



## Millennial's perspective of clicker technology in a nursing classroom: A Mixed methods research study

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### ABSTRACT

**Background:** Nursing education is facing challenges and a shift in paradigm within the nursing classroom. Educators need to explore innovative strategies that engage students. Clickers are one tool that can enhance participation, protect anonymity, and promote learning of concepts.

**Methods/Data sources:** This mixed methods study evaluated nursing student's perceptions of clicker technology during lecture. This study uses a 9-item questionnaire to explore perceived levels of student perception of the technology of clickers in a nursing classroom.

**Participants:** The sample consisted of ninety-nine sophomore and senior level nursing students. Participants were recruited using convenience sampling.

**Results:** Ninety-one percent of the students agreed or strongly agreed that the use of clickers helped them to develop a better understanding of the subject matter when compared to traditional lecture based class.

**Conclusion:** The findings portray a positive correlation of learning and an enhanced pedagogical approach for nursing students.

### 1. Introduction

Nurse educators strive to produce graduate nurses to become competent practitioners. Educators continue to search for effective methods that will engage multiple generations of students in learning. Millennial students born on or after 1982, are accustomed to living in a highly technological world. Millennials have unique educational needs which encompass learning styles, distinct educational needs and learning experiences (Garwood, 2015). Studies describe the millennial as creative, innovative, multitaskers who are technologically savvy (Gale, 2015; Stephens and Gunther, 2016). This generation prefers to be entertained in the classroom and desire instant gratification to questions and access to information. They have a low tolerance for persons who do not quickly grasp technology adding additional challenges for the educator (Gale, 2015). The use of many teaching strategies in the classroom is required to fully engage this generation. Exemplars can include gaming, clickers, or case studies which not only make learning fun and interactive, but also encourage critical thinking (Kaylor, 2016). Growing up with technology, millennials and subsequent generations will add complexity to the nursing education classroom.

Studies reveal that millennial students play a major role in the changing classroom dynamics; while nursing faculty often favor traditional methods of teaching (Shatto and Erwin, 2017; Stephens and Gunther, 2016). However, recognizing and providing innovative

strategies that are active help to address generational diversity and aid in maximizing student outcomes, retention, and progression. Active learning strategies aim to engage the learner in the classroom setting. Innovative learning strategies can aid the nursing educator toward student centered learning. The approach helps to engage the learner in the classroom by enhancing the environment through collaboration. Techniques such as the “flipped classroom” enhance learning by energizing and motivating students through peer interactions with educational material (Kaylor, 2016). The use of innovative teaching strategies can create an educational environment for baccalaureate nursing students rich in active learning and problem solving.

Classroom response systems (CRS) are pedagogical tools that assist educators in collecting student's answers to questions in a classroom setting. CSR can also be known as student response systems, clickers, automatic response systems (ARS) or classroom communication systems (CCS). According to Han (2014), “clickers are one of the most widely adopted interactive technologies used in classroom instruction worldwide” (p. 150). This technology connects students to lecture through an interactive mechanism (DeGagne, 2011). Clicker technology involves the process of active learning through peer discussion and clarification of classroom material from the instructor without any fear of consequences. CRS comprises of a response device and the receiver system. Faculty can introduce a myriad of questions in various formats such as multiple choice, select all that apply, true/false, and fill in the blank.

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The student's answers are inputted in a response device and automatically configured on the projected screen to give instantaneous feedback. This immediate feedback allows students to evaluate their own learning and instructors to gauge understanding of concepts in real time. In addition, clickers have been shown statistically to be beneficial to students due to their ability to increase knowledge retention and student engagement (Mains et al., 2015).

The millennial generation expects immediate feedback and responses, are multitaskers, and have difficulty focusing on one task at time (Harvey, 2015; Shatto and Erwin, 2017). Nurse educators have a responsibility to facilitate student academic learning and evaluate outcomes. Active learning strategies are preferred over lectures that provide the student with a myriad of learning opportunities. Despite the need to teach using different methods to motivate students, nurse educators find this challenging. The use of active strategies such as gaming and clickers are techniques that can be utilized to obtain students attention and bring active learning rather than passive surface level learning. The use of evidenced based educational strategies through experiential learning can enhance a more interactive nursing classroom (Montenery et al., 2013). In order to develop education practices that appeal to the millennial generation, personal perspectives on active strategies are needed to promote evidenced based teaching practice.

