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Student Perception of Clicker Usage in Nursing Education

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Abstract Nurse educators must explore innovative ways to engage students and stimulate learning. Student response system (SRS) technology is one tool educators can use to increase participation, provide immediate feedback, and encourage critical thinking. This study evaluated perceptions of first-year nursing students using SRS technology. The findings support the use of SRS technology as a positive pedagogical approach to incorporate in teaching associate degree nursing students.

1. Background

Student response systems (SRSs), also known as clickers, have been used in education for the past decade. Clickers can be a powerful and flexible tool for teaching (Caldwell, 2007). Advantages include increasing attentiveness to lectures, clarifying information, providing immediate feedback, promoting an anonymous environment, increasing student participation, and encouraging critical thinking (Hunter-Revell & McCurry, 2010; Moredich & Moore, 2007).

The response system consists of the following components: a keypad that students use to transmit responses, a base or receiver that is used to tabulate responses, and computer software. Recent advancements in SRS technology incorporate software that allows students to connect through Web-enabled cell phones (McRae & Watson, 2010; Skiba, 2006).

Using a keypad, students respond to a question posed in class. The receiver linked to the instructor's computer collects and records responses. Collective responses can then be displayed, generally in a histogram format. Most SRSs work with PowerPoint, textbooks, or course management systems (Hunter-Revell & McCurry, 2010; Skiba, 2006).

2. Literature review

There have been numerous studies investigating the use of SRS technology in a variety of academic settings. Disciplines in which SRS technology has been used include physics, chemistry, education, statistics, psychology, human development (Graham, Tripp, Seawright, & Joeckel, 2007), nursing (Hunter-Revell & McMurry, 2010; DeBourgh, 2008; Porter & Tousman, 2010), family and consumer sciences (Gentry, 2007; Graham et al., 2007), biology (Caldwell, 2007; Graham et al., 2007; Prezler, Dawe, Shuster, & Shuster, 2007), engineering (Gentry, 2007), and accounting (Mula & Kavanagh, 2009). Most studies have found positive results in levels of student participation and student engagement, although negative results include cost of the clicker and fear of losing the clicker.

2.1. Best practices/instructional value

In addition, SRS can be used to foster Chickering and Gamson's (1987) best practices in education, including encouraging active learning, student–faculty contact, coop-

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eration among students, and prompt feedback. SRS can be used as an active learning technique by engaging students using a variety of clicker question methods. Students can be quizzed on content from assigned reading, pre- and posttest knowledge of content, review of material for examinations, National Council Licensure Examination (NCLEX) preparation/review, and case studies with questions embedded. By creating student interaction using clicker questioning, instructors can direct students toward reasoning instead of recall. Students use reasoning to select an answer and, once committed to it, are emotionally involved in the learning process and are more attentive to the continued discussion (Beatty, 2004; DeBourgh, 2008). Student–faculty contact is encouraged by creating an interactive environment that engages students with their peers and the instructor. This interaction occurs through the students' initial responses and deeper discussion that often happens when ideas, viewpoints, and beliefs are stimulated and shared. Cooperation among students occurs when they are allowed to interact and consult with one another or work in small groups. For example, an instructor can have students partner with others to discuss the clicker question, give rationale for each answer, then agree upon a unified answer. SRS usage provides prompt feedback to students and instructors. Feedback regarding individual and class understanding of concepts, content covered prior to class, and learning progress can all be assessed in real time. Clickers can be used by instructors for summative evaluation of a particular lecture or course content. Based on student performance, the instructor can evaluate if students have achieved the objectives and understand the content or if additional time needs to be spent clarifying information (Beatty, 2004; DeBourgh, 2008).

2.2. Critical thinking

SRS can be used to develop students' critical thinking and preparation for the NCLEX. The NCLEX-style questions can be interspersed throughout the class. In addition, using application or higher multiple-choice questions related to the content, working through case studies or scenarios that incorporate clicker questions, and using alternate format questioning including multiple response and hot spot items are a few examples of tactical focused questioning that can enhance student participation and critical thinking (DeBourgh, 2008; Hunter-Revell & McCurry, 2010; Moredich & Moore, 2007).

