledge (Filej et al., 2023). Instructors can utilize pre-class surveys, discussion forums, or interactive polls to encourage students to remember and discuss their experiences relevant to the upcoming content, as illustrated by Sheridan and Kelly (2010). Prior to a lesson on communicating with patients, students may discuss difficulties they have encountered in this area, helping them get ready for new knowledge and fostering a sense of unity.

Table 1 Online Tools and Methods Aligned with the ERR Framework

ERR Phase	Tools/methods
Evocation	Pre-class Surveys: Gauge students' prior knowledge and experiences related to upcoming content. Discussion Forums: Facilitate sharing of thoughts and experiences to activate prior learning. Interactive Polls: Engage students with questions that prompt reflection on existing knowledge. Concept Mapping Tools: Allow students to visually represent their understanding of a topic before delving into new material.
Realization of Meaning	Virtual Simulations: Provide immersive, practical experiences that replicate clinical scenarios. Interactive Multimedia Resources: Utilize videos, animations, and modules to explain complex concepts. Collaborative Projects: Encourage teamwork and application of knowledge to solve problems. Synchronous Discussions and Breakout Rooms: Promote real-time interaction and deeper exploration of content. Adaptive Learning Technologies: Personalize learning paths based on individual performance. Virtual escape rooms: Promotes interactivity and collaboration.
Reflection	Electronic Reflective Journals: Enable students to document and analyze their learning experiences. Peer Review Activities: Foster critical thinking through feedback on peers' work. Structured Reflection Prompts: Guide students to reflect on specific aspects of their learning. Discussion Boards: Allow for sharing reflections and insights with classmates and instructors.

Multimedia introductions or storytelling can also evoke students' interest and connect new content to real-life scenarios. By presenting a case study or a real-world problem at the beginning of a lesson, instructors can pique students' curiosity and encourage them to draw upon their existing knowledge.

Facilitating discussion forums where students share their thoughts before new content is introduced can also encourage engagement and peer learning (Rovai, 2002). Sharing perspectives helps build connections among students, fostering a sense of community that's essential in online learning. Instructors can prompt discussions with thought-provoking questions or scenarios related to the upcoming content.

In addition, collaborative tools for concept mapping can assist students in seeing their existing knowledge and pinpointing topics to delve deeper into (Novak & Cañas, 2008). These visuals can act as a base for acquiring new information while learning.

Realization of Meaning Remotely

Engaging students with new content in a meaningful way is essential for understanding. In distance learning, this can be facilitated through multimedia resources, virtual simulations, and interactive case studies. For nursing students, virtual simulations offer a chance to practice clinical skills in a safe environment. These simulations can mimic patient interactions, clinical procedures, and emergency situations, providing hands-on experience without the risks associated with real-life practice.

Interactive case studies allow students to apply theoretical knowledge to real-world scenarios, enhancing critical thinking and problem-solving skills (Popil, 2011). For instance, using 3D models to demonstrate anatomy or interactive timelines to illustrate disease progression can make complex concepts more accessible. In addition, online platforms can facilitate branching scenarios in which students engage in decision-making that results in various outcomes, strengthening their understanding of the outcomes of their choices.

Furthermore, synchronous online discussions and breakout rooms can further promote active engagement by allowing students to collaborate and learn from each other. Collaborative tasks that involve working together to address issues or create care plans foster important abilities such as communication and cooperation (Brindley et al., 2009). They not only enhance understanding, but also build communication and teamwork skills, which are vital in nursing practice. Using online platforms like shared documents or virtual whiteboards can further allow students to collaborate efficiently, even if they are not in the same location.

Another innovative approach in the realization phase are virtual *Escape rooms*. They provide an opportunity for students to actively engage with new content, integrate it with prior knowledge, and apply it in practical situations, thereby solidifying their understanding and promoting meaningful learning. These interactive experiences require students to collaborate, think critically, and apply their nursing knowledge to solve a series of puzzles and challenges within a set time limit (Bramhagen et al., 2023).

Moreover, integrating adaptive learning technologies allows for a personalized learning experience by adapting the content and pace to individual student performance. This customization aids in keeping interest by ensuring the content is not excessively simple or overly difficult.

Encouraging Reflection in Distance Learning

Reflection is a key part of professional development in nursing. Online platforms provide various tools for facilitating reflection, such as electronic jour-

nals, blogs, or discussion boards. Instructors can promote reflective thinking by posing open-ended queries that motivate students to reflect on their learning encounters and contemplate how they can utilize fresh information in practical situations.

Following a virtual simulation, students may be prompted to think about their successes, obstacles encountered, and possible approaches for future similar scenarios. This process of reflection aids in reinforcing learning and encourages ongoing enhancement.