## 2. Background/Literature

Engagement of learners is essential to the millennial generation (Stephens and Gunther, 2016). The primary goal of classroom courses is delivery of content, however students desire activities that maintain their attention and motivate them to learn. Clickers have been studied in other disciplines and perceived to be an interactive tool that aid interactions between faculty and peers (Mareno et al., 2010). Clickers also provide a safe learning environment through anonymity which help to alleviate peer pressure, embarrassment and overall decrease anxiety level.

Clickers can be perceived as a tool that has the potential to improve student engagement and motivation (Johanson, 2012). Nursing educators must use teaching tools and activities that enhance and create learning environments where learners become active members. Millennials are more likely to become engaged in their learning if they are personally interesting and satisfying to them. Engagement of millennial learners represents a crucial aspect in the active nursing learning environment. While many different types of active strategies exist, clickers foster student participation and engagement (Efsthathiou and Bailey, 2012; Montenery et al., 2013).

According to Montenery et al. (2013), “millennial learners develop critical thinking through experimentation, active participation, and multitasking with rapid shifts between technological devices” (p.405). Clicker technology can develop millennial students' critical thinking and aid as an effective test taking strategy. The professor can evaluate the student performance on individual questions and measure achievement of objectives, concepts, and content mastery. In addition, concepts that are not clear can be reiterated by the professor. Nurse educators can use clickers to enable learner participation which in turn aids an efficient learning environment. The learners become actively involved and ultimately become part of the learning.

Motivating the millennials in the educational environment is essential as motivated learners seek clarification, show persistence through challenges, and actively participate. When learners are engaged in the process in the classroom they become motivated in learning (Montenery et al., 2013; Stephens and Gunther, 2016; West, 2014). Therefore, the motivation and engagement of the millennial learner are crucial to new pedagogical strategies such as clicker technology.

The use of clicker technology promotes critical thinking and innovative reasoning. When students feel involved in the learning

process, they are more likely to work hard and become committed to the learning process (Stevens et al., 2017). Actively involved students learn more subject matter and support learning outcomes.

Clickers align with the principles of game-based learning (GBL). Game based learning turns activities into competitive exercises which challenges students in order to internally motivate themselves to learn concepts. These experiences can motivate students to retain and apply new knowledge and aid in critical thinking through problem solving (Mawhiter and Garafola, 2016; Stevens et al., 2017; West, 2014). According to Roche et al. (2017) “practice answering NCLEX-style questions may also enhance the retention of new knowledge among nursing students” (p.124). The use of clickers in short intervals enhances student interactions and breaks up the repetitive nature of traditional lecture.

## 3. Methods

### 3.1. Sample and Setting

The aim of this study was to assess the millennial perceptions and attitudes of clickers on learning during a traditional lecture series. A mixed-method study following two cohorts of nursing students over a one semester period to measure their perspective of the use of clickers as an interactive activity. A mixed method design was appropriate for this study to examine human perspectives that integrate the assets of quantitative and qualitative research to gain meaningful understanding (Zhang and Creswell, 2013). After Institutional Review Board (IRB) approval, the study was explained to each student and each student signed a consent form. Each faculty member embedded ten clicker questions within weekly presentations as a means of pre-lecture and post lecture knowledge checks. At the end of the course, each student filled out a student evaluation form. This study uses a 9-item questionnaire to explore perceived levels of student perception of the technology of clickers in a nursing classroom. Participants were asked to rate their level of agreement with each item using a 5 point Likert scale, where 5 = strongly agree; 4 = agree; 3 = undecided; 2 = disagree; and 1 = strongly disagree. One additional open-ended item was asked to obtain qualitative data about their individual perceptions. The item was labeled comments to allow students to openly “verbalize” how they felt about clickers.

### 3.2. Data Collection

Data was collected from two cohorts of nursing students in the sophomore and senior level of the nursing program. A response rate of 100% was attained as 99 of the 99 students completed the survey. The numerical data was analyzed using descriptive statistical analysis and the narrative comments were analyzed using qualitative content analysis.

### 3.3. Data Analysis

Students (n = 99) participated in a post-semester, 10 item survey measuring clicker perceptions on a 5-point Likert scale ranging from “strongly agree” to “strongly disagree”. This survey was analyzed using descriptive statistics (see Table 1). For all items, the majority of respondents (over 50%) agreed (strongly agreed + agreed) that clickers are beneficial to lectures and learning. The scale yielded a Cronbach's alpha of 0.91.

## 4. Results

There were a total of 99 students who participated in the study: 74 sophomores students enrolled in a professional nursing course and 25 senior level students enrolled in a psychiatric nursing course students. All students engaged in clicker technology over 12 weeks, and ages 18

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