



## Bringing your a-game: Educational gaming for student success



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### ABSTRACT

**Background:** The purpose of this article is to describe the theoretical basis for the integration of gaming in nursing education and discuss aspects related to the implementation of “The Race for Nursing Student Success” game.

**Methods:** This game was designed for 112 junior-level baccalaureate nursing students enrolled in a fundamentals nursing course. Students were divided into groups of 5–8 and rotated through ten specific learning activities that took place in various locations throughout the nursing building.

**Results:** Student and faculty feedback indicated positive responses to this instructional strategy and also promoted a learner-centered teaching environment.

**Conclusion:** This learning activity supports the use of educational gaming as a means to develop learner-centered environments that provide experiential experiences, enhance learning, and stimulate interest, and motivation for students to learn.

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It's no secret that educators face multiple challenges within today's classroom, including generational differences between instructor and student, the need to present a large—and growing—body of content, and the need to develop active learning experiences that students find appealing. When used as an adjunctive teaching–learning strategy, educational gaming may serve to develop active learning environments that provide experiential experiences, enhance learning, and stimulate student interest and motivation. The purpose of this article is to describe the theoretical basis for the integration of gaming in nursing education and discuss aspects related to the implementation of “The Race for Nursing Student Success” game.

### 1. Integration of Educational Gaming

Experiential education as a theoretical framework serves as a philosophy and teaching methodology in which educators intentionally engage learners in active-learning experiences and times of reflection in order to increase knowledge and develop skills. A champion of experiential education, Dewey (1938) originally proposed that education is centered on the value of experience. Kolb (1984) further grounded his experiential learning theory based upon Dewey's educational principles. The goal for experiential learning is to directly involve students with learning content so that they may gain new, purposeful knowledge, and increase their retention of information.

Educational gaming serves as a prime example of experiential learning. A game is defined as any activity involving a precise set of rules in which players compete using knowledge and skills in attempts to reach a specified goal (Rowles, 2012). Gaming requires students to be active participants in learning, reflect upon their performance while considering their strengths and weaknesses, and plan future actions accordingly (Kolb, 1984). The experience students gain during gaming helps connect the dots between theory content and practice, increases student engagement, and provides authentic learning (Bliemel and Ali-Hassan, 2014; Boctor, 2013). Educational gaming further engages multiple learning styles, which can be advantageous when facilitating large and diverse groups of students with varying backgrounds and learning styles (Kolb, 1984; Lisko and O'Dell, 2010). An additional benefit of gaming as an educational strategy is that it allows a large volume of material to be covered within one activity (Boctor, 2013).

### 2. Implementation of Educational Gaming

Faculty implementation of gaming greatly depends on the type of gaming strategy. As a teaching strategy, gaming can be an effective method for reinforcing knowledge, as it increases both cognitive and affective learning, improves retention, promotes collaborative learning among students, and motivates learners in a fun and exciting environment (Rowles, 2012). Some gaming strategies are much more complex than others, requiring extra time, preparation, costs, supplies, and physical space in order for the game to be successful. It is important to recognize that post-game debriefing is critical, so that students can make connections between the game and important theoretical concepts (Rowles, 2012).

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### 3. The Race for Nursing Student Success

This section describes a large-scale interactive and competitive game created by the authors to serve as a comprehensive review of the semester's content for students preparing for their final examination. "The Race for Nursing Student Success" was designed for 112 junior-level baccalaureate nursing students enrolled in a fundamentals nursing course, which was taught by four full-time course faculty members. This class meets a total of 15 times throughout one semester, and each class lasts 4 h in length. Time is built into the topical outline for an entire class session to serve as a comprehensive review, which is offered 1 week prior a standardized specialty exam, and 2 weeks prior to the course's comprehensive final exam.

Considering that collegiate football is an integral part of this institution's campus life, the authors used butcher's paper to create a large football field for use as the game's scoreboard, complete with end zones, yard lines, and hash marks. Much like a scavenger hunt, the authors pre-selected ten locations within the nursing building for student groups to rotate through, with a specific learning activity taking place at each location (see Table 1). Each location offered an independent, collaborative student activity, complete with detailed instructions of the activity and all necessary worksheets, supplies, or equipment the students would use.

Students were divided into their clinical small groups of 5–8, resulting in fourteen competing groups. Each group was given a group number that corresponded to a numbered elephant located on the scoreboard, with all team elephants lined up at one field goal at the start of the game. Student groups were given a starting location; after completing each activity, students were to check in with faculty at the scoreboard in order to proceed to the next location. The object of the game was simple: the first team to advance their elephant across the field won. However, each activity must be completed not only with speed, but also with accuracy, as each activity was worth a total of 10 points (or, the advancement of 10 yards on the scoreboard). All four course faculty participated in the game through active roles; one faculty member directed teams to their various locations through the use of location cards, another faculty member was in charge of advancing the

teams' playing pieces, and the two remaining faculty members were responsible for quickly grading the student worksheets.

### 4. Discussion and Recommendations

This game proved to be a successful and effective instructional strategy for comprehensively reviewing a large volume of material with fundamentals nursing students.

