

Use of Scenario-based Activities for Learning and Confidence in Accelerated Bachelor Nursing Students in Acute Settings

Emily J. Elliott¹, Jenny L. Firkins²

¹Assistant Professor of Clinical Nursing (Drs Elliott and Firkins), Oregon Health & Science University, School of Nursing, 3455 SW US Veterans Hospital Road, Portland OR 97239, United States

How to cite this article: Emily J. Elliott, Jenny L. Firkins. Use of Scenario-based Activities for Learning and Confidence in Accelerated Bachelor Nursing Students in Acute Settings. International Journal of Nursing Education / Vol. 16 No. 4, October-December 2024.

Abstract

Objective: The aim of this study was to evaluate the impact of a unique, case based, learning activity,

Background: There is a great call and demand for nurse educators to prepare practice ready nurses who display critical thinking and clinical judgement. Improved critical thinking and clinical judgement have been demonstrated from case study-based learning. Along with case studies, gamification has been demonstrated to be an effective learning strategy not only in nurse education, but in other high-risk professions. In our study we combined case studies and gamification to create a new, scenario-based learning activity.

Design: This qualitative study used forums to elicit the student's experience with the learning activity.

Methods: Choose your own Pathway (CYOP) allow students to make clinical decisions in a safe, structured environment and to experience the consequences of those clinical decisions. Accelerated Undergraduate students were given three mega CYOPs based in PowerPoint corresponding to three didactic theory units. CYOPs provide students with clinical data and allowed them to make decisions based on this information and to experience the consequences of those decisions. Upon completion of these activities, students were asked to participate in a forum to discuss their experience with the CYOPs.

Results: After analysis, three main themes, with two subthemes, were identified: (1) the CYOP's engaged students thinking and led to use of clinical judgement through realism and prioritization of nursing decisions, (2) the CYOP's interactive engagement facilitated knowledge application through adaptive learning not memorization, and (3) the CYOPs technology design interfered with learning. Theme 1 subthemes included (1) interaction variety and (2) putting pieces together.

Conclusions: Our results demonstrate the potential for the CYOP learning activity to promote critical thinking and clinical judgement by placing students in the role of the nurse in simulated real-world scenarios. CYOPs are an innovative approach to enhance students learning and positively impact their readiness for the clinical setting.

Key words: gamification; nurse education research; undergraduate; schools-nursing

Corresponding Author: Jenny Firkins, Assistant Professor of Clinical Nursing (Drs Elliott and Firkins), Oregon Health & Science University, School of Nursing, 3455 SW US Veterans Hospital Road, Portland OR 97239, United States.

E-mail: firkinsj@ohsu.edu

Submission date: June 6, 2024

Revision date: July 8, 2024

Published date: Oct 22, 2024

This is an Open Access journal, and articles are distributed under a Creative Commons license- CC BY-NC 4.0 DEED. This license permits the use, distribution, and reproduction of the work in any medium, provided that proper citation is given to the original work and its source. It allows for attribution, non-commercial use, and the creation of derivative work.

Introduction

As the demand for practice ready nurses continue to increase in today's health care environment, so does the call on undergraduate nursing faculty to develop and deliver content and learning activities that effectively prepare nursing students for the workforce. Critical thinking is an essential nursing skill that requires nurses to interpret, assess, respond, and foresee possible challenges and barriers.¹ Pre-licensure nurse educators have the challenge of creating a learning environment and learning strategies that support and develop critical thinking in pre-licensure nursing students to ensure student's successful transition to practice in the clinical setting.^{2,3}

In nursing education, active learning strategies, such as traditional and unfolding case studies, are vital to increase critical thinking and retention effectiveness.⁴⁻⁶ Yet even with case study approaches, literature continues to indicate that students feel a disconnect and are unsure of how to transfer knowledge to practice in the clinical setting.⁷ Use of digital learning activities and content have been shown to be engaging and effective methods to improve nursing education.^{5,6}

Gamification, like simulation, offers a supportive, low stakes environment for students to be exposed to high risk, high stake, clinical situations in a learning environment.^{8,9} Gamification involves the use of game-based mechanics, principles, and thinking such as challenges, feedback, and interactivity, in a learning context to promote engagement. The use of games has been shown to elicit significant emotional reactions that can significantly improve the learning of the player in a positive way.^{10,11} Little research, specifically into gamification in nursing education, has been completed. Little to no research has been conducted on integrated digital gamification to improve student nurses' confidence, learning, and critical thinking in acute health situations.

