Active Learning in Online Learning Environments for Adult Learners

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Abstract

Active learning is an instructional technique that involves students' active participation in the learning process through a variety of activities. Due to the rapid development of emerging technologies, online education becomes one of the major approaches to learning for adult learners. Active learning strategies applied in a traditional classroom environment may also be applied to online learning. It is necessary to explore the application of active learning in accordance with the characteristics of adult learners. In addition, we need to understand how online learning and active learning strategies can assist adult learners in developing their competencies for sustainable futures and becoming successful lifelong learners in the information explosion era.

Introduction

Active learning is an instructional technique that involves students' active participation in the learning process through a variety of activities (Bonwell & Eison, 1991; Escribano, Aguera, & Tovar, 2013; Hativa, 2000). Traditional active learning methods that are usually implemented in traditional classroom environments, evolved away from the static lectures to a learning environment where students actively engage in the learning process (Strage, 2008). Due to the rapid development of emerging technologies, online education becomes one of the major approaches to learning for adult learners (Allen & Seaman, 2008; Parsad & Lewis, 2008). The percentage of the online student population has been increasing, from 9.6% in 2002 to 32% in 2011 (Allen & Seaman, 2013). Online learning shifts the use of active learning for adult learners from traditional classroom learning to web-based learning with the use of various technologies (Muncy & Eastman, 2012; Paetzold & Melby, 2008; Shieh, Chang, & Tang, 2010).

A substantial amount of research has shown that there are no significant differences between the effectiveness of online learning and traditional face-to-face learning, and that the active learning strategies applied in a traditional classroom environment may also be applied to online learning (Allen, Bourhis, Burrell, & Mabry, 2002; Brown & Liedholm, 2002; Johnson, Aragon, Shaik, & Palma-Rivas, 2000). It is necessary to explore the application of active learning in accordance with the characteristics of adult learners. In addition, we need to understand how online learning and active learning strategies can assist adult learners in developing their competencies for sustainable futures and becoming successful lifelong learners in the information explosion era.

Objectives/Purpose

The objectives of this paper include:

- We address the history of active learning based on a review of existing literature on active learning.
- We also introduce the types of active learning strategies along with the theories that support active learning.
- In addition, we indicate the learning outcomes that are relevant to active learning and discuss the advantages of utilizing active learning strategies.

Method and Data Source

We reviewed articles related to active learning through EBSCO. Key words were utilized including active learning, active strategy, adult learning, and online learning. Articles that are not relevant to the topic were removed.

Findings

An Introduction to Active Learning

Active learning is a student-centered approach to learning that focuses on students' active involvement in the learning process (Deneve & Heppner, 1997; Escribano, Aguera, & Tovar, 2013; Mumoz, Martinez, Cardenas, & Cepeda, 2013). Bonwell and Eison (1991), the leaders of active learning, have contributed much to its development and the acceptance of active learning as a feasible approach to enhancing student learning. Student activity and engagement in the learning process are the two major elements of active learning (Prince, 2004). In active learning, students take responsibility of their own learning. Students learn best through "learning by doing," in which students are required to actively participate in meaningful learning activities and think about what they are doing (Gardner & Belland, 2012). Active learning may fit the needs of adult learners because adults are self-directed learners who intend to control their learning progress and prefer to work on something practical that connects life experiences and learning (Merriam, Caffarella, & Baumgartner, 2007). Active learning is aligned with the adult learning principles (see Table 1).

Table 1.
Alignment of the Characteristics of Active Learning with the Adult Learning Principles

Characteristics of Active Learning	Addressed Adult Learning Principles
Students are more involved than in passive listening,	Learner's need to know; Self-concept of the learner
Students are engaged in activities such as reading, discussing, and writing	Learner's need to know; Self-concept of the learner; Readiness of learn; Orientation to learn
Student motivation is increased	Motivation to learn
Students can receive immediate feedback	Learner's need to know; Orientation to learn; Motivation to learn
Students may be engaged in higher-order thinking, such as analysis, synthesis, and evaluation	Learner's need to know; Prior experience of the learner; Readiness to learn; Orientation to learn

Active learning strategies encompass various activities (e.g., icebreakers, class discussions, answer pairs, one minute paper, cooperative learning, student debates, games, role-playing, Jigsaw, computer-aided instruction). Selection of appropriate active learning methods depends on the level of students and the content that is being taught. Learner motivation increases when active learning strategies are appropriately adopted in an instruction (Carroll & Leander, 2001).