The course faculty found that this game promoted a learner-centered environment in which the students were able to competitively take control of their own learning. The small groups of students used teamwork, their prior knowledge and skills, and even a little bit of creativity to complete each station in a thorough and timely manner. Compared to the prior year before implementation of the game as a comprehensive review strategy, exam question item analysis of the same content-related questions revealed an increased mastery of the content by 15%. At the conclusion of the activity, student feedback was overall positive, as students mentioned: "The race was so much fun! I remember that material so much better!", "The competitiveness of the game helped me stay engaged," and "I loved learning on the go!"

Although this type of gaming strategy received positive student feedback, several time-tested recommendations are offered for educators considering this strategy in the future. The initial preparation for this scavenger-hunt style game was time consuming and required several weeks of planning as faculty created activities for the ten various stations (see Table 1). Several of the stations required specific supplies such as personal protective equipment, laminated puzzle pieces, and access to a clinical practice lab setting for demonstration of crutch-walking and positioning techniques. When preparing to implement this type of game, the authors recommend utilizing pre-existing resources rather than trying to "reinvent the wheel" by developing their own activities. Furthermore, this game initially may be piloted on a smaller scale, with new stations being developed over time, so that each time the game is played, it grows in size. Doing so allows faculty to assess the strengths, weaknesses, and content areas of each activity, with a final product of multiple games existing within the larger scavenger hunt. The good news, however, is that once activities are created,

**Table 1**  
The Race for Nursing Student Success.

Location	Activity (with description)	Student instructions
1	<i>ECG interpretation</i> : Fourteen copies of a worksheet containing 10 six-second strips of basic dysrhythmias.	Identify each cardiac dysrhythmia and calculate the rate.
2	<i>Medication calculations</i> : Fourteen copies of a worksheet containing 10 medication calculations.	Complete each medication calculation, using appropriate rounding rules.
3	<i>Clinical questions #1</i> : Fourteen copies of a worksheet containing 10 open-ended clinical questions about patient safety, sleep/pain, nutrition, and elimination.	Write your responses to each question provided. The more information you can provide the better!
4	<i>Clinical questions #2</i> : Fourteen copies of a worksheet containing 10 open-ended clinical questions about medication administration, wound care, hygiene, and vital signs.	Write your responses to each question provided. The more information you can provide the better!
5	<i>IV access crossword</i> : Fourteen copies of a crossword puzzle containing definitions related to intravenous access devices.	Identify the key terms used to initiate a venous access device.
6	<i>Nutrition crossword</i> : Fourteen copies of a crossword puzzle containing definitions related to nutrition and diet therapy.	Identify the key terms used to describe nutrition and diet therapies.
7	<i>Physical assessment jigsaw puzzle</i> : A 20-item question-and-answer jigsaw puzzle was developed regarding terms related to physical assessment.	Complete the question-and-answer jigsaw puzzle. Once complete, take a picture to show faculty before advancing!
8	<i>Lab values matching</i> : Twenty pairs of laminated cards with the name of the lab value and its corresponding range are shuffled on a table.	Match each item with its corresponding definition/value. Place all matching cards face up and take a photo to show your faculty. Each correct pair is worth 1 point.
9	<i>Isolation precautions</i> : Laminated cards (five total) labeled with a medical diagnosis are placed next to an array of personal protective equipment supplies, including isolation gowns, various types of masks and gloves, shoe covers, etc.	Identifying the necessary precautions for each medical diagnosis, don the proper personal protective equipment. Take a picture to show your faculty, ensuring that the medical diagnosis is visible in each picture. Each diagnosis is worth 2 points.
10	<i>Movin' and Shakin'</i> : This station is best performed in a clinical practice lab setting. A laminated card containing five activities and instructions are available. Examples of activities include placing a member of the team in a Trendelenburg position, taking a video demonstrating 4-point crutch walking, taking a video capturing proper logrolling technique.	Using your smart phone, complete each action below and show to faculty before advancing! Each action is worth 2 points.

subsequent setups for the scavenger hunt are fairly quick and can be easily set up within a 30-minute timeframe.

For some, physical space and faculty labor may be an obstacle when implementing a game of this magnitude. This style of educational gaming tends to work best when stations are not in close proximity to one another. When implementing this game, the authors recommend getting creative by utilizing empty conference rooms, classrooms, the simulation center, the clinical practice lab, and even—weather permitting—outdoor spaces.

During the game, the authors find it works best when at least four faculty members are available to help students navigate through the game, assess performance of each activity for correctness, and serve as motivators for engagement. As with other types of clinical or simulation group experiences, the faculty noted that at times group dynamics led some of the more introverted students to hold back whereas dominant personalities were more likely to jump in and serve as leaders. To address this, the faculty may opt to be intentional when developing small groups so that each student has the opportunity to assume a leadership role.

Using experiential learning as a framework, nurse educators may wish to incorporate educational gaming as a teaching–learning strategy used in the classroom. Gaming is an effective method for reinforcing

knowledge by increasing both cognitive and affective learning, can improve retention, promote collaborative learning among students, and motivate learners in a fun and exciting environment (Rowles, 2012). Positive feedback received by both students and faculty following “The Race for Nursing Student Success” supports the use of educational gaming as a means to develop active learning environments for comprehensively reviewing the plethora of fundamentals material.

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