

Effectiveness of clickers: Feedback for Developing Clinical Reasoning and Problem Solving

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Findings suggest that nuanced discussion of all possible answers encouraged students to think more deeply about their initial answers and opened them up to new reasoning processes.

93% of the students agreed or strongly agreed that the clicker questions made them think more deeply about their original answers.

80% of students said the case study questions were the most helpful style of questions used.

ABSTRACT:

This project explored how clickers, combined with case-based questions, resulted in increased student engagement, attention, and participation in an introductory clinical nursing course. Clicker questions and ensuing discussion were designed to enable students to practice reasoning through patient situations before entering the clinical setting. Findings suggest that nuanced discussion of all possible answers encouraged students to think more deeply about their initial answers and opened them up to new reasoning processes.

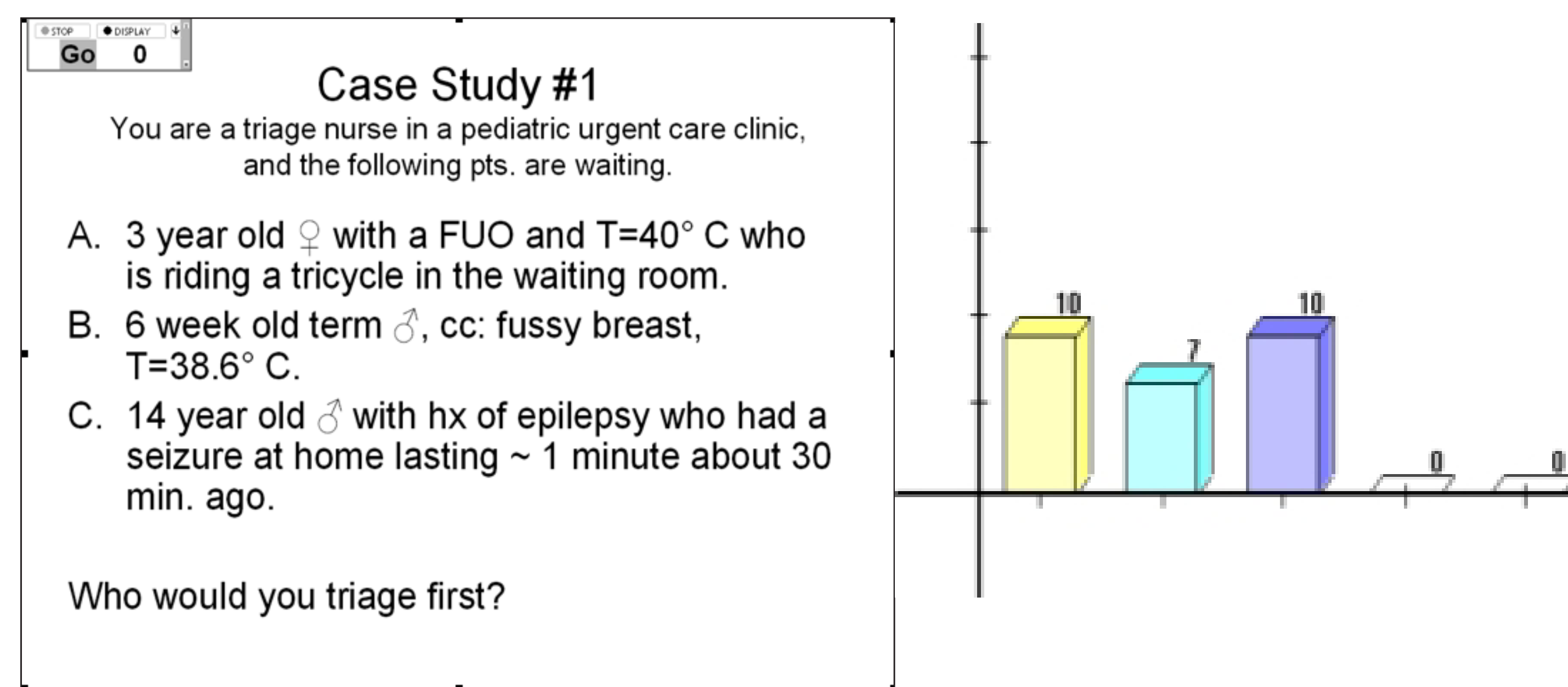


Figure 1. Sample clicker question. On the left is the question displayed in PowerPoint. Note the tool bar at the top left of the image for controlling the clicker software. On the right is the histogram displaying the range and quantity of student answers.