The aim of this study was to evaluate the use of a scenario-based gamification activity and its impact on student nurses in an accelerated bachelor program's critical thinking and confidence in acute situations.

Theory

The theory of gamified learning has been reviewed and interpreted in fields beyond healthcare for its application in learning and education with a distinct separation between the conceptual ideas of "serious games" and "gamification".¹² The concept of "serious games" stems from the idea of an immersive experience often designed for training and education purposes compared to the "gamification" approach, which uses gaming elements or mechanics to enhance learning. These gamified elements might include items such as points, badges, or even leaderboards in a classroom setting.¹³ Game based techniques, when employed correctly, have the power to inform, engage and educate through feedback mechanisms and learner interactivity, allowing the user to gain experience through trial and error.

Serious games for learning, when applied to nursing education, involves integrating gaming elements and design principles into the learning experience with the purpose being connected to change behavior or knowledge connected to an education goal.¹⁴ This integration can enhance student engagement, motivation, and learning outcomes. Based on Knowles' (1984) adult learning theory, adult learners are different in how they learn. This is highlighted in the accelerated undergraduate nursing student who begins a nursing program, ranging in duration from 12 to 18 months, with previous work experience and degrees.

The blending of both theories, gamified learning and adult learning, provides a unique approach to educating adult learners with true-based gamification components. Gamification research within the nursing education is lacking, yet in the broader educational environment, including gamification has consistently demonstrated a positive effect in learning compared to learning without gamification.¹⁵⁻¹⁷ Nursing student learners can be provided opportunities to be intrinsically motivated using gamification by fostering autonomy and competence in understanding material because learners feel confident when they are in control of their own perceived success.

Methods

The aim of this study was to examine the impact of a unique, scenario-based gamified activity (Choose Your Own Pathway [CYOP]) on students' learning and confidence in caring for patients in the acute care setting. CYOPs allow students to make clinical decisions and to explore the results of those decisions in a safe and low stake environment. Expanding on traditional and unfolding case studies, CYOPs are a choice-driven experience. Unfolding case studies only unfold in one direction, but CYOPs are 3-dimensional, allowing students to make their own decisions and to experience the consequences of those decisions, similar to providing care in a health care setting.

For this study, three CYOPs were developed, the topics of each CYOP corresponded with three to four weeks of content covered as didactic topics followed by a high-stakes exam. The CYOPs were made available to students after the completion of the didactic content and prior to the exam for students to use the CYOP as a study tool. In each CYOP, students were first presented with a closed circular loop of assessment and chart review data that they could independently navigate through on their own prior to being presented with interventions and/or decisions to move forward. Using integrative linking design in the background of PowerPoint®, students were then directed to different potential disease trajectory tracks based on their interventions and/or decision making. From the student perspective, choices took them into variable closed loop cylinders based on their decision making. For example, in CYOP #1, a patient with a history of sickle cell disease comes to the emergency department with appendicitis, if students fail to recognize the risk of a sickle cell crisis and address this prior to the patient being taken to the operating room, the patient comes out of surgery in sickle cell crisis, and the student is faced with decision making choices regarding management of sickle cell crisis. However, this is avoided if the student addresses the risk of potential sickle cell crisis before surgery. This is only one example of the key concepts for students to address in CYOP #1. Each of these issues presents students with decisions and directs them to different tracks based on the consequences of that decision.

Institutional review board approval was obtained 2/25/2022 (IRB #24083). Informed consent were obtained prior to all study related procedures. Engagement with the CYOPs was not required for the course, and there was no assessment or grade directly associated with the CYOPs. At the completion of term after final grades had been submitted to the university registrar, students were invited to participate in one of three focus groups to discuss their experience with the CYOPs,

Data Analysis

Focus groups were completed via an online virtual meeting platform and recorded. Forum transcripts were auto generated in the virtual meeting platform and reviewed for completeness and correct transcription. Responses were analyzed by the authors. Transcripts were approached with an inductive coding process, with three coding cycles, to allow for the authors to explore the raw data itself as it was presented from the students' perspective.¹⁸ Categories that were conceptually congruent were established from the codes created.

