Learning Theories that Encompass

Distance Education

Jayne Crawford

Boise State University

April 28, 2009

Abstract

This paper describes the roles of learning theories in distance education. It will define distance education and explain the importance of learning theories. Given the absence of a primary focus in distance education, the paper demonstrates how traditional theories of the past century continue to play a role in distance education. Also discussed are new theories that have emerged.

Definition of Distance Education

The digital age has greatly increased both the speed and amount of information for those with access to the Internet, the fastest growing form of media and accessible information. This change brought about the popularity and expansion of distance education which Moore defined as "all arrangements for providing instruction through print or electronic communications media to persons engaged in planned learning in a place or time different from that of the instructor or instructors" (as cited in Jonassen, Davidson, Collins, Campbell, & Haag, 1995). Computer-mediated communication (CMC) allows and facilitates interaction between distance learners through technologies such as email, computer conferencing, and on-line databases.

Nearly 3.5 million students were taking at least one online course during the fall 2006 term, as reported by Allen & Seaman (2007). The range of learners involved in distance education varies but encompasses adult learning, K – 12 education, the disabled and homebound, second language speakers. There has also been a shift from the industrial to the international service sector economy, as evidenced by changing work, social, and educational patterns. I think we need to look carefully at this change in how people are learning as a challenge for everyone involved in distance education and see this transformation of learning theories as a necessary challenge so that the best quality program can be made available for learners.

Importance of Learning Theories

A theory provides people with an explanation to make sense of complex practices and phenomena (Garrison, 1990) and can provide a perspective that reduces complexity while suggesting generalizability. Garrison continues to explain that learning and learning at a distance

is a complex practice; an examination of a theory will provide us with the understanding necessary to take effective action and can also help to predict what will or what could be. The learning process is a highly complex system; it's not a linear process but rather cyclical (Kop & Hill, 2008). As this process continually changes depending on a person's experiences and surroundings, instructional designers and educators face a demanding task when producing meaningful and challenging learning experiences for all learners.

As early as 1972, Moore (1972) indicated that "there is a need to describe and define the field of distance education, to discriminate between its various components, and to identify the critical elements of the various forms of learning and teaching". Even today, a single theory that is exclusive to the field of distance education is unavailable. Perhaps this is because we are living in an environment, as Simonson, Schosser, & Hanson (1999) state, where "technology, society, economics, politics, and approaches to learning are all in transition and ….theories, definitions, and the practice of distance education will continue to be contested." Snelbecker suggested that it would do learners a disservice by limiting them to only one theoretical position (as cited in Ertmer & Newbie, 1993) because it is the particular educational situation and theory holding the highest value that are most important.

<div align="center">The Dominant Learning Theories of the Past Century:

Behaviorism, Cognitivism, and Constructivism</div>

The three learning theories of behaviorism, cognitivism, and constructivism have been influencing education and guiding instructional practice since the 1800's (Baruque & Melo, 2004). Learning theories provide a solid foundation for a multitude of strategies and reasoning techniques needed for instructional designers to create meaningful learning systems. There are

two main questions debated by theorists and researchers (Ertmer & Newbie, 1993): "Where does knowledge come from, and how do people come to know?" These questions provide insight into the differences between learning theories but also demonstrate how each theory plays an important role in distance education. As suggested by Warries (as cited by Ertmer & Newbie, 1993), theories based on strong research are much more reliable than (theories) based on instructional phenomena.

Behaviorism

Behaviorists believe that is it external factors that shape learning rather than the characteristics of the individual learner. Learning is sequential and hierarchical and occurs by accumulating its elemental building blocks. Ertmer & Newbie (1993) believe that the most critical factor that affects learning is "how the association between the stimulus and response is made, strengthened, and maintained".

Behaviorism was dominant around the 1950's when instructional design (ID) first arose and was used as a basis for creating many audio-visual materials as well as Skinner's teaching machines. Some recent examples used in distance learning are computer-assisted instruction (CAI) and mastery learning. Key principles used when designing instruction materials, as suggested by Ertmer and Newbie (1993), include the production of observable and measurable outcomes in students to be used for assessing the students. This is considered in the assessment of students to determine where instruction should begin, the mastering of early steps before progressing to more complex levels, reinforcing to improve performance, and using cues to ensure a strong stimulus-response association.

