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Using Virtual Gaming Simulation to Promote Self-regulated Learning

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BACKGROUND

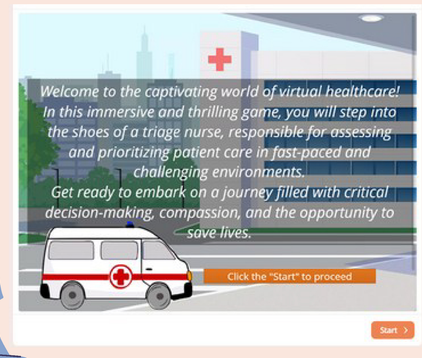
The increasing complexity of healthcare systems necessitates innovative approaches to nursing education that foster self-regulated learning, clinical reasoning, and decision-making skills. Traditional teaching methods often fall short in providing the dynamic, interactive learning experiences needed to cultivate these essential competencies. Virtual Gaming Simulations (VGS), with their immersive scenarios and opportunities for personalized feedback, offer a promising avenue to enhance nursing education and better prepare students for the challenges of real-world clinical practice.

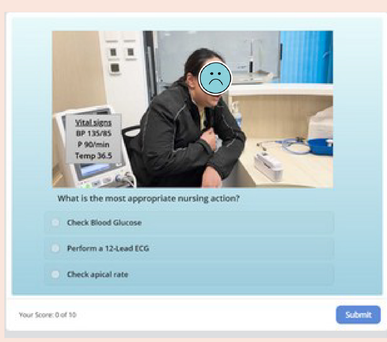
OBJECTIVE

The project aims to develop a virtual gaming simulation in Moodle to promote self-regulated learning and enhance safe practice in nursing students. The specific objectives are (1) to evaluate self-regulated learning readiness in nursing students, (2) to understand the influence of virtual gaming simulation on learning and how it promotes self-regulated learning, (3) to strengthen the nursing student's competence and confidence in caring for patients, (4) to evaluate the effectiveness of virtual gaming simulation in promoting clinical reasoning skills.

Intervention

Virtual gaming scenarios, tailored to the local context and simulating real-world clinical challenges (e.g., managing deteriorating patients with hypotension, tachycardia, and electrolyte imbalances), were developed and integrated into two core nursing courses within Moodle: Critical Care and Emergency Nursing (Year 3) and Nursing Care Adult II (Year 2). These scenarios required students to assess, plan, and implement nursing interventions. A key element of the VGS intervention was the provision of immediate, targeted feedback on students' choices, designed to enhance their understanding of underlying clinical principles and foster intrinsic motivation by emphasizing mastery over performance outcomes.





The simulations were integrated into the Moodle learning management system, providing seamless access to educational content. This integration capitalizes on Moodle's robust analytics capabilities, enabling faculty to monitor students' learning trajectories, assess their progress, and evaluate learning outcomes in real-time. The platform's analytical tools provide valuable insights into student achievement and engagement patterns, facilitating data-driven instructional improvements.

Evaluation

A mixed-methods approach assessed the impact of VGS using:

- Motivated Strategies for Learning Questionnaire (MSLQ)
- Self-perceived confidence scale
- Clinical Reasoning Scale

Key Finding

Enhanced Motivation & Learning Strategies

- Significant improvement in intrinsic motivation & task value ($p < 0.01$)
- Better use of learning strategies (elaboration & organization)

Improved Clinical Reasoning & Confidence

- 89% of students felt confident in managing deteriorating patients
- 92.6% improved in clinical reasoning skills (collecting info, decision-making)

Student Engagement & Feedback

- 87.1% found VGS useful for patient safety education
- 86.8% enjoyed the learning experience

Discussion

Self-regulated learning (SRL) is critical for nursing students, as it enables them to take ownership of their learning, adapt to new challenges, and continuously improve their skills (Zimmerman, 2002). The VGS approach provided an interactive, problem-solving environment, encouraging active engagement with learning materials, reflection on decisions, and critical thinking.

- *Intrinsic motivation increased:* After using VGS, students shifted from externally driven motivations (grades, passing exams) to intrinsic goals (gaining competence, improving clinical skills). This aligns with self-determination theory, which suggests that autonomy and mastery-driven learning environments enhance intrinsic motivation (Deci & Ryan, 2000).
- *Task value improved:* Students recognized the real-world applicability of VGS scenarios, reinforcing the importance and relevance of learning material. This was evident in their increased engagement and willingness to complete multiple simulation attempts.
- *Cognitive strategies strengthened:* The elaboration and organization strategies measured through the MSLQ indicated that students were better able to structure, connect, and retain information. This suggests that the interactive nature of VGS promoted deep learning, rather than rote memorization.