ONLINE EDUCATION, ACTIVE LEARNING, AND ANDRAGOGY:
An approach for Student Engagement

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ABSTRACT

Online learning opportunities have become essential for today's colleges and universities. Online technology can support active learning approaches to learning. The purpose of the paper was to investigate why active learning in online classes has a positive effect on student engagement. A review of the literature revealed that research studies have been conducted to investigate the benefits of active learning. There exists extensive evidence to support the notion that active learning enhances learning of course content in comparison to more conventional learning approaches. Effective active learning activities and assignments enhance the likelihood that a deeper understanding of the subject matter will emerge. Technology also works harmoniously with andragogy. Technology offers multiple choices for adult learners to be self-directed and in control of learning, connect new learning with past experiences, and link new learning to real-world problems. A deeper understanding of why active learning approaches to learning in online classes have a positive effect on student engagement will help educators with the design of online classes. In addition, an understanding of andragogical principle of learning and how they connect to active learning approaches will assist in engaging students in the learning process. Students academically engaged in the learning process are more likely to graduate from college.

Keywords: Online learning, distance learning, active learning, andragogy.

INTRODUCTION

Distance learning has transformed education. Specific transformations in higher education include:

- ➢ premiere institutions are now offering online education,
- ➢ e-learning opportunities have proliferated,
- ➢ academic publications on e-learning topics have grown, and
- ➢ marketing efforts on the benefits of e-learning have increased.

In a review of the research, Tallent-Runnels, Thomas, Lan, Cooper, Ahern, Shaw, and Liu (2006) maintained that online education has been increasing at a rate of 33% annually in the United States. The Sloan Consortium, a professional online learning association dedicated to promoting excellence in e-education, claimed that online education exceeds the overall growth rate in higher education (Allen & Seaman, 2010). Consequently, online education has become essential for today's colleges and universities (Larreamendy-Joerns & Leinhardt, 2006).

Research revealed mixed reviews regarding academic achievements between online education and face-to-face instruction. In addition, students have communicated both satisfaction and dissatisfaction with the delivery of online classes (Kim & Bonk, 2006). Married, graduate students residing off campus and males, for example, were more satisfied with online education (Beqiri, Chase, & Bishka, 2010). In a survey of 128 online students, according to Pastore and Carr-Chellman (2009), faculty and students perceived online education to be as effective as face-to-face education. Furthermore, both graduate and undergraduate students communicated that they were able to save time, enjoy more flexibility, earn equal grades, and take more courses online. However, students tended to feel less satisfied with totally online instruction and showed higher attrition rates (Rovai & Jordan, 2004). These mixed reviews become even more perplexing with the excessive e-learning options available (Kim & Bonk, 2006). In other words, online learning methods are experiencing a "perfect e-storm" (p. 22).

Malcolm Knowles, credited with giving renewed insight into adult education (Knowles, 1968), predicted in 1989 that technology would provide "new opportunities" (Knowles, Holton, & Swanson, 2011, p. 242) and "rich learning experiences" (p. 242) for adult learners. He also predicted that technology would one day play a significant role in adult learning because learners could be in control of their own learning at a time and place that is convenient for them. Knowles claimed that technological learning opportunities would provide adults with:

> ➢ self-directed learning possibilities,
> ➢ opportunities to customize learning that correspond to individual learning needs, and (c) problem-centered learning in more realistic environments. The end result would be more effective learning for adult students (Knowles et al., 2011).

Online learning does however, present unique challenges for higher education. To begin with, e-learning does not guarantee learning and all too frequently students do not have the necessary confidence, motivation, or metacognitive skills necessary to engage in a self-directed, online learning environment. This academic engagement, according to Tinto (2012), has a positive impact on student retention and success. Consequently, the more students are academically engaged in learning the more likely they will "stay and graduate" (p. 64). The best way to engage students, maintained Friedman and Friedman (2013), is by using social media in learning activities and assignments because it keeps today's students interested.

Online learning, or e-learning, requires that students have previously developed the skills of self-directed learning prior to enrolling in online classes. Such cognitive skills typically develop between the ages of 16 and the mid 20s (Czabanowska, Moust, Meijer, Schroder-Back, & Roebertsen, 2012). Students need to be self-directed learners with the ability to learn how to learn in order to take full advantage of the benefits of online learning. In other words, students must be active learners in the learning process rather than passively waiting to be taught or hand-fed the knowledge (Knowles et al., 2011). Matherly and Burney (2013) stated that active learning approaches to learning "can enhance students' learning by transforming them from passive receptors of information into information processors" (p. 654).

