The Flipped Classroom and Situational Awareness: Clinical Reasoning for Bachelor's Degree Students

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Purpose:

Background: Traditionally, students learn new material in the classroom and work at home to refine their understanding. In the flipped classroom, this paradigm is reversed, so students learn new material at home and have the opportunity to practice the new material in the classroom. The student has the responsibility to independently learn the new material at home using written through on-line material, recorded videos, and lectures (Moffett, 2015). In the classroom, the students participate in interactive activities to gain practice with the new material (Butt, 2014) including small groups, question and answer sessions, and small projects (Houston & Lin, 2012). This method enables students to share information and knowledge, and to be involved in higher-order learning that improves their academic achievement (Fulton, 2012). The flipped classroom involves partnership, and team-based learning; moreover, it prepares students to be actively responsible for their own self-directed learning (Bergmann & Sams, 2012; Della Ratta, 2015; Mason et al., 2013). The flipped classroom though new, has been successfully implemented in a few recent applications to nursing (AACN, 2011; Hamdan et al., 2013). Another advantage of this paradigm is that it is consistent with the continuing education and updating of knowledge and skills that are expected of registered nurses throughout their careers.

Perception of learning among current students (called "generation Y") are technically oriented, using computers, smartphones, and I-pads with alacrity. Moreover, they tend to prefer immediate feedback and are easily engaged.

An optimal course to begin the flipped classroom is one with strong and direct applications to clinical practice. Thus, the clinical reasoning course, which is paired with clinical practice, is ideal as the course goal is to increase the students’ ability to learn in dynamic, high-stress, and complex environments (Bhoyrub et al., 2010). Moreover, this required course was historically problematic in our University as students complained that it was “boring,” “without enough interaction,” and “packed with so much information that they were unable to really understand and process it.” Thus, the Head of the Academic Clinical Unit targeted this course for the flipped classroom approach.

The flipped classroom according to Endsley’s Situational Awareness Model (SA), has three levels of perception in a given situation: (1) Level I - the Perception of the Elements in the Environment - involves awareness of the status, attributes, and dynamics of relevant elements in the topic area, and gathering all the information that is currently available; (2) Level II - Comprehension of the Situation - is the synthesis of the amalgam of elements (Level I), and organizing this synthesis of knowledge so that the implication and context of the topic area and its relevance forms a clear, holistic mental picture to the clinical practitioner. (3) Level III - Projection of future status – further builds on the foundation of the previous levels and enables students to use their knowledge to project and anticipate future actions.

Methods:

Five classrooms of third year, fall semester, baccalaureate nursing students (n=140) attending the required Clinical Thinking course (which is paired with medical, surgical and pediatric clinical practicum) were involved in the flipped classroom. Preparation for the flipped classroom included rewriting all the lecture material for video-taped lectures, construction and arrangement of an interactive modules, and placement on an online platform. Included in these modules was a quiz that was administered automatically after viewing the lecture. Students could not access the quiz, unless they had opened the
lecture. Moreover, they could not proceed to the next lesson if they had not completed the quiz of the previous lecture. The classroom activities, which ordinarily contained lectures, were reserved for exercises including puzzles, question-and-answer sessions, games, and peer-learning activities (this latter element was administered as a reward to the highest achieving students). The quizzes where short containing only ten questions, eight questions relating to Level I perception, and two questions relating to Level II perception. Classroom activities were relegated to Level III perception.

Results:

Grades of the quizzes were similar to those of the traditional course in previous years. Students' scores on Level II perception exercises were high. The students reported that the learning was more interesting and that they better understood the connections between the classroom learning and learning in practice. They had more insight on their clinical practice learning, and were aware when their learning did not achieve a high level of professional nursing.

Student comments included: “it’s lots of fun to play the games in the class because we are repeating the topics that we had in the online lectures”, “some online lectures are technically poor but by using the games and exercises in the classroom I managed to understand them”, “the quizzes are short and not too hard”.

Faculty comments were: “We can interact more actively with students and discuss with them all sorts of issues”, “The students can demonstrate how they understood the clinical topics being studied”, “Students can check what they did not understand from the online lecture they would like us to discuss and explain in class”.

Conclusion:

Combining the flipped classroom with the three levels of Endsley Situational Awareness Model forms an ideal teaching methodology that instills student responsibility, autonomy, engagement, and matches the current student generation that is attended to online learning and immediate feedback. The majority of student and faculty responses were extremely positive. Students felt more connected to the learning materials and were more insightful regarding their learning and its application to clinical practice. As a result, they could more easily bridge the gap between academics and clinical practice. Faculty believed that this method facilitated better learning and enhanced students’ ability for clinical thinking.

Title:
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References:
Abstract Summary:

In the flipped classroom, students learn new material at home and gain practice in the classroom, rather than by the traditional method. This presentation describes the implementation of the flipped classroom through the application of the three levels of Endsley's Situational Awareness Model.

Content Outline:

Background:

1. Flipped Classroom

A. Traditionally classrooms introduce new material and homework is for further refinement.

B. Flipped classrooms reverse the traditional paradigm so that students learn new material at home and have the opportunity to practice the new material in the classroom.

C. The goal of learning is to:
(1) enable students to gain higher-order learning

(2) improve their academic achievement.

D. The flipped classroom is consistent with the continuing education and updating of knowledge and skills that are expected of registered nurses throughout their careers.

2. Endsley's Situational Awareness Model (SA)

A. Level I - the Perception of the Elements in the Environment - involves awareness of the status, attributes, and dynamics of relevant elements in the topic area, and gathering all the information that is currently available;

B. Level II - Comprehension of the Situation - is the synthesis of the amalgam of elements (Level I), and organizing this synthesis of knowledge so that the implication and context of the topic area and its relevance forms a clear, holistic mental picture to the clinical practitioner.

C. Level III - Projection of future status – further builds on the foundation of knowledge of the previous levels so the students can project the future actions of the elements in the environment.

Methods:

1. Five classrooms of third year, fall semester, baccalaureate nursing students (n=140) in the Clinical Thinking course.
2. Preparation - rewriting all the lecture material for video-taped lectures, construction and arrangement of an interactive modules, quizzes and placement on an online platform.
3. Student interface - No access the quiz, unless they had opened the lecture, lectures in sequence. Focus on Level I and Level II perception.
4. Classroom activities - exercises including puzzles, question-and-answer sessions, games, and peer-learning activities (this latter element was administered as a reward to the highest achieving students). Classroom activities were relegated to Level III perception.

Results:

1. Grades of the quizzes were similar to those of the traditional course in previous years.
2. Students' scores on Level II perception exercises were high.
3. Student satisfaction was high. Learning at a higher level was obtained.
4. Faculty satisfaction was high. Teaching more focused and at a higher level.

Conclusions:

1. Combining the flipped classroom with the three levels of Endsley Situational Awareness Model forms instills student responsibility, autonomy, engagement, and matches the current student generation.
2. Flipped classrooms using the three levels of Endsley Situational Awareness Model is an ideal methodology.

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