Student Response Systems for Feedback and Review during Lectures

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Opportunities for feedback and review during lectures

This position paper argues in favour of the need to improve opportunities for timely feedback and review during lectures with the integration of a Student Response System (SRS). Traditionally, many higher-education courses have been delivered in large lecture theatres where an instructor presents or explains key knowledge-based concepts or skills to a large number of students (Chen, Whittinghill, & Kadlowec, 2012; Roselli & Brophy, 2006). In this environment, feedback has typically been given to learners though assignment, quizzes, and examinations, yet, unfortunately, these methods often delay opportunities for feedback and review (Chen et al., 2012). Roselli and Brophy (2006) found that any students' misconceptions and misunderstandings of concepts could go unchecked and unresolved until one of these feedback methods had been completed, typically at the end of the course. The authors also found that learners do not always grasp every concept presented in a lecture as intended by the instructor and there is little point in continuing to the next concept or topic if the previous has gone largely misunderstood.

According to Chen et al. (2012), "providing feedback to students of their current level of understanding of concepts is critical for effective learning" (p. 159). The majority of students surveyed in their study wanted rapid feedback on their level of comprehension and felt that their overall performance in the course would be affected negatively without it. The authors found that, for students, there was a lack of timely feedback and opportunities for review to improve learning before graded examinations. For faculty, the challenges related to identifying which concepts were being understood and which were proving to be more difficult to comprehend.

Student Response Systems for providing feedback

Student Response Systems (SRSs), (also known as clickers) offer two-way (instructor-students) communication that can have an increased positive effect on student learning and retention (Terrion & Aceti, 2012) and enhance and assist many traditional pedagogical approaches (Trees & Jackson, 2007). They "offer feedback to both instructors and students as to how well concepts are being understood" (Kay & LeSage, 2009, p. 242). Kay and LeSage (2009) suggested that, without the use of a tool similar to an SRS, it is difficult for faculty to assess the overall student comprehension of topics discussed and presented in a lecture. With the use of an SRS, each student is encouraged to provide a response to every question and, as a result, there is an increase in the number of

opportunities to respond to questions designed to assess their comprehension (Blood, 2012). Such devices have been embraced by university faculty to augment and support lecture based pedagogy (Kay & LeSage), particularly in large classes in science education (Lin, Liu, & Chu, 2011).

Terrion and Aceti (2012) found that students perceived that SRSs foster engagement in otherwise passive lectures and, more importantly, they believed that SRSs had a positive effect on their comprehension and retention of course material. In addition, Ioannou and Artino (2010) found that students favored the integration of an SRS in the classroom and considered it to be an effective tool for gauging their understanding of material and concepts presented and discussed in class. Students have also reported that an SRS was their preferred way to review the course material, which, in the end, reinforced their learning (Fike, Fike, & Lucio, 2012). Ioannou and Artino suggested that "receiving immediate feedback and monitoring student understanding was the most highly-cited benefit" (p. 320) of the use of SRSs in the classroom.

Findings from Terrion and Aceti (2012) indicated that students recognized that instructors were responsive to the feedback from the SRS identifying the lack of understanding of the current concepts. This real-time feedback can prompt instructors to provide further instruction and discuss any misconceptions in a quick and timely manner, reassess, and, if satisfied with the level of understanding, continue (Stav, Nielsen, Hansen-Nygård, & Thorseth, 2012). Moreover, Terrion and Aceti found that once students had indicated their level of understanding, instructors responded by modifying the class activities to focus on areas that the students did not achieve an acceptable level of understanding.. Blood (2012) also found evidence that supported that review and feedback supported by SRS had a positive effect on long-term retention of information. Ioannou and Artino (2010) reported that such results were evident due to the "unique affordances" (p. 321) that SRS contributed to classroom pedagogy.

Obstacles to use of Student Response Systems

Ioannou and Artino (2010) reported that several students thought that the SRS was time-consuming and wasted instructional class time. These findings were also supported by Lin et al.'s (2011) study in which students expressed concern that using SRS was resulting in too much repetition during class and, as a consequence, instructors were rushing to complete the lecture in time. While Blood (2012) reported positive findings for the increased opportunities for students to response to questions, some students found stressful the expectation to give responses to all questions. Some students also felt that they were excited initially with the technology; however, they eventually found that the SRS became a distraction (Ioannou & Artino, 2010). Blood found that students' interest and engagement during lectures using a SRS was higher at the start of the course,

however, over time, the novelty of the new technology diminished for some students and they became disengaged and uninterested.

Trees and Jackson (2007) suggested that students may begin to lose interest or react negatively "if they do not see the use of [SRSs] as necessary to an instructor's pedagogical style" (p. 35). It is important for students to be aware of the relevance, benefits, and role of the questions, SRS, feedback, and review to the overall instruction and learning (Trees & Jackson). Thus, successful integration of an SRS, as proposed by Trees and Jackson, depends less on faculty and more on the student's acceptance of the technology and its potential effectiveness.

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