Researchers and educators internationally have endeavored to encourage active learning approaches in college and university classrooms since the early 21st century. Research has suggested that students actively engaged in learning resulted in improved academic achievement, enhanced comprehension of subject matter, involved participation in the class, and accepted accountability for the learning (Pundak, Herscovitz, & Shacham, 2010). Michael (2006) stated that "Active learning works. It should be clear that there are large bodies of evidence from a number of different fields supporting the effectiveness of active learning" (p. 164). Not only is there evidence that active learning approaches work, but there is evidence that active learning approaches are superior to passive approaches to learning (Hermanson, 1994).

The purpose of the paper was to investigate why active learning in online classes has a positive effect on student engagement. A review of the literature presents a compilation of research, peer-reviewed journals, non-peer reviewed journals, and books on the impact of active learning on college and university students. The academic databases used were from the online library of Texas A&M University-Commerce and included, but were not limited to, Academic Search Premier, EBSCO, Education Research Complete, Eric, ProQuest, and Sage Publications. The key descriptive terms used for this research was online learning, distance learning, active learning, andragogy, and adult learning.

DEFINITIONS

Before proceeding further some definitions are in order:

> - Active learning - *Active learning* can be defined "as any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing" (Prince, 2004, p. 223).
> - Adult-The term *adult* can be defined as, (a) one who is biologically responsible—able to reproduce; (b) one who is legally responsible -able to vote; (c) one who is socially responsible -able to work and marry; or (d) one who is psychologically responsible -able to be responsible for his or her own life (Merriam, Caffarella, & Baumgartner, 2007).

- **Andragogy**-The word *andragogy* was derived from the Greek word *andros*, which means "man" or "grownups" (Knowles, 1968, p. 351) or *agogus* meaning "leader of" (Knowles et al., 2011, pp. 59-60), which translates to "the art and science of helping adults learn" (Knowles, 1984, p. 6). In andragogy, the teacher and student share a relationship of mutuality and reciprocity for learning.
- **E-learning**-The term *e-learning* is defined as the "use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as exchanges and distance collaboration" (as cited in Nerguizian, Mhiri, & Saad, 2011, p. 51).
- **Pedagogy**-The word *pedagogy* was derived from the stem "pediatrics" from the Greek word *paeda* meaning "child" (Knowles, 1968, p. 351), which translates to "the art and science of helping children learn" (p. 351). In pedagogy the teacher is in charge of all learning.
- **Self-directed learning** – There are two definition of *self-directed learning*. The first, the student is viewed as "self-teaching" (Knowles et al., 2011, p. 184) and able to manage the procedures for teaching themselves in a specific subject. The second, the students is viewed as having "personal autonomy" (p. 184) and becomes an autodidact which means a self-taught person taking control of the objectives of learning thereby assuming "ownership" (p. 184) of learning.

A REVIEW OF THE LITERATURE

"Learning is not a spectator sport" claimed Thaman, Dhillon, Saggar, Gupta, and Kaur, (2013, p. 28). Students do not learn by passively sitting in class paying attention to the teachers, committing class lectures to memory, and reorganizing subject matter to ultimately regurgitate responses for grades. Students need to actively discuss learning information, put in writing learned material, connect newly learned material to previous knowledge, and relate new knowledge to everyday events.

Active learning has become another one of those banal expressions that is characteristic of academia (Carnes, 1011) and generally refers to any approach to learning that engages students, entails important learning actions, and requires thinking about those actions (Thaman et al, 2013). Note taking, for example, has even been considered a form of active learning (Carnes, 1011). Active learning encompasses a learning environment that permits students to discuss, pay attention, study, record, and contemplate subject matter through collaboration and cooperation with colleagues (Thaman et al, 2013).

Today's college and university curriculum is full and does not permit sufficient time for students to attain full comprehension of course matter or to cultivate strong thinking skills that are necessary for today's society. As a result, it is up to instructors to relax the curriculum enough to permit adequate time and effort to encourage students to become active, self-directed learners and to generate student interest in and student commitment to continuous learning.

This attempt to loosen the requirements, on behalf of the students, requires time and planning on the part of the educator (Thaman et al, 2013). Encouraging students to become self-directed learners also requires educators to be willing to assume the role of facilitators of learning, thereby allowing students to be in charge of their own learning and to also encourage collaboration between peers and colleagues (Henning, 2012).