Active learning strategies have been developed as effective methods to complement traditional classroom learning that is primarily static lecture-based (Paetzold & Melby, 2008). Applying active learning instruction will help increase student interaction and knowledge retention in the traditional classroom learning environment (Paetzold & Melby, 2008). Passive learning, as opposed to active learning, does not require students to actively participate in learning activities. Instead, passive learners are instilled knowledge from the instructor through lecture-based instruction or receive information by reading course materials on their own (Phillips, 2005; Prince, 2004; Wilson, Pollock, & Hamann, 2007). Fewer higher-order cognitive learning skills, such as analysis and critical thinking, are developed through passive learning, and lower-level learning, including rote memory and reciting, often becomes the outcome. Dale's (1969) cone of learning, a visual metaphor for learning modalities, indicates the differences between active learning and passive learning in terms of the degree or levels of learning that takes place with different learning modalities involved. When examining a variety of active learning strategies, we found that active learning strategies address the adult learning principles to a large degree (see Table 2).

Table 2.
Active Learning Activities and Adult Learning Principles

Active Learning	**Adult Learning Principles**					
Activities	Learner's need to know	Self-concept of the learner	Prior experience of the learner	Readiness to learn	Orientation to learning	Motivation to learn
Ice breakers	–	–	v	–	–	v
One minute paper	v	–	v	–	–	v
Question/ answer pairs	v	–	v	v	v	v
Class discussions	v	v	v	v	v	v
Student debates	v	v	v	v	v	v
Role playing	v	v	v	v	v	v
Games	v	v	v	v	v	v
Cooperative learning	v	v	v	v	v	v
Jigsaw	v	v	v	v	v	v
Case study method	v	v	v	v	v	v
Fieldwork	v	v	v	v	v	v
Independent study	v	v	v	v	v	v
Computer-aided instruction	v	v	v	v	v	v

Note. The sign "v" refers to the activity that represents the principle, and "–" indicates that the activity does not well represent the principle.

Underlying Theories of Active Learning

The claim of constructivism that people learn by constructing their own understanding and knowledge of the world based on previous experiences and prior knowledge serves as the foundation of active learning. In the view of constructivist, learning is a process of knowledge construction instead of knowledge recording or absorption (Anthony, 1996; Chalufour, 2014; Füllsack, 2013). The role of learners is shifted from a passive recipient of knowledge to an active constructor of knowledge who builds an internal illustration of knowledge and a personal interpretation of experience. Learners are knowledge-dependent as they build on current knowledge to construct new knowledge. Moreover, active learners are often aware of the processes of cognition and can control or regulate them based on their needs or situations. These assumptions of constructivism are in line with the core elements of active learning.

Learning Outcomes as a Result of Active Learning

Active learning has been linked to better learning outcomes, including achievement, attitudes, and behaviors (Michel, Cater, & Varela, 2009; Taraban, Box, Myers, Pollard, & Bowen, 2007). Particularly, research has shown that active learning strategies enhance learners' higher-order thinking, including critical thinking, problem-solving, synthesis, analysis, and evaluation (Bonwell & Eison, 1991; Richmond & Hagan, 2011). Development of higher-level thinking becomes one of the most significant aims for active learning (Pundak, Herscovitz, & Schacham, 2010).

A wide range of evidence supports the importance of active learning in receiving higher-order thinking, and its superior role over traditional learning methods. The conceptual framework of active learning proposed by Watkins, Carnell, and Lodge (2007), which implicitly depicts the cognitive learning domain of Bloom's taxonomy, provides a basis of the measurement of learning outcomes for active learning. The three distinct dimensions in this framework include behavioral, cognitive, and social elements (Watkins, Carnell, & Lodge, 2007). This framework rests on two relevant constructivist theories, cognitive constructivism and social constructivism.

The Advantages of Applying Active Learning Strategies

Based on the positive learning outcomes from active learning, researchers have discussed the benefits of active learning (Bonwell & Eison, 1991; Phillips, 2005; Watkins et al., 2007). In addition to its academic advantages, active learning has been shown to bring social and psychological benefits (Gavalcova, 2008; Slavin, 1996). These benefits of applying active learning include an increase of learners' motivation to learn, self-confidence, and self-reliance; enhancing the opportunities to retrieve previously learned knowledge; fostering social interdependence and support; improving attitudes towards subject areas and student retention; and enhancing skills to collaborate, communicate, or interact with others (Gavalcova, 2008; Kane, 2004; Phillips, 2005; Watkins et al., 2007). Moreover, active learning is found to be positively related to perceived course quality (Taylor & Ku, 2011).

