International Journal of Sustainability and Advanced Integrated Research
Volume 2, Issue 2 (April-June 2026) | ISSN: 3107-7854
DOI: https://doi.org/10.65339/ijsair.V2.I2.160

Gamification Used in Anatomy and Physiology in Nursing

Amador Roy U. Piñera, RN[1], Maria Shane S. Del Rosario, RN, PhD[2]
[1] *Master of Arts in Nursing , Graduate School, University of Santo Tomas-Legazpi, Legazpi City, Philippines*
[2] *Adviser , Graduate School, University of Santo Tomas-Legazpi, Legazpi City, Philippines*

Publication history: Received: January 12, 2026; Revised: March 25, 2026; Accepted: April 2, 2026
Email of Corresponding Author: amadorroy.pinera@ust-legazpi.edu.ph

Abstract

This study examined the effects of gamification on learning outcomes in Anatomy and Physiology among Level I nursing students and served as the basis for a proposed gamification-integrated instructional plan. Specifically, the study investigated the presence of gamification strategies, students' engagement, knowledge acquisition, skills development, teaching strategies where gamification may be integrated, and students' suggestions for improving gamified learning activities. The results revealed that gamification strategies were present in Anatomy and Physiology classes, particularly through interactive quizzes, simulations, and game-based learning activities. The findings showed that gamification had a high effect on students' engagement, knowledge acquisition, and skills development, indicating that gamified learning activities improved student motivation, participation, understanding of lessons, knowledge retention, and practical skills development. Furthermore, the study found that gamification can be integrated into various teaching strategies such as lectures, laboratory activities, clinical simulations, review sessions, and assessment activities. Students also supported the increased integration of gamification in both lecture and laboratory sessions. Based on the findings, a gamification-integrated instructional plan was developed to enhance student engagement, improve learning outcomes, and support outcomes-based education in nursing education. The study concluded that gamification is an effective instructional strategy that can improve teaching effectiveness and enhance learning experiences in Anatomy and Physiology.

Keywords: Gamification, Anatomy and Physiology, Nursing Education, Student Engagement, Instructional Plan

1. Introduction

Gamification, or the use of game-design elements such as points, badges, challenges, and feedback in educational settings, has emerged as a promising instructional strategy in higher education. In nursing education, it is increasingly recognized for its potential to promote active learning, improve student engagement, and support knowledge and skills development, particularly in challenging foundational courses such as Anatomy and Physiology. Although previous studies have reported positive outcomes associated with gamified learning, limited evidence remains available regarding its application in specific nursing subjects and local educational contexts. In particular, there is a need to examine how gamification is used in Anatomy and Physiology and how it is perceived to influence student engagement, knowledge acquisition, and skills development among nursing students. Accordingly, this study examined the use of gamification in Anatomy and Physiology among Level I nursing students at Amando Cope College. Specifically, it described the gamification strategies employed and assessed their perceived influence on student engagement, knowledge acquisition, and skills development.

2. Material and methods

2.1 Research Design

This study employed a descriptive-evaluative quantitative design to describe the gamification strategies used in Anatomy and Physiology and assess their perceived influence on student engagement, knowledge acquisition, and skills development. A survey method was used to gather data from the respondents.

2.2 Locale of the Study

The study was conducted at Amando Cope College among Level I nursing students enrolled in Anatomy and Physiology. Data were gathered in the actual learning environment where gamified instructional activities were implemented.

2.3 Respondents of the Study

The respondents were Level I nursing students taking Anatomy and Physiology at Amando Cope College. They were selected because they had direct exposure to the gamified learning activities used in the course

2.4 Sample and Sampling Procedure

Purposive sampling through total enumeration was used in the study. All 45 Level I nursing students enrolled in the class section where gamification strategies were implemented were included as respondents.

2.5 Research Instrument

The study used a structured survey questionnaire as the main data-gathering instrument. It included items on gamification strategies, student engagement, knowledge acquisition, skills development, and possible areas for gamification integration. A four-point Likert scale was used for the close-ended items.

2.6 Data Gathering Procedure

Permission to conduct the study was secured from the appropriate authorities before data collection. The purpose of the study was explained to the respondents, and informed consent was obtained. The questionnaires were distributed during class sessions, collected after completion, and encoded for analysis.

2.7 Data Analysis Techniques

The data were analyzed using frequency counts, percentages, and weighted mean. These statistical tools were used to describe the gamification strategies and determine the respondents' level of agreement regarding the perceived effects of gamification.

2.8 Ethical Considerations

Ethical principles were observed throughout the study. Participation was voluntary, and respondents were assured of confidentiality, anonymity, and their right to withdraw at any time. The data gathered were used solely for academic and research purposes.