Results

Ten students participated across three focus groups. Three primary themes and two subthemes were identified. The main themes generated were: (1) the CYOP's engaged students thinking and led to use of clinical judgement through realism and prioritization of nursing decisions, (2) the CYOP's interactive engagement facilitated knowledge application through adaptive learning not memorization, and (3) the CYOPs technology design interfered with learning. Theme 1 subthemes included (1) interaction variety and (2) putting pieces together. *Theme 1: Challenged thinking and clinical judgement through realism and prioritization of nursing decisions.*

The first theme was the most dominant and highlights that the CYOP design met learners' needs considering the social, cognitive, emotional, and teaching aspects of the nursing content received during the study. Students reported that the CYOP activity helped to stimulate their own thought process in how they would proceed in the care of patients in each case scenario, building their critical thinking and

clinical judgement. This concept was highlighted by a student who said, "It's a way of practicing clinical judgement. It integrates the knowledge and helps you apply that knowledge to situation in a way that you're really working on your clinical judgement". Students identified that they valued the opportunity to practice their own prioritization of care, ultimately experiencing how their decisions affected outcomes.

The CYOP design helped to approximate, from the student perspective, the clinical realism of being in a clinical setting, expected to make decision with the information provided in the chart and through assessments and to make choices. But they were in a safe environment of potential high stakes-low occurrence situations. One student summed this up by stating, "In the CYOP, I am the role of the nurse, I'm seeing myself as a nurse, I'm taking actions as a nurse and I'm going to see the consequences as the nurse. So, I think really putting myself in the role or that mindset is kind of preparing me for future nursing practice". The non-punitive nature of the CYOP design provided students the opportunity to learn from mistakes and redirect their focus to which information was more important and to prioritize the appropriate care of the scenario patient.

Subtheme 1: Interaction variety

Students identified that the structural design and presentation of the CYOP activities provided a variety of ways to interact with the content that engaged various learning styles and corroborated the feeling of clinical realism. One student stated, "I enjoyed that you could say, where do you want to go from here - Let me look back at the chart, do I want to look at lab values? I liked that it wasn't so clear that you just moved in a linear fashion. I liked the dimensionality of being able to say, well actually they're not leading me to think like I should look at the lab values next, but that I could go all different places". This was supported by another who said, "The animations and the sounds kept it fun. I also liked having the reference manuals, so we didn't have to navigate away to look things up". All but two students reported that the design of CYOP helped them to develop their knowledge based on the interactive features of the case study provided.

Subtheme 2: Putting pieces together

All student participants spoke of the importance of how the CYOP's allowed them to independently follow their own thought processes, allowing them to put the clinical pieces of what was occurring with the case scenario patients together. This was also interwoven with the component of having a safe gamified environment to make mistakes and learn. As one student said, "I felt like it [CYOP activity] was a place where, in private, I could make mistakes or maybe see where my own thinking was going ... and I could get feedback right away and then go back and try to understand where my thinking had gone". This sentiment was supported by all student participants as another stated, "The hardest and most beneficial things was that it exposed my own ignorance, it exposed the information that was there in front of me but that I had looked past the first time I went through. I should have thought more about why that might have been the case based on what we were learning in the class". The reported engagement and learning that students obtained through the CYOP to put the clinical pieces together demonstrates the value of this learning tool in a didactic setting.

Theme 2: Interactive engagement facilitating knowledge application through adaptive learning, not memorization.

The second theme stems from student comments about the engaging design of the CYOPs that allowed for them to directly apply their own knowledge base and think through what was happening over a learning approach that used only memorization. For example, one student said, "It [CYOP activity] feels more interactive, we had to put forth effort to know how to apply the material. So, it required more output from us versus taking in information" and another stated, "The more ways you engage with the material and draw on different learning styles the better. The CYOP activity is especially valuable in that sense because it engages with pretty much all learning styles to some degree...it really is multimodal in its engagement in terms of learning styles".

These considerations are specific to the CYOP interactive case study design that affords the interactive engagement in concrete knowledge application rather than evaluating a student's ability to memorize information. One student reported, "I

don't like to just memorize information, but that's kind of what I felt I was doing [in nursing school] and the CYOP let me really try it on and see how it fit, like trial and error and practice it in a way that was more effective for learning". Implementing and designing learning activities, like the CYOP, allowed students to grow through adaptive learning revealing that the CYOPs are a unique and new approach to learning and teaching.

