

Supporting Distance Education with Theory

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Abstract

Distance education has now become a mainstay on the education landscape. Learners of all ages, specifically Kindergarten through post secondary, have a variety of public, private, and for-profit options for their education. The delivery options range from hybrid online courses with some class attendance required, to completely online, asynchronous learning from any location in the world with Internet access. As distance education evolves, adapting historic learning theories and implementing emerging theories are needed for asynchronous teaching. The emerging theories of connectivism and transactional distance learning are discussed in relation to their role in distance learning. This work also researches instructional design options related to virtual learning and addresses common misconceptions associated with distance education. Educational technologists have been tasked with creating an academic environment that rivals and exceeds the learning opportunities of traditional "brick-and-mortar" institutions. The authors endorse distance education as a valuable option for educational pursuits for all learners. This paper should be used as a valuable resource for those interested in the justification and merits of distance education.

Supporting Distance Education with Theory

The advancement of technology has changed the education industry, expanding to include distance education, which is now encompassed by an entire educational technology field. School sites are being referred to as “brick-and-mortar schools” because more learners are choosing the distance education avenue. Distance education is becoming so popular that “if current trends continue, it will be just a matter of time before distance education becomes the dominant form of teaching and learning” (Saba, 2005, p. 257). Students are choosing to learn through online schools using instructional and educational technology, hybrid learning, and virtual education; all of which fall under the broad definition of distance education. With this shift in learning, the inclusion of pedagogy, theory, technology, and instructional design, distance education has the potential to become the main learning platform for students.

Distance education and the educational technology field are continually evolving, which changes the formal definition of educational technology and the emerging theories created to encompass this modern learning platform. “The development of new knowledge causes shifts in thinking and introduces change and in the field of Educational technology multiple knowledge bases lead to multiplying change” (Luppacini, 2005, p. 105). Educational technology and the contributing theories are constantly changing the way students learn and interact.

Educational technology is creating interactive teaching, diverse learning methods, and the demand for current material. It allows students to complete collaborative projects virtually and participate in activities that are not restricted by time, location, or money. Students engage in virtual field trips around the world, virtual lab experiments that would be too cumbersome or dangerous to complete in class, and collaborate with like-minded students globally. Similar to physical schools, distance education promotes scaffolding, critical thinking skills, engaging

dialogue, and learning communities. The distance education shift also means students are participating in an education that is current, relevant, and authentic.

Learning Theories in Distance Education

Role of Learning Theories

Regardless of how education and the platform of learning change, the foundation remains constant; it must be based on theory to be successful. Theory determines the vitality and credibility of the field of practice. Theoretical foundations power ideas, ideals, models, and influence practice. “Since ideas and ideals shape distance education practice, attention and effort must be devoted to the development of coherent, rigorous and valid theory” (Garrison, 2000, p. 3). The role of distance education is to incorporate new and sophisticated technology that allow for synchronous and asynchronous collaboration. The challenge is determining what theories are applicable to this type of learning.

Major Learning Theories

As for the classic learning theories, there is extensive history, research, and proven implementation of the theories in education. Together, behaviorism, cognitivism, and constructivism all contribute to both the development of mainstream and distance education, as the application of one theory rarely encompasses all of the desired objectives. Garrison (2000) notes, “The challenge is to provide theory that will explain and anticipate distance education practices for a broad range of emerging educational purposes and experiences” (p. 1). While classic learning theories have valuable implications, a closer examination of emerging theories can further contribute to distance education's legitimacy. Thus, applying emerging theories to the field of distance education reflects the progression of an organizational and transactional foundation.

Emerging Learning Theories

With the impact of technology in education, theories must evolve, or new theories created, to accommodate this shift. The main theories all conclude that learning occurs within people, but fail to address the learning that occurs outside of people (Siemens, 2004). Two emerging theories that have developed to meet the needs of distance education are connectivism and transactional distance.

Connectivism

Connectivism theory focuses on cognitive development, learning that occurs within an environment, and connections enabling us to learn, rather than our current state of knowing. Siemens (2004), the founder of connectivism, asserts that learning can reside outside the individual enabled through the use of technology such as databases or websites. The principles of connectivism are:

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right

answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision. (Siemen, 2004, para. 25)

Connectivism is a cycle of knowledge development that begins with the individual, feeds the personal knowledge network, which feeds organization, which feeds back to the network and provides learning back to the individual. Thus, the task of Internet research and filtering valid, reliable sources, demonstrates the characteristics of connectivism. This process of learning, knowledge, and understanding through this personal network is connectivism.

Transactional Distance

Transactional distance is the emerging theory that incorporates open learning and its pedagogical concept. “Transactional distance is not determined by geography but by the way and to what extent instructors, learners, and the learning environment interact with one another” (Chen, 2001, para. 2). Transactional distance primarily evolved due to the Internet, networks, and the creation of an open and social learning space. This has produced an entire new approach to learning and teaching.

