Chapter 2
Learning the Active Way: Creating Interactive Lectures to Promote Student Learning

Chris Campbell
Griffith University, Australia

Heidi Blair
Griffith University, Australia

ABSTRACT

This chapter, by highlighting research project examples, reports on methods of active learning to promote student engagement in previously static classes. Through these examples, one can explore how increased lecture interactivity can be accomplished via the implementation of strategies sans technology and those that leverage the often ubiquitous wireless Internet accessed by mobile devices found in higher education learning spaces today. A variety of practices for engaging students in lectures are described including those that promote student voice through various emerging technologies. Technologies discussed include learner response systems, 3D simulations, videos, online web applications such as Padlet and tlk.io, as well as various other feedback systems. Learning design theory is used to relate the case studies included to the latest theory.

INTRODUCTION

Student centered learning can be challenging (Kerr, 2011), particularly in large classes, however, with ready access to technology by most students, and through collaborative learning this can occur in today’s classrooms. New understandings around the theory and practice of learning design and increasing use of active learning strategies have assisted in this happening. Although implementing change in one’s teaching can be challenging for even the most experienced of teachers, this can be done through the iterative modification of teaching pedagogies and through a gradual change in mindset (Kerr, 2011).

In addition to increased learning, another catalyst to include active learning in lectures is to attempt to improve student retention rates and student engagement in higher education. Overall, in the United

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States only 59% of full-time four-year college students graduate within six years (US Department of Education, National Center for Education Statistics, 2013). Thus, Universities are now focusing on improving rates of students graduating within four to six years. This chapter, using empirical data from previous projects, attempts to report and describe an assortment of the effective ways classes can have greater student engagement through lecture interactivity. Discussion of the current literature is illuminated by three projects previously conducted. The discussion includes a section with tips for implementing interactivity during lectures as well as a general discussion on active learning.

BACKGROUND

The 2017 Horizon Report suggests that pedagogical approaches to creating richer, hands-on and authentic learning experiences are warranted because students “learn by experiences, doing, and creating, demonstrating newly acquired skills in more concrete and creative ways” (Adams Becker, Cummins, Davis, Freeman, Hall Giesinger, & Ananthanarayanan, 2017, p. 6). The Adams et al., report asserts students are now active contributors to their learning and as such, educators facilitate this new way of learning by creating interactive lectures via a variety of methods. This is a clear shift from previous generations of students, who were required to sit passively in lectures to learn, as well as structuring their learning in other, more passive ways. With access to new and emerging technologies and wireless networks, it is now possible to create interactive lectures that all students are able to confidently participate in with the mobile devices they carry with them.

Student centered learning is a common pedagogical approach that uses a social constructivist background and informs today’s contemporary teaching practices (McLoughlin & Lee, 2008). Another study suggests educators will use interactive tools and in particular, learner response systems according to their existing pedagogical frameworks, which in the study were generally based on constructivist learning theories (Monk, Campbell, & Smala, 2013).

In this chapter’s literature review both active learning and learning design will be defined. Enhancing student learning using learner response systems will also be examined. Giving students near-immediate feedback and teaching large classes are also dissected with the current literature, as are other tools that promote active learning.

LITERATURE REVIEW

Active Learning

Active learning, where students are in class and learn in an active learning environment, as opposed to passively is increasingly favored in the higher education environment. Thus, establishing a constructivist environment for the teaching process, instead of employing transmissive practices is one of the most influential factors of student attitudes in class (Massingham & Herrington, 2006). This means that using constructivist learning, for example through active engagement in class while allowing the students to construct knowledge supports the teaching environment to shift from teacher-centered instruction with passive and individual student learning to have a greater emphasis “on approaches that involve problem solving, collaboration, discussion, authentic contexts, and action” (Massingham & Herrington, 2006, p.