Various research studies have been conducted in the United States to investigate the benefits of active learning. There exists extensive evidence to support the notion that active learning enhances "conceptual understanding" (Pundak et al., 2010, p. 2) of course content in comparison to more conventional learning approaches. A key objective of active learning is to develop higher level thinking skills. Solving problems according to scientific methods is a good example, which includes collecting, analyzing, interpreting, and representing information necessary in order to develop appropriate systems or processes. Research has demonstrated that active learning has a positive effect on: conceptual understanding, test results, dropout rates, student satisfaction, team work assignments and activities, and problem solving assignments and activities. Unfortunately, most educators do not employ active learning in the classrooms and as a result students remain passive in the learning process. That is, students who wait to be taught by educators rather than becoming actively engaged in the learning process.

In a review of the literature, Prince (2004) revealed that active learning also leads to an improvement in student attitudes, writing, and retention of course material, and thinking skills. Some examples of active learning activities and assignments include: (a) collaborative learning which are group tasks rather than individual tasks, (b) cooperative learning which is founded on the principle that cooperation is more effective than competition between students, and (c) problem-based learning which consists of posing a problem then employing a variety of instructional methods such as lectures and educator led discussions (Prince, 2004).

Effective active learning activities and assignments enhance the likelihood that a deeper understanding of the subject matter will emerge. To accomplish this deeper understanding, the activities must be planned around the course learning objectives and encourage student engagement relative to the new knowlegde. In other words, facilitate students' thinking about what is being learned. Implementing activities and assignments that engage students in the learning process is the major component of active learning and an excellent forecaster of college success. Active learning approaches to learning have also been recommended learning approaches for college and university students for some time (Matherly & Burney, 2013; Prince, 2004).

There is mounting research that validates the effectiveness of student-centered, active learning approaches. The pertinent data have come from multiple disciplines (Hermanson, 1994). Moreover, in 1990 the National Research Council questioned undergraduate education. Educators were encouraged by the Council to implement active learning approaches that facilitate improved learning (National Research Council Committee on High School Biology Education, 1990).

According to Pundak et al. (2010), online learning has resulted in a burgeoning of e-learning options. E-learning platforms have, however, three common characteristics: (a) availability - all learning materials are available and easily accessed by students, (b) multiple representations - all learning materials can be presented in text, graphics, animation, sound, and video formats, and (c) multiple communication tools – all learning materials include similar support tools, such as discussion groups, e-mails, video conferences, blogs, and social networks. Online learning can accommodate a multitude of preferred teaching approaches from the most traditional (textual learning material and summative student assessments delivered at the completion of the course) to active learning (instructor facilitates learning at each stage through multiple formative assessments). Online technology can support active learning approaches to learning (Koohang & Paliszkiewicz, 2013; Pundak et al., 2010).

In addition, Knowles anticipated that technology could work in harmony with andragogy because technology encourages opportunities for adult learners to be self-directed, allows adults to complement new learning with past experiences, and enables adults to match learning to real-world problems (Knowles et al., 2011). Research has also demonstrated that andragogy corresponds well with blended or hybrid learning (Korr, Derwin, Greene, & Sokoloff, 2012), which is a combination of online and face-to-face learning, and online learning (Johnson, Wisniewski, Kuhlemeyer, Isaacs, & Krzykowski, 2012). The use of andragogy in technology and online learning requires adult learners to already be self-directed learners. This prerequisite for online education is not the case in traditional face-to-face classroom environments because educators have opportunities to balance andragogy and pedagogy according to the needs of the students. Rather, online learning requires that adult learners be prepared to be in control of their own learning before beginning an online course (Knowles et al., 2011). Knight (1999) found that learning and confidence increase when adult students are provided hands-on computer learning opportunities. Allowing students to maintain control of the mouse and the computer keyboard increases learning outcomes (Knight, 1999). In a study conducted on online education, Zhang (2009) claimed that most e-learners are adult students. He introduced the term "e-andragogy" (p. 36) and defined it as a field of online adult students who studied off-site with the use of technology.

Students are inclined to behave dependently when in a more structured educational settings alleged Knowles (1984). This dependent behavior might be because these learners do not know how to learn, they only know how to be taught.

In pedagogy, the teacher is considered to be in control and totally responsible for learning: what is to be taught, how it is to be taught, when it is to be taught, how it is to be measured, etc.

Adult students need to be taught how to learn in order to become self-directed learners maintained Knowles. He further maintained that the objective of education is to attain the capacity to inquire and to become life-long learners.

A key distinction between pedagogy and andragogy is, clarified Knowles, whether learners consider themselves as responsible for the learning. For example, children see themselves as being dependent on teachers for learning while adults see themselves as dependent on themselves for their learning.

As students mature, they grow to see themselves as independent and self-directed (Knowles, 1968) as can be seen in an autoethnographic study on adult learning.

The author stated that "Before even enrolling in the course, I found that I, too, had concerns about control" (Henning, 2012, p. 15).

Adult students tend to avoid and dislike teachers implying the idea that "learner equals dependent" (p. 65).

This implication of dependency and treatment of adult students as dependent generates internal inconsistency for adult students. A normal response to this inconsistency is to avoid the situation, which may explain the low completion rates in colleges and universities (Carnes, 2011; Knowles et al., 2011).

In summary, a review of the literature revealed that:

> Active learning approaches to learning enhance learning; testing results; student engagement, retention, and success; student satisfaction; thinking skills; teamwork skills; and problem-solving skills (Hermanson, 1994; Matherly & Burney, 2013; Prince, 2004; Pundak et al., 2010)
> Active learning approaches to learning have been a recommended learning approach for college and university students (Matherly & Burney, 2013; National Research Council Committee on High School Biology Education, 1990; Prince, 2004).
> Online technology can support active learning approaches (Koohang, Paliszkiewicz, 2013; Pundak et al. 2010).
> Technology could work in harmony with andragogical principles (Korr, et al., 2012) and requires adult learners to be self-directed and prepared to be responsible for their own learning (Knowles et al., 2011).
> Andragogical principles and active learning approaches suggest that students must be active in the learning process for effective and continuous learning (Hermanson, 1994; Knowles et al., 2011; Matherly Burney, 2013; Michael, 2006; Prince, 2004; Pundak et al. 2010; Thaman et al., 2013).
> Academic engagement leads to student retention and success (Tinto, 2012).

For these reasons, students enrolled in online courses tend to become engaged in the learning process as a result of the active learning activities and assignments.

Since, active learning approaches to learning enhance learning, the technology supports active learning approaches to learning and works in harmony with andragogical principles requiring learners to be self-directed and responsible for their own learning, and andragogical principles and active learning approaches suggest that students must be active in the learning process for effective and continuous learning. This academic engagement tends to lead to student retention and success.

DISCUSSION

Typically e-learning platforms have three common characteristics:

 - ➢ learning matter is available and easily accessed by students,
 - ➢ learning matter is introduced to students through multiple formats, and
 - ➢ learning matter can be communicated through multiple tools.

As for active learning, online learning provides multiple opportunities for students to learn and communicate learning actively through multiple formats and tools and to collaborate with colleagues at convenient times and locations for students. In addition, technology works harmoniously with andragogy. Technology offers multiple choices for adult learners to be self-directed and in control of learning, connect new learning with past experiences, and link new learning to real-world problems.

Figure: 1 depicts how online learning opportunities support active learning approaches and also works in harmony with andragogical principles of learning as presented in the literature.

	Active Learning	Online Education	Andragogy
Availability	Active learning can be completed at mulitple times and locations convenient for students.	Learning materials are available and easily accessed by students.	Self-directed and in control of time and location for learning.
Multiple representations	Multiple opportunities for students to learn by actively paying attention, studying, taking notes, and reflecting.	Learning materials can be presented in multiple formats.	Self-directed and in control of learning material to connect past learning to new learning.
Multiple communication tools	Multiple opportunities for active communication of learning through discussions and study groups.	Learning materials can be communicated through multiple tools.	Self-directed and in control of communication through collaboration with peers on real-world experiences.

Figure: 1
Online Learning Support Active Learning and Angragogy

CONCLUSION

The purpose of the paper was to investigate why active learning in online classes has a positive effect on student engagement. Research has revealed that online technology supports active learning approaches and andragogical principles of learning. All learning matter is available and easily accessed by students, is introduced to students in multiple formats, and can be communicated through multiple technological tools. Students can learn through active activities and assignments and contemplate new knowledge by communicating with peers. In addition, technology supports andragogy by encouraging self-direction by providing multiple choices for students to be in control of learning, connecting new learning with past experiences, and linking new learning to real-world problems. Students actively engaged in the learning process experience improved learning outcomes. This academic engagement tends to lead to student retention and success.

IMPLICATIONS

The implications for colleges and universities are positive. A deeper understanding of why active learning approaches to learning in online classes have a positive effect on student engagement will help educators with the design of online classes. In addition, an understanding of andragogical principle of learning and how they connect to active learning approaches will assist in engaging students in the learning process. Students academically engaged in the learning process, are more likely to graduate from college. Therefore, improved retention and graduation rates are to be expected. Increased graduation rates will have a positive effect on society.

RECOMMENDATIONS

It is recommended that additional studies be conducted on active learning, andragogy, and online education to verify the results of this investigation. It is also recommend that additional studies be conducted on active learning and andragogy to determine what similarities and differences exists. Studies could also be conducted to determine if similar results are revealed between institution types, student levels, and geographical locations.

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