Peer feedback can also enhance reflective practices, as students gain new perspectives by reviewing and commenting on each other's reflections (Boud & Molloy, 2013). This collaborative reflection fosters a community of practice where students support each other's development.

Providing structured reflection prompts with guiding questions can help students focus on specific aspects of their learning, enhancing self-awareness and professional competency. Questions might include:

- What new knowledge or skills did you acquire?
- How does this learning relate to your previous experiences?
- How can you apply this knowledge in your future practice?

Moreover, incorporating reflective activities into assessments ensures that students recognize the importance of reflection in their professional growth (Mann et al., 2009).

Insights and Best Practices

Bringing together technology and effective teaching strategies is key to boosting engagement in distance learning. Educators should be trained in online teaching methods and how to use interactive tools to make the most of the digital environment. Professional development programs can equip instructors with skills in instructional design, multimedia production, and on-line facilitation.

Building a supportive online community is crucial for reducing feelings of isolation and encouraging collaboration among students. Tactics involve establishing social areas on the online platform for casual interactions, employing icebreakers to facilitate student introductions, and encouraging peer support systems.

Case studies have shown that when students feel their instructors are present and actively involved, their satisfaction and engagement levels increase. Instructors should strive to be visible in the online environment by regularly

interacting with students, providing timely feedback, and showing enthusiasm for the subject matter (Sheridan & Kelly, 2010).

Addressing technical barriers is also essential for fair access to education. Institutions should consider providing resources or support to students who may lack adequate technology or internet access. Partnerships with technology companies or government programs might offer solutions such as discounted equipment or subsidized internet plans.

Continuous evaluation and adjustment are also crucial. In blended learning environments, collecting input from students regarding their experiences can help instructors identify areas for improvement and make instructional adjustments that foster deeper engagement (Garrison & Vaughan, 2008). This could include frequent surveys, comment boxes, or focus groups.

Staying up to date with emerging technologies and teaching innovations allows educators to refine their approaches and meet the evolving needs of students. For example, exploring the use of virtual reality for immersive simulations or artificial intelligence for personalized learning can open new avenues for engagement (DeVaney et al., 2020).

Ethical considerations should also be taken into account, particularly regarding data privacy and security when using online platforms (Krutka et al., 2021). Ensuring compliance with regulations like FERPA or GDPR protects students and maintains trust.

Conclusion

Achieving high levels of involvement in online nursing education necessitates a comprehensive strategy that considers both technology and instructional elements. High-quality audio-video material, coupled with dependable internet connections and other technological prerequisites are essential for a successful online learning experience. The ERR framework provides a structured method to increase involvement by using current knowledge, enabling meaningful learning, and encouraging reflection.

By combining technology with interactive and student-centered teaching methods, educators can create engaging and effective online nursing programs. This approach improves academic performance and prepares students for the real-life obstacles of nursing professions. Continuous research and adaptation are essential to meet the needs of different student demographics and the ever-evolving healthcare landscape as remote learning advances.

Establishing a culture that prioritizes ongoing enhancement, values feedback, and fosters innovation can keep institutions ahead of challenges and

ensure the delivery of excellent education. Working together, educators, technologists, and students can create best practices that are beneficial for everyone involved.

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Maksimiranje vključenosti študentov zdravstvene nege v učenje na daljavo: strategije in vpogledi

Povečanje spletnega izobraževanja na področju zdravstvene nege, ki ga spodbujata tehnologija in povpraševanje po prilagodljivem učenju, je poudarilo pomen vključenosti študentov. Sodelovalne igre imajo ključno vlogo pri oblikovanju tako akademskih dosežkov kot tudi pridobivanju ključnih negovalnih veščin. To poglavje raziskuje vpliv tehnoloških dejavnikov, kot sta kakovost zvoka in videa ter hitrost interneta, na vključenost študentov. Poleg tega se pogloblja v to, kako se lahko okvir ERR (iz angl. *evocation, realization of meaning, reflection*) – učni pristop, ki vključuje *evociranje, uresničevanje pomena in refleksijo* ter druge interaktivne elemente – uporablja v spletnih učnih okoljih za izboljšanje sodelovanja študentov zdravstvene nege. Namen prispevka je ponuditi izobraževalcem praktične vpoglede za izboljšanje spletnega izobraževanja na področju zdravstvene nege s kombiniranjem tehnoloških vidikov in inovativnih učnih strategij.

Ključne besede: izobraževanje v zdravstveni negi, izobraževanje na daljavo, vključenost študentov, okvir ERR, tehnološki dejavniki