3. Results and Discussion

3.1 Gamification Strategies Used in Anatomy and Physiology

The findings showed that gamification strategies were generally present in Anatomy and Physiology classes, with an overall mean of 2.98 interpreted as High. Among the strategies, interactive quiz platforms obtained the highest mean (3.18), followed by simulation/role-playing (3.15) and immediate feedback (3.04), while leaderboards/ranking systems received the lowest mean (2.58), though still interpreted as High. These results indicate that gamification was mainly implemented through quizzes, simulations, and feedback-oriented activities, suggesting that instructors favored practical and easily integrated gamified strategies in both lecture and laboratory settings. ge. The practical, theoretical, or research implications of the findings may also be included if applicable.

3.2 Effects of Gamification on Learning Outcomes

Gamification showed a high effect on the three measured learning outcomes: student engagement (3.12), knowledge acquisition (3.09), and skills development (3.15), with skills development obtaining the highest mean. This suggests that gamified learning activities were perceived to be particularly effective in improving students' competence, confidence, teamwork, and problem-solving, while also enhancing their motivation, participation, attention, understanding, and retention of concepts. These findings support the value of gamification as an instructional strategy that contributes positively to cognitive, affective, and psychomotor learning outcomes in nursing education.

3.3 Teaching Strategies Where Gamification May Be Integrated

The respondents perceived gamification as applicable across various teaching strategies, with an average weighted mean of 3.21, interpreted as High. The highest-rated areas for integration were clinical simulations (3.33), skills laboratory activities (3.31), and different nursing subjects (3.27), followed by lectures, case studies, review sessions, and online learning. These findings indicate that students viewed gamification as a flexible instructional approach that can be incorporated in both theoretical and practical learning environments, particularly those that require active participation and application of knowledge.

3.4 Students' Suggestions for Improving Gamification Integration

Students generally supported the increased use of gamification in Anatomy and Physiology, with an average weighted mean of 3.26. The strongest recommendation was the integration of gamification into skills laboratory activities (3.33), followed by its use in more topics (3.27) and the development of more gamification strategies by instructors (3.24). Open-ended responses further indicated that students preferred interactive and visual activities such as identification quizzes, 3D anatomy applications, and group challenges, but also suggested improvements in pacing, clarity of instructions, visual support, and opportunities for repeated practice. These results imply that effective gamification should be engaging as well as carefully structured to match students' learning needs.

4. Conclusion & Recommendations

This study concluded that gamification was present in Anatomy and Physiology classes and was commonly implemented through interactive quizzes, simulations, role-playing activities, and immediate feedback. The findings further showed that gamification was perceived to have a high positive influence on student engagement, knowledge acquisition, and skills development, with skills development obtaining the highest rating among the measured learning outcomes. Moreover, the results indicated that gamification may be effectively integrated into various teaching strategies, particularly in clinical simulations, skills laboratory activities, lectures, and review sessions. Overall, the study suggests that gamification is a useful and learner-centered instructional strategy that may enhance the teaching and learning of Anatomy and Physiology among Level I nursing students.

Based on these findings, it is recommended that nursing educators strengthen the integration of gamification in Anatomy and Physiology through regular use of interactive quizzes, simulation-based tasks, game-based reviews, and collaborative activities in both lecture and laboratory sessions. Instructors may also develop a more structured gamification system that includes points, badges, leaderboards, rewards, and progressive challenges to further improve student motivation and participation. In addition, future researchers are encouraged to conduct similar studies in other nursing subjects and to use experimental or longitudinal designs to further examine the effectiveness of gamification on academic performance, clinical competence, and long-term learning outcomes.

Despite its contributions, the study has several limitations. It was conducted only among 45 Level I nursing students from one institution and one course, which may limit the generalizability of the findings to other settings or populations. The study also relied mainly on a structured survey questionnaire and descriptive statistics, which means that the results reflect students' perceptions rather than objective measures of academic or clinical performance. Furthermore, because the design was descriptive-evaluative and context-specific, the study cannot establish causal relationships between gamification and learning outcomes. These limitations suggest the need for broader samples, multi-site studies, and more rigorous research designs in future investigations.

Compliance with ethical standards

This study was conducted in accordance with applicable institutional ethical standards and with prior permission from the appropriate authorities of Amando Cope College. Participation in the study was entirely voluntary, and all respondents were adequately informed of the purpose, procedures, and nature of the research before data collection; informed consent was obtained from all participants, who were likewise assured that their decision to participate or withdraw would not affect their academic standing in any way. Confidentiality and anonymity were strictly maintained by excluding identifying information from the research instrument and by using all collected data solely for academic and research purposes. The author declares full responsibility for the integrity, originality, and accuracy of the manuscript, confirms that the work is original and not under consideration elsewhere, declares no conflict of interest in relation to the conduct and reporting of the study, acknowledges the academic guidance and institutional support received during the completion of the research, and retains responsibility for ensuring proper citation, attribution, and compliance with copyright and publication requirements.

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