Cognitivism

A shift occurred in the late 1950's toward learning theories and models from the cognitive sciences. Educators placed less emphasis on overt, observable behavior. They focused more on complex cognitive processes and internal mental processes such as information acquisition, processing, storage, and memory, which are vital to learning. Cognitivists focus on how information is received, organized, stored, and retrieved by the mind. As Jonassen states, the concern is *not* on what learners do, but rather on what they *know* and how they come to acquire what they know (cited in Ertmer & Newbie, 1993).

The main focus of the cognitive approach is on changing the learner by encouraging him/her to use appropriate learning strategies. Ertmer and Newbie (1993) emphasized key factors when designing instruction processes. These include involving the learner in the learning process, organizing and sequencing information to facilitate optimal processing, and creating learning environments that allow and encourage students to make connections with previously learned material.

Both cognitivists and behaviorists share the same goal, which is to "communicate or transfer knowledge to students in the most efficient, effective manner possible (Bednar et al., as cited in Ertmer & Newbie, 1993). In both views, knowledge can be analyzed, decomposed, and simplified into basic building blocks so that irrelevant information is eliminated; however, behaviorists focus is on a well-designed environment while behaviorists emphasize efficient processing strategies.

Constructivism

Constructivists believe that "knowledge is a function of how the individual creates meaning from his or her experiences; it is not a function of what someone else says is true" (Jonassen et al., 1995). They do *not* share the belief analogous to behaviorists and cognitivists that knowledge is mind-independent and can be mapped onto a learner. Rather, they believe that humans *create* meaning as opposed to *acquire* it. Both the learner and environmental factors are critical, and the interaction between these two issues is what creates knowledge.

When developing a distance education program according to constructivism theory, designers must create stimulating environments that capture learners and enable them to formulate knowledge and derive meaning for themselves. These environments allow for collaboration (between learners and the instructor) and encourage meaningful dialogues so that understanding can be individually constructed. "Knowledge… is language mediated" (Jonassen et al., 1995) and computer-meditated communication (CMC) supports this belief because learners attempt to interpret, clarify, and validate their understanding through sustained dialogue (i.e., two-way communication) and negotiation. Henri and Rigault also compared CMC to face-to-face interaction and noticed that CMC provided "more intense communication than face-to-face groups, where the lack of social pressure and the greater freedom to express their views, without struggling for the right of the audience, enabled participants to react to the content, and not the author, with more reflective and effective communications (as cited in Stacey, 1999).

In terms of evaluation from a constructivist point, there is no single solution to a problem, and students are encouraged to justify their own solutions and show how they arrived at their conclusions. A considerable amount of self-reflection occurs; writing in journals, for example, provides a means for students to think about what they have learned and record examples from

their own experiences. Evaluation is an on-going process that is part of the learning process rather than coming only at the end of the course.

Overview of Behaviorism, Cognitivism, and Constructivism

Each of these three longstanding learning theories plays a role in distance education. A good designer does not strictly apply only one theory when designing; rather, it is important to consider the specific learning task. Jonassen concludes that introductory knowledge acquisition is better supported by approaches from behaviorists and cognitivists. On the other hand, a transition to a constructivist approach needs to occur as learners master more complex problems and acquire higher-level thinking skills (as cited in Ertmer & Newbie, 1993). The Dick and Carey systems approach model for designing instruction materials is a popular instructional model that uses tools and strategies that are based on these three learning theories (Dick, Carey, & Carey, 2004).

Another Important Theory – Objectivism

Objectivism

The philosophical beliefs and assumptions of objectivism are also shared with the traditional approaches to teaching and learning, as reflected by behaviorist and cognitive theories. The objectivist paradigm is a linear model that follows a set of sequential steps. According to Vrasidas (2009), several instructional design models focus on these sequential steps (Dick & Carey, 1996; Gagne & Briggs, 1974; Smith & Regan, 1993; Wagner, 1990).

The first step in designing a distance education program, according to the objectivist, would be content analysis. This step can be broken down further. Through analysis, major skills

are defined so the learner is able to complete the course. The next step involves analyses of the task and of the learner. This is followed by the most important step in developing the performance objectives. The learner must demonstrate observable behavior in order for learning to occur.