Theme 3: Technology design interference with learning

This theme originated from student reports of how the technology platform used in the creation of the CYOP activities can interfere with learning. Given that the framework of this interactive case study approach relied solely on the use of a software program, PowerPoint®, students needed to adapt to it for effective learning to take place. The identified issues and subsequent recommendations students raised were not about the software itself but file size, as one student said, "Some barriers for me to use it was that they were upwards of 900 slides and being able to pull that up on my laptop, for instance, it didn't work". Additional issues revolved around navigation challenges and confusion on how to use the interactive features integrated within each CYOP.

Students described navigation once inside of the CYOP as another issue with technology design interfering with learning as. Because the activity was designed on a platform of integrative link jump points to variable slides within one PowerPoint® file, students were instructed not to navigate outside of the current slide they were on and only to move forward. This was an intentional design feature implemented to prevent students from changing their decision once an action or decision was performed. However, this was not a desirable feature from the student perspective, as one student stated, "I wanted to see – how did I get here? I wanted to go back and look at what I just chose and see if I could choose differently and make a different choice instead of going through the whole thing and having to start over" and another student said, "I would get kind of lost in the slides. I know you said don't click back or, you know, don't try to go backwards. But you know people... people like to do things that they're told not to". The students further identified recommendations to the study researchers, all suggesting a different platform

for dissemination to improve navigational challenges reported.

Discussion

The results of this study discuss the potential for CYOP activities promote critical thinking and clinical judgement among nursing students by simulating real-world patient scenarios. CYOPs provide a safe environment for students to make decisions, learn from mistakes, and prioritize patient care, enhancing students' decision-making skills through clinical realism. The CYOPs expanded on a case study format, putting the student in the role of the nurse directly caring for the patient. Due to the nature of undergraduate nurse education, especially accelerated programs, student nurses have limited exposures to extensive disease processes in the acute clinical setting. Even when exposed to disease processes in the clinical environment, students are typically only able to focus on one specific aspect of care that they are providing that day. CYOPs allow students to provide care for a patient across the disease trajectory. They can synthesize the information they receive through a chart review and physical assessment, make clinical decisions based on their assessment, and immediately see the consequences of their decisions, thus promoting reflection and enhanced learning, progressing critical thinking and clinical judgement.

Accelerated undergraduate nursing students frequently struggle with the shift from their previous education practices of memorization to application of the learned content required to be a competent nurse. The interactive design of the CYOPs fostered knowledge application rather than memorization. Students appreciated the engagement and multimodal learning styles the CYOP design allowed for by providing students control of how they actively applied their clinical knowledge through trial and error. It put students in the role of the nurse, including the decision making and ultimately the experience of understanding the consequences of those decisions. Active engagement with the CYOP activities also demonstrated to students gaps in their learning and understanding. Using this low stakes, self-paced, learning activity, students were able to envision and see themselves in the role of the nurse

evaluating what they knew and what they did not know. This allowed them to tailor their studying to focus on information and/or concepts they were struggling to apply.

Although the CYOP was beneficial, it was clear that students faced challenges with the technology platform, specifically the file size and navigation within PowerPoint®. The students told the researchers to consider an alternative platform to improve the end-user experience. Due to the CYOP leading students to different 'tracks' based on their decisions, the CYOPs involved 800 to 900 PowerPoint® slides. Many of these slides were duplicates with the end result differing based on previous decision making. Although it was impossible for students to access all the slides if they played the activity as designed, students would frequently exit out of the game in an attempt to "go back" and reverse previous decisions.

Through active engagement and knowledge application, students used the CYOP interactive learning experience to nurture their own individualized learning needs and styles. This student driven customization of learning allowed them to develop their knowledge application while concurrently scaffolding in new knowledge through the gamified application of nursing care that students identified as correlated to clinical realism. With the continued need for practice ready nurses to enter the workforce to fill the nursing shortage, nursing educators need to develop innovative ways to enhance student learning that provides the opportunity for students to understand how their choices affect patients, which the CYOPs have demonstrated.

Limitations

This study had limitations. This study was conducted with a small single cohort of accelerated nursing students, as such, the results cannot be generalizable to the broader nursing student population. Additional studies are needed in order to confirm study results with both a larger student population and students not exclusively enrolled in an accelerated nursing program.