Transactional distance allows for variables, especially between the learner and teacher, but also the environment, patterns of behavior, and the individuals. Moore, (1997) creator of the transactional distance theory, stated “it cannot be emphasized too strongly that transactional distance is a relative rather than an absolute variable” (p.22).

The extent of transactional distance in education is a function of three variables; dialogue, structure, and learner autonomy. Dialogue is the interaction or exchange of information between the learner and the teacher. In distance education, communication, in all forms, is utmost important since there are no face-to-face encounters. Structure refers to course design and how it is structured so it can be delivered through various communication media. Learner autonomy is

the process of students accessing learning materials and programs to achieve goals alone, in their own way, and under their own power. “Learner autonomy is the extent to which in the teaching/learning relationship it is the learner rather than the teacher who determines the goals, the learning experiences, and the evaluation decisions of the learning programme” (Moore, 1997, p. 26-27).

All of these variables are inter-related; where one area lacks, the others are more evident. Noting that transactional distance is a theory developed purely for distance education verifies the evolution of technology and the need for emerging theories. The combination of emerging and classic learning theories, distance education can proceed to design quality instruction.

Instructional Design in Distance Education

In his transactional distance theory, Moore (1997) identifies structure as one of three necessary components for successful distance learning. When viewing distance education through an Instruction Design lens, it is important to reflect on the theories, but also to examine the strategies implemented with respect to the targeted learners. One of most important parts of the Instructional Design process is conducting a learner analysis. Although this step is often omitted by inexperienced designers, it is absolutely critical for developing effective instruction and courses (Smith & Ragan, 2005).

Just like traditional students, learners in distance education vary in age and ability. However, the somewhat independent and learner-centric nature of distance learning courses often lends designers to a more generative approach, allowing learners to guide their own learning and understanding. Smith and Ragan (2005) recognize that “generative strategies require greater mental effort and consequently lead to greater depth of processing, resulting in better learning” (p. 143). The autonomy present in many distance learning courses can force

learners to develop a deeper understanding of the content. Many adult learners rave about the education they receive through online courses, as they delve into the material themselves, and not just listen to lectures. In a study done with graduate students in 2002, the participants responded positively about the amount of reflection and learning they experienced in the online course. One participant reflected about his experience with discussion board, “there is something that forces you to think more deeply about subject areas when you have to respond in writing” (Petrides, 2002, p. 72). Another participant recognized that online technology allowed more reflection than occurs for some individuals in face-to-face classroom discussions. The reflective and communitive nature of distance education, through means such as discussion boards and blogs, provide support for connectivism theory.

While generative instructional design strategies can lead to effective, engaging online courses and content, designers must also be cautious about the targeted distance education learners. Adults may possess stronger developed cognitive strategies and thrive in the autonomous online environment, where younger, less experienced learners may find online courses very challenging if the wrong design strategies are used. In 2010, the International Association of K-12 Online Learning reported roughly 450,000 students were enrolled in a virtual high school in the US, a 40% increase from the previous year. While distance education is undoubtedly growing in the K-12 environment, designers of these courses need to be mindful of the learners. Credit recovery has been recognized as one of the leading reasons high school students are taking online courses (Piccano & Seaman, 2009). Given the fact that these students usually have low motivation, little prior knowledge, and limited cognitive strategies, designers of these courses should use more supplantive strategies for instruction. High levels of scaffolding and teacher guided instruction should be present to help these students be successful in distance

education courses. If course designers mistakenly use a more a generative approach for these students, there will be a “high cognitive demand on the learners’ working memory by requiring them to acquire new learning while taking the responsibility for structuring the learning situation...[leading] to cognitive overload, emotional frustration, and [will] detract from learning” (Smith & Ragan, 2005, p.142). It is important that designers understand all online learning is not created equal, and that many types of students can be successful if the appropriate considerations for their needs are made.

In addition to applying the appropriate strategies to instruction, designers need to also consider other important elements of design and the supporting theories. Feedback is an extremely important part of the learning process. It is promoted through the classic learning theories of behaviorism and cognitivism and recognized by transactional distance theory as part of the necessary dialogue component (Moore, 1997). Technologies used in distance learning courses can provide feedback in ways a traditional teacher cannot. Educational games and computer-based instruction afford learners with instant feedback on questions and assignments. This allows students to learn at their own pace, and permits the teacher to be more available for remedial and enrichment opportunities. Online teachers can also utilize email, chat, and video conferencing for more specific and unquantifiable forms of feedback to students. Due to constant need for communication in the distance learning environment, the feedback element of the design process naturally situates itself and can lead to better learning.

Instructional Design is an important component to distance education. It is with carefully researched and implemented design that many types of learners can experience success through distance education. Whether a class is being designed for a graduate student, an advanced fourth grader, or a struggling high school student, well-designed online courses can meet the needs of

the learner and ensure learning goals are met. With the available and emerging technologies, designers of online courses can easily implement multimedia, social networking, the Internet, and many other resources into courses to promote learning opportunities consist with both classic and emerging theories of learning.