<div align="center">The Latest and Newest Distance Learning Theories</div>

Transactional Distance Theory

Within the last thirty years, there has been a formalization of distance education as a discipline. This naturally aroused a need to develop a new learning theory for all those involved. Moore states that "the first attempt in English to define distance education and to articulate a theory appeared in 1972 and in 1980 was named as the theory of transactional distance" (Moore, 1991). Looking more carefully at the concept of transaction, Boyd and Apps explains that it "connotes the interplay among the environment, the individuals and the patterns of behaviors in a situation" (as cited in Moore, 1991). This transaction *is* distance education. Moore explains that when referring to distance education, there is more than a geographic separation of learners and teachers; there is also a distance associated with understanding and perception also partially caused by geographic distance. Therefore, this "psychological and communications space" (Moore, 1991) is what is known as the transactional distance.

The degree of transactional distance depends on three variables: dialogue, structure, and learner autonomy. First, dialogue is described as an exchange of words, actions, and ideas between teacher and learner. The important factor involved is communication. The second variable, structure, is the extent to which to which a course's elements (learning objectives, content themes, presentation strategies, evaluation activities) change to meet the specific needs

of the individual learner. Third is learner autonomy, which refers to a learner's control over learning activities and processes. Each program and institution as it affects the degree of dialogue, structure, and learner autonomy is different.

A study conducted by Godool-Ramdoo in 2008 compares some of the most discussed theories in distance education to date. His findings claim that the important difference of the Transactional Distance Theory is that "it encompasses both organizational and transactional issues without losing sight of the learner, the institution, and the nation altogether". All other theories have been rethinking their processes and likening them to Moore's philosophy by moving away from the organizational component and moving towards the transactional one.

The teaching/learning process is a shared responsibility that occurs through a dialogue between a teacher and a student. The learner must be aware of the learning activity and think about what is being learned (meta-cognition). The learner must also utilize critical thinking skills to develop a true awareness of the learning process. This will come about with the use of reflective practices, which can be created through dialogues with the instructor and with other students.

Connectivism

Connectivism is a theoretical framework that helps to understand learning. It is mainly concerned with cognitive development. Learning begins when learners join together in a learning community, and knowledge is then put into action by discussing, sharing, and thinking.

Distance Education makes the formation of learning communities easier and globalizes this process, as people from all over the world can become involved. Considering the wealth of information available on the World Wide Web, it is crucial for learners to be able to filter

through information and to ensure it is from a valid, reliable source. Connectivism stresses two

skills that relate to this aspect of distance education and learning communities. At stated by

Siemens (2008), "the capacity to know is more critical than what is actually known".

Knowledge comes from a variety of domains and disciplines, and access to the World

Wide Web makes this easier. Siemens (2008) stresses that the ability to make connections

between fields, ideas, and concepts is a core skill. Knowledge does not fit in a pre-packaged

curriculum, although formalized education must deliver it to a degree. However, as learners

become autonomous and seek information on their own, they come to understand the existence

of an endless world of knowledge.

Conclusion

Distance education does not appear to be a fad. It is here to stay. Moore and Kearsley

describe distance education as "a changing paradigm, one that is perpetually evolving, non-static,

and dynamic" (as cited in Betz, 2005). The ever increasing number of universities and

institutions offering online classes can be overwhelming, but the challenge is to find a quality

program that provides learners with a wealth of meaningful experiences and that does not center

solely on making a profit. As we have seen, distance education is still struggling to agree upon

the theories it will use to build a framework; however, developers must not lose sight of the

execution phase of their programs, as they involve collaboration between the teacher, the learner,

and the technology in the generation of knowledge.

References

Allen, I., E. & Seaman, J. (2007). *Online Nation Five Years of Growth in Online Learning*.

Retrieved April 18, 2009, from http://www.sloan-

c.org/publications/survey/pdf/online_nation.pdf

Betz, M. K. (2005). [Review of the book *Distance Education: A Systems View,* 2nd edition]. *Int'l*

J. of Information and Communication Technology Education, 1(4), 70-72, Oct-Dec 2005.

Retrieved April 22, 2009, from https://idea-

group.com/files/bookReviews/ijicte%20bookreview%201(4)1.pdf

Dick, W. O., Carey, L., & Carey, J. O. (2004). *Systematic Design of Instruction*. Boston: Allyn &

Bacon.

Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, Cognitivism, Constructivism: Comparing

Critical Features from a Design Perspective. *Performance Improvement Quarterly*, *6 (4)*,

Retrieved April 20, 2009, from http://www3.interscience.wiley.com/cgi-

bin/fulltext/121461672/PDFSTART.

Garrison, R. (2000). Theoretical Challenges for Distance Education in the 21st Century: A shift

from structural to transactional