Conclusions

The findings of this study underscore the effectiveness that the CYOP activities had in fostering

perceived critical thinking and clinical judgement among nursing students. By immersing students in realistic patient scenarios, the CYOP design provided a safe space in a gamified approach for students to practice decision-making, learn from their errors, and prioritize patient care. Despite the reported and perceived challenges with the technology platform, CYOP activities offer valuable learning that encourage students to grow within their own clinical reasoning. The interactive design facilitates knowledge application and accommodates diverse learning styles, thereby empowering students to actively engage with the materials and subsequently develop a deeper understanding of patient care priorities. As nursing educators strive to prepare practice-ready nurses, innovative approaches like the CYOP's hold promise in enhancing student learning and readiness for the workforce.

Ethical clearance: Institutional review board approval was obtained 2/25/2022 (IRB #24083)

Conflict of interest: The authors declare no conflict of interest.

Source of funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Eckerson CM. The impact of nurse residency programs in the United States on improving retention and satisfaction of new nurse hires: An evidence-based literature review. *Nurse education today*. 2018;71:84-90.
2. Hong S, Yu P. Comparison of the effectiveness of two styles of case-based learning implemented in lectures for developing nursing students' critical thinking ability: A randomized controlled trial. *International journal of nursing studies*. 2017;68:16-24.
3. Kaylor SK, Strickland HP. Unfolding Case Studies as a Formative Teaching Methodology for Novice Nursing Students. *Journal of Nursing Education*. 2015;54(2):106-110.
4. Sarker U, Kanuka H, Norris C, Raymond C, Yonge O, Davidson S. Gamification in nursing literature: an integrative review. *International journal of nursing education scholarship*. 2021;18(1).
5. Mandernach BJ. Thinking Critically about Critical Thinking: Integrating Online Tools to Promote Critical Thinking. *Insight (Parkville, Mo)*. 2006;1(1):41-50.

6. Bristol T, Hagler D, McMillian-Bohler J, Wermers R, Hatch D, Oermann MH. Nurse Educators' use of Lecture and Active Learning. *Teaching and learning in nursing*. 2019;14(2):94-96.
7. Robinson L, Mulvey BK, Aller L. Early Prelicensure Nursing Students' Perceptions of Case Studies Through the Lens of the Clinical Judgment Measurement Model. *Nurse educator*. 2024;49(1):E12-E16.
8. Chou YK. *Actionable gamification: Beyond points, badges, and leaderboards*. . Packt Publishing Ltd.; 2019.
9. da Rocha Seixas L, Gomes AS, de Melo Filho IJ. Effectiveness of gamification in the engagement of students. *Computers in human behavior*. 2016;58:48-63.
10. Martínez-Cerdá J-F, Torrent-Sellens J, González-González I. Promoting collaborative skills in online university: comparing effects of games, mixed reality, social media, and other tools for ICT-supported pedagogical practices. *Behaviour & Information Technology*. 2018;37(10/11):1055-1071.
11. Ambrosio Mawhirter D, Ford Garofalo P. Expect the Unexpected: Simulation Games as a Teaching Strategy. *Clinical Simulation in Nursing*. 2016;12(4):132-136.
12. Krath J, Schürmann L, von Korflesch HFO. Revealing the theoretical basis of gamification: A systematic review and analysis of theory in research on gamification, serious games and game-based learning. *Computers in human behavior*. 2021;125:106963.
13. Nair SM, J. A Theoretical Framework for Gamified Learning. *International Journal of Innovative Technology and Exploring Engineering*. 2019;8(12):2846-2851.
14. Becker K. What's the difference between gamification, serious games, educational games, and game-based learning? *Academia Letters*. 2021;Article 206.
15. Bai S, Hew KF, Huang B. Does gamification improve student learning outcome? Evidence from a meta-analysis and synthesis of qualitative data in educational contexts. *Educational research review*. 2020;30:100322.
16. Baptista G, Oliveira T. Gamification and serious games: A literature meta-analysis and integrative model. *Computers in human behavior*. 2019;92:306-315.
17. Sailer M, Hense JU, Mayr SK, Mandl H. How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in human behavior*. 2017;69:371-380.
18. Saldaña J. *The coding manual for qualitative research*. Sage; 2021.