Introduction

All nursing faculty struggle to balance the information conveyed to students with preparing them to enter the clinical setting. Many also find that teaching large lecture-based classes is not conducive to creating deep and enduring understanding in students. Faced with both these problems in an accelerated second-degree nursing program, we implemented our clicker study.

Developing Critical Thinking with Clickers

We designed clicker questions that gradually increased the depth of critical thinking needed to identify correct answers. Figure 1 shows a sample screen shot of a clicker question and how the clicker software automatically displays student responses.

A common pedagogical strategy with clickers is to engage students in peer-to-peer discussion after they have registered their answers, but before the instructor reveals the correct answer.^{1,5} Initially, we followed this protocol and displayed bar graph tabulations that indicated responses before inviting discussion. However, students seemed reluctant to share their personal reasoning and rationales if their answer did not match the answer selected by most of the class. As a result, we began initiating discussion with students about their responses before displaying the answer tabulations and ended up fully discussing the possibilities of each answer. This slight change in practice resulted in discussions in which students were more willing to engage in debate and displayed more respect for peer opinions and perspectives.

Student Perceptions of Clicker Use: Survey & Open-Ended Questions

We asked students to complete a short survey which included some opened-ended questions. Of 86 students, 73 responded, for an overall response rate of 85%.

Questions queried students' opinions on a range of topics, including whether clickers sharpened students' critical thinking skills, helped prepare them for course exams and the NCLEX (professional examination), and whether clickers enhanced their level of classroom engagement and attentiveness. Open-

ended questions asked students what was most and least helpful about the use of clickers in class, what style of questions they found to be most beneficial, what they discovered about their own learning styles, and what suggestions they had for future use of clickers in this course.

Data from the surveys confirmed findings from the literature that use of clickers:

- allowed them to participate more openly (75% agreed)
- helped them to pay attention in class (76% agreed)
- made class more engaging for students (95% agreed)

According to students:

- 61% felt the questions prepared them for the NCLEX professional exam
- 66% felt the clicker questions prepared them for a future career in nursing
- 72% thought the clicker questions helped them prepare for class exams
- 76% thought that clickers helped them hone their critical thinking skills
- 80% of students said the case study questions were the most helpful style of questions used
- 83% agreed that clickers constituted a beneficial use of class time, noting that they "made the information more understandable and relevant" and "opened up discussion about the topic"
- 93% of the students agreed that the clicker questions made them think more deeply about their original answers
- Only 5% of the students reported confusion from hearing wrong answers

From open-ended questions, students said:

- The clicker questions "made me think about things differently, finding I would often change my original thinking when I heard other rationales."
- "discussion of reasoning behind false answers" was helpful, as was "discussing why certain answers were correct and the anonymous opportunity to give your decision facilitated discussion."
- clicker questions "opened up greater perspectives on how to approach and respond to nursing demands."
- the use of clickers "gets you in the mindset of being a nurse and figuring out what your priorities should be."
- "my thinking pattern was not on the right track."
- it was helpful to "apply the information we were learning."
- the most helpful aspect of using clickers was "putting us in situations to think critically."

Conclusion

Our survey findings suggest that clickers used in a first semester second-degree nursing course increased student engagement, attention, and participation. Furthermore, students perceived clickers to be a beneficial use of class time, as well as helpful in preparation for examinations and future careers. Both our use of case-based clinical reasoning questions and the discussion strategy of walking students through the nuances of each possible answer after they committed to an answer but before they saw their classmates' responses capitalize on DeBourgh's concept of "witnessed dialogue," where "the developing practitioner sees how the expert uses factual knowledge and experience to effectively recognize and respond to complex situations."¹ As one student reported, "understanding how the professor arrives at answers" was the most helpful aspect of using clickers.

REFERENCES

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NOTE: A more thorough report of this study is available in *Nurse Educator* Vol. 36, No. 1, pp. 13-15.