3. Use of SRS in first-year nursing courses

The nursing faculty at a community college began inquiring about the use of SRS technology 3 years ago. The faculty worked with the campus Distance Education and Academic Technology Department, which coordinated the effort to research and select one system that would be used universally across campus. The Distance Education and Academic Technology Department conducted focus groups and needs assessments, performed product evaluations, and worked with programs to pilot test various systems. Key factors involved in the selection of an SRS technology system included ease of use for faculty and students, ease of installation, tech support needed, accessibility, cost, battery life and type, and ability to work on multiple platforms. Findings from the focus groups, needs assessments, product evaluations, and pilot tests were shared with the Academic Technology Committee and the I-clicker system was chosen. Training required for faculty to use basic features of the

Table 1 Survey of student perceptions of clicker usage

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	*M*	*SD*
I like the way clickers give instant feedback.	77.1% (27)	20% (7)	0% (0)	0% (0)	2.9% (1)	4.69	0.76
Clicker usage helped motivate me to be more prepared for class.	25.7% (9)	45.7% (16)	17.1% (6)	8.6% (3)	2.9% (1)	3.83	1.01
Clicker usage helped me to gauge my understanding of class content.	57.1% (20)	34.3% (12)	2.9% (1)	2.9% (1)	2.9% (1)	4.40	0.91
Discussion of the clicker answers helps me to clarify my knowledge about the subject.	57.1% (20)	37.1% (13)	0% (0)	2.9% (1)	2.9% (1)	4.43	0.88
I like to see how I fared in my response relative to the rest of the class.	60.0% (21)	28.6% (10)	8.6% (3)	0% (0)	2.9% (1)	4.43	0.88
Being able to answer anonymously is important to me.	51.4% (18)	25.7% (9)	20% (7)	0% (0)	2.9% (1)	4.23	0.97
Clicker usage is a good way of helping me maintain concentration in lectures.	42.9% (15)	28.6% (10)	14.3% (5)	11.4% (4)	2.9% (1)	3.97	1.15
Clicker usage helped me stay interested during class.	45.7% (16)	31.4% (11)	14.3% (5)	5.7% (2)	2.9% (1)	4.11	1.05
Clicker usage helped me to focus on key knowledge in class.	51.4% (18)	40% (14)	2.9% (1)	2.9% (1)	2.9% (1)	4.34	0.99
Clicker usage helped me participate in class.	68.6% (24)	25.7% (9)	2.9% (1)	0% (0)	2.9% (1)	4.57	0.81
Clicker usage helped make the learning experience more enjoyable.	57.1% (20)	25.7% (9)	11.4% (4)	2.9% (1)	2.9% (1)	4.31	0.91
Overall, the clickers have helped me learn.	54.3% (19)	31.4% (11)	8.6% (3)	0% (0)	5.7% (2)	4.29	1.05
Overall, I have enjoyed using clickers.	62.9% (22)	25.7% (9)	5.7% (2)	2.9% (1)	2.9% (1)	4.43	0.95
I found the clickers easy to use.	82.9% (29)	14.2% (5)	0% (0)	0% (0)	2.9% (1)	4.47	0.74

Note. Total enrolled = 47; total responding = 35; response rate = 74.47%. Likert-type scale: *strongly agree* = 5; *agree* = 4; *neither agree or disagree* = 3; *disagree* = 2; *strongly disagree* = 1.

system was less than 1 hour. Initial training and ongoing assistance were provided by the Distance Education and Academic Technology Department. Minimal assistance has been needed for instances including troubleshooting student clicker malfunctions and setting up specification upgrades.

On the first year that the program began using clickers, the base and remotes were checked out by faculty and used in a limited number of classes. Faculty did not want students to have to pay for the clicker until it was used consistently throughout the first year of the program. As faculty became more familiar with this technology, its use increased and, by Year 2, it became a consistent pedagogical approach used by the first-year faculty to stimulate active learning, participation, and student engagement.

At the beginning of the school year, each student pays $32 for a clicker that includes three AAA batteries. The student owns the clicker that will be used throughout both years of the associate degree in nursing program. Battery life is approximately 200 hours, and students are responsible for replacement batteries. They are expected to bring their clickers to every class.

This is the third year that first-year faculty have been using clickers. Since the faculty team teach each theory course for first-year nursing students, six instructors use the SRS technology in various ways in classes throughout the course. Faculty use clicker questions to assess student preparation for class, assess student comprehension of content, clarify challenging concepts, encourage critical thinking, and incorporate NCLEX-style questions. This author wanted to evaluate if students had positive perceptions of SRS technology usage.

4. Methods

A qualitative study was done in the winter 2011 term of NUR 108. It was determined to be exempt from human subject approval by administration since participation was voluntary and anonymous. The study used a convenience sample of all 47 first-year nursing students enrolled in the nursing program. Near the end of the term, all students were offered an opportunity to participate in the study by completing an online survey. Students were assured that participation in the survey was anonymous and had no possible influence on their final course grade.

