Introduction

Active learning approaches have been shown to be effective in undergraduate education on multiple occasions (Armbruster, Patel, Johnson, & Weiss, 2009; Carmichael, 2009; Nelson & Crow, 2014). These pedagogical techniques lead to several positive outcomes, such as improving student academic success, learning, engagement, and attitudes (Campisi & Finn, 2011; Cavanagh, 2011; Yoder & Hochevar, 2005). However, these outcomes have primarily been determined through the study of individual courses that implement active learning pedagogy; consequently, there is a lack of literature that synthesizes the active learning benefits found in undergraduate classes. This review is needed because it is important to determine the most salient and common benefits of active learning in order to inform instructors as well as other groups in higher education. For the purposes of this literature review, active learning (AL) is defined as any pedagogical strategy that encourages students to engage in the material, in the form of meaningful activities that support course learning outcomes (Prince, 2004).

Methods

An exhaustive search for scholarly, peer-reviewed articles was completed on AL pedagogy in undergraduate education. This search was conducted using several online databases through Academic Search Complete and EBSCOHost, including ProQuest, Taylor and Francis Online, NCBI, and Wiley Online Library. The current literature search was carried out between August 2015 and October 2015. Keywords included in the search were active learning and higher education, learner-centered teaching and college or university, active learning and college students, and active learning and undergraduates. In addition to the use of online databases, scholarly, peer-reviewed articles were also obtained through recommendations from experts in the field as well as through ancestral review. Articles included in this literature search
were empirical, peer-reviewed studies published between the years of 2000 and 2015. Selection criteria for this search included studies that either involved (a) the implementation of AL strategies and (b) the exploration of outcomes for students as a result of AL. Reviewed articles encompassed either university or college level teaching, solely at the undergraduate level. Articles that dealt with either high school or elementary school pedagogy, in addition to graduate school teaching, were excluded. In addition, any articles that solely involved faculty or instructor outcomes as a result of AL were not included in this review.

Results

The reviewed articles assessed the outcomes of AL for undergraduate students. As outlined in the following table, there were four main categories of outcomes for undergraduate students as a result of AL pedagogy: (1) Academic Performance, (2) Comprehension of course content/ Learning, (3) Engagement, and (4) Attitudes. A fifth category, “Other Skills,” includes miscellaneous outcomes that were only present in one or two articles. Twelve out of the fifteen articles measured two or more of these outcomes. In addition to assessing the positive outcomes of AL for undergraduate students, some of these articles found that AL might be of particular importance for certain groups in terms of effectiveness. These groups include first generation students (Eddy & Hogan, 2014), minorities (Eddy & Hogan, 2014; Preszler, 2009), and women (Preszler, 2009), in addition to low-performing students (Gauci et al., 2009).

Discussion & Conclusion

Based on this literature review, it is clear that AL should be used in the undergraduate classroom, due to the fact that an overwhelming amount of studies have reported positive outcomes as a result of AL pedagogy (Armbruster et al., 2009; Carmichael, 2009; Nelson & Crow, 2014). However, we do not know how widespread AL is or how often AL is being used
with undergraduates. Very few articles were found concerning the extent that AL is
implemented in universities. That being said, in the field of physics, faculty members are not
using AL techniques in their classrooms (Henderson & Dancy, 2007). In fact, out of 722 physics
faculty surveyed by Dancy and Henderson (2010), only 10% report having their students solve
and discuss problems in class, while 48% report lecturing in almost every class. In this field, this
is a problem that should be addressed and solved.

For other disciplines, on the other hand, research is lacking surrounding the occurrence of
AL pedagogy. Because of this, there is a distinct need for research on AL rates across
disciplines. Since AL is such a successful technique in several different ways (Campisi & Finn,
2011; Cavanagh, 2011; Terenzini et al., 2001, Yoder & Hochevar, 2005), it is important to keep
better track of who is using it and who is not, in order to determine if action needs to be taken to
implement AL in certain disciplines, colleges, or universities.

Another gap in the research is surrounding how AL affects specific groups of students.
Some of the studies reviewed found that AL works particularly well for women (Preszler, 2009),
minorities (Eddy & Hogan, 2014; Preszler, 2009), and low-performing students (Gauci et al.,
2009). However, these are the only articles found that touched on this topic. Helping
underrepresented students and women succeed in the undergraduate classroom is important not
only for diversity, but for the success of our society as a whole in terms of innovation and
creativity (Espinosa, 2011; Ong, Wright, Espinosa, & Orfield, 2011). In addition, closing the
gap between low- and high- performing students is also important. Therefore, more research
should be done on how AL impacts specific groups so that educators can figure out the best way
to apply AL in their classrooms, in addition to informing university teaching policies.
References


centered active learning in lectures with a personal response system. *Advances in Physiology Education, 33*(1), 60-71.


Collaborative Learning vs. Lecture/Discussion: Students' Reported Learning Gains.