Active Learning and Adult Learners in Online Learning Environments

Application of Active Learning among Online Adult Learners

The active learning strategies applied in a traditional classroom may be also applied to an online course with adult learners, as long as the multiple learning styles of adult learners are considered (Paetzold & Melby, 2008). Cost, individual learning styles, instructional skill sets, and technology support are important factors that influence an instructor's decision of selecting active learning strategies (Phillips, 2005). Although there are different types of active learning strategies, not all of them can be properly applied in online settings. Instructors need to understand the needs of online adult learners with different learning styles and be prepared to utilize active learning strategies to help each style of adult learners and enhance student interaction in online settings (Kuo, Walker, Schroder, & Belland, 2014; Paetzold & Melby, 2008; Phillips, 2005; Vincent & Ross, 2001).

To incorporate active learning techniques into online learning, instructors must know the technology they choose for an online course (e.g., the strengths and weaknesses of technology tools, main features, potentials, quality), and think about whether the selected technology tool can efficiently engage adult learners in active learning activities, and thus, enhance student learning outcomes (Parker, Lenhart, & Moore, 2011; Phillips, 2005). Although the selection of proper technology tools is important for an online course with adult learners, the focus should not be the technology, but the development of an online course that incorporates active learning.

Important Factors for the Design of Online Active Learning

A proper design of active learning in online settings is necessary to facilitate student learning processes. Hutchings, Hadfield, Howarth, and Lewarne (2007) indicated seven principles that guide the design and development of active learning in web-based learning environments. Formed based on Kolb's (1984) experiential learning cycle and Laurillard's (2002) conversational framework, these guiding principles of active learning design emphasize the relationships between learning process and the role that teachers play to guide learners by taking both learner-centered and teaching-focused approaches into consideration. These principles also represent the important factors that instructors or instructional designers should consider when developing an online or web-based course with active learning.

Challenges and Difficulties of Implementing Active Learning in Online Settings

Although much evidence has shown the benefits of applying active learning, many faculty members are reluctant to utilize it in the class due to the obstacles they have encountered, especially in online courses. These obstacles include content coverage issues, time consumed, fears of new learning techniques, student reaction, teacher characteristics, technology, and pedagogical issues (Faust & Paulson, 1998; Michael, 2007). It takes too much time for faculty to prepare for a course incorporating active learning techniques, especially for those who teach a new course or who are using active learning the first time (Michael & Modell, 2003). A fear of utilizing new innovative learning strategies is another impediment to incorporating active learning. In addition, lack of teacher maturity and perceptions of colleagues may influence the adoption of active learning. In addition to the problems that the teachers encounter, students may also experience some barriers in an active learning class (Michael, 2007).

Conclusion

We review the major trend of online learning in adult learning, the concept of active learning, and the application of active learning in online learning environments. Public and private institutions have been offering more online courses or degrees than before. Online learning provides extended opportunities for adults in the workforce to earn a college or an advanced degree, which helps resolve the shortage of future positions in the United States. Adults return to the school for many reasons, and facing the changes in life and career plans appears to rank the top of the list for adults to continue the education. Online learning benefits adults in several ways (e.g., convenience, life transitions, professional development, and increased chances for future promotions). It is important to design effective online learning by considering the characteristics and learning needs of adults. Active learning is an instructional method that can facilitate adults' learning in online settings. It has the potential to increase adult learners' levels of engagement in the learning processes and, thus, enhance the effectiveness of online learning.

Although active learning is popular in K-12 or higher education, there is limited research of active learning in the adult education literature. Few researchers have addressed the role of active learning in continuing education from the perspectives of adult learning. The majority of active learning research was completed through case studies. On one hand, there is a lack of online active learning studies at program or institutional levels. It is necessary to include the viewpoints of the faculty, program directors, or institutional leaders for active learning. On the other hand, researchers should investigate non-traditional adult learners' perspectives of attending online courses involving active learning strategies. In addition, this study did not draw on the literature in training. Future studies should extend the application of active learning to both formal (e.g., courses offered towards a degree program) and informal (e.g., training) learning settings, and compare the use of such instructional method in two different settings.

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