A 14-item Likert scale survey was used to collect students' perceptions of SRS usage. The items were selected from two prior studies regarding students' perception of clicker usage (Graham et al., 2007; Porter & Tousman, 2010). Participants were asked to indicate their level of agreement with each item using a 5-point scale, where 5 = *strongly agree*; 4 = *agree*; 3 = *neither agree nor disagree*; 2 = *disagree*; and 1 = *strongly disagree*. Two additional open-ended questions were asked to obtain qualitative narrative comments about the strengths and weaknesses of using SRS technology.

5. Results

A response rate of 74.47% was attained as 35 of the 47 students completed the survey. Table 1 displays the students' ratings of each survey question. Strong positive ratings were reported for all 14 statements. Student responses for strongly agree and agree ranged from 71.4% to 97.1%. Ratings of 71.4% to 77.1% occurred for statements indicating clicker usage helped motivate students to be more prepared, maintain concentration in lectures, stay interested during class, and maintain response anonymity. Statements receiving 82.8% to 88.6% ratings included clicker usage made learning more enjoyable, helped students learn, liked to see how they fared relative to the rest of the class, and enjoyed using clickers. Ratings ranging from 91.4% to 94.2% occurred for statements indicating clicker usage helped students gauge understanding of class content, focus on key knowledge, and clarify subject matter. The highest rating of 97.1% included statements regarding instant feedback and ease of use.

Table 2 Students' narrative comments regarding clicker usage

Please write any additional comments regarding strengths of using clickers.

- I wish we could have more clicker questions on each topic.
- Clicker question are awesome and they help me learn.
- Great anonymous test practice; gives you a great idea of how questions might be worded.
- Love them!
- I feel they really help my learning.
- Practice applying our knowledge to clinical situations and getting feedback is extremely beneficial to me.
- Love them. This way when I'm unprepared or just dumb, no one knows I was the only one who chose the wrong answer.
- Clickers help me become more confident in answering and preparing for test questions.
- Good resource for testing what we know and might be weak in.
- Quick scan of class knowledge.
- Confidentiality
- They help me a lot. Good to test my knowledge and application.
- It's engaging. I also think it's a better use of class time using clickers than straight lecture.
- I have found the clickers to be very useful.
- I liked the clickers.
- They are helpful to know whether or not I understand the concept and opens up discussion.
- Clicker questions are a great way for the instructors to find out if the students are reading and doing preclass work.

Please write any additional comments regarding weaknesses of using clickers.

- I don't see any weakness other than wanting more!
- Battery life.
- The only weakness is when people don't bring them or when instructors don't have clicker questions.
- Some times clickers stop working.
- Prefer the application clicker questions over identifying student knowledge base questions.
- More clicker questions to help prepare us for testing.
- Use them more.
- Would prefer harder questions all the time.

Of the 35 respondents, 18 completed narrative comments. All narrative comments are displayed in Table 2. Results indicate students have a positive perception of using clickers. Written statements by 17 of 18 respondents regarding strengths of clicker usage referred to feedback, student engagement, greater application of theory, and test preparation. Comments included the following: "It's engaging," "Clickers help me become more confident in answering and preparing for test questions," and "They are helpful to know whether or not I understand the concept and opens up discussion." There were 8 of 18 respondents who wrote statements regarding weaknesses of using clickers. These included battery life and a desire for all clicker questions to focus on critical thinking and testing. As one student wrote, "More clicker questions to help prepare us for testing," and another, "Would prefer harder questions all the time."

6. Discussion/Conclusion

In this study, overall student perceptions regarding clicker usage were positive and favorable. Student responses indicated clickers helped gauge their understanding of class content, clarified and focused knowledge, maintained interest during class, assisted them to participate, and helped make learning more enjoyable. Students liked the instant feedback, anonymity, and ease of use and overall enjoyed using clickers. SRS usage is one strategy that promotes active learning, provides immediate feedback to faculty and students, creates a safe environment, and increases student participation.

Although these findings were consistent with prior study findings, limitations include a small sample size in one setting with findings that cannot be generalized to all nursing students. The study measured student perceptions about their learning, which may vary from actual learning. Future research regarding second-year student perceptions of clicker usage would be beneficial. In addition, research evaluating the effect of SRS technology on examination grades, overall course grades, and NCLEX scores is recommended.

This author challenges and encourages nursing faculty to consider SRS technology as a pedagogical tool that can be incorporated into existing classes.

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