Misconceptions of Distance Education

While distance education is experiencing significant increases every year, there is still skepticism about online courses. Many criticisms surround the legitimacy of online programs, interactions with peers and teachers, and the level of learning. Realistically, many of these arguments can also be made about traditional classrooms. In many ways these general concerns about education are better supported in the online environment.

Legitimacy

Distance education is grounded in classic learning theory and its mere existence prompted the emergent of new theories, yet many people are still hesitant to accept and validate this platform of learning. If both traditional and virtual schools offer an education supported by theory, then what are the advantages of distance learning?

For decades distance education was traditionally executed by institutions through phone correspondence and ground mail organizations. Over the past twenty years distance education has become synonymous with online, virtual, or asynchronous learning. As more virtual learning tools are becoming available to educators, the transactional distance between student and teacher are minimized through interactive learning platforms.

Distance learning is changing the landscape of education, many colleagues agree. Larreamendy-Joerns and Leinhardt (2006) recognize, “the growing presence of distance education has changed the landscape of formal education. Some signs of this change are that the

U.S. Senate considered easing the rule by which a college must enroll no more than 50% of its students through distance programs if the students are to be eligible for federal aid” (p. 572). The value of earning a degree online from a fully accredited, respected institution is invaluable.

Learners whose educational experience is a classroom setting may benefit from distance education, which offers the same degree in less time, for less money, and their own time frame.

Communication

Without physically meeting on regular basis, the presence of communication in an online setting is imperative. In many cases, there are more opportunities for teachers and students to interact in a distance education setting. In a traditional classroom, a student may walk into class, sit through a lecture, work on an assignment individually, and leave. So often there is little personalized communication that actually occurs in a traditional setting. Through distance education courses, teachers make it a priority to facilitate conversation in the class. Discussion boards, email, chat, and even video conferencing are used to create a sense of community in class, helping to minimize the transactional distance between the student and teacher. It is often the case that students who are traditionally shy, feel comfortable communicating in an online setting (Maeroff, 2003). Fortunately, with the available technologies, online courses provide additional dynamics for communication.

Evidence of Learning

Perhaps the largest question surrounding distance education is: Does it work? Many people are still concerned with the effectiveness distance education. Although frequently questioned by college faculty members, school teachers, and administrators, there has been very little comparative research that shows the effectiveness of online learning (Angiello, 2009). The US Department of Education provided some of the only credible research of online learning with

its publication of the “Evaluation of Evidence-Based Practice in Online Learning: A Meta-Analysis and Review of Online Learning Studies.” The study was done using meta-analysis methodology, which combines the results of multiple independent studies addressing a common hypothesis to come up with an estimate of the overall effect of a particular treatment (Angiello, 2009). The primary purpose of the study was to guide policy makers, administrators, and educators in implementing online learning. The most notable conclusion from the survey was, “Students in online conditions performed modestly better, on average, than those learning the same material through traditional face-to-face instruction” (Means et al., 2009, p. xiv). The report also found that combining face-to-face elements and increasing on task time led to high performance for online courses (Means et al., 2009, p. 44). While these results were not alarming, they did validate many of the efforts of online educational programs.

Distance Education is still education, and shares many of the fundamental principles and issues evident in traditional classrooms. While the medium for instructional delivery may be different, the same educational aspects are present. In many ways, learning online can even enhance the educational experience with the readily exposure of new methods and technologies for teaching and learning.

Conclusion

There are many theoretical foundations and advantages in distance learning. “Online education may well go the distance and beyond, if it reduces educational inequality by providing wide access to enticing learning opportunities in a way that is mindful of students’ individual differences and the nature of the subject matter.” (Larreamendy-Joerns & Leinhardt, 2006, p. 597). Distance education promotes collaboration among teaching peers and encourages tandem teaching and sharing of best practices. While instructional designers will make conscious

decisions based on learning theories, the process of designing distance learning materials is often grounded in connectivism. Larreamendy-Joerns and Leinhardt (2006) noted, online education may contribute to making teaching a public and collegial activity. The design of online environments usually is a team effort that brings together different although complementary competences. Decisions about what is desirable and feasible pedagogically and technologically are made through conversation and debate. Many distance education classes and programs are collaboratively designed to support the classic and emerging theories and the needs of many different learners. While specific instructional tools such as multimedia presentations, computer games, and simulations have groundings in behaviorism, cognitivism, and constructivism, the use collaborative resources like discussion forms, Web 2.0, and video conferencing in distance education recognize the validity of both connectivism and transactional distance theories.

A distance learning program meeting the necessary accreditation requirements, can prove to be a cost effective alternative to classroom study. Furthermore, distance education gains an advantage by allowing students to access learning through the latest theories, an opportunity not typically provided at the traditional brick and mortar institutions. Distance learning programs, theory-based and designed for the learner, provide a valuable resource to anyone with a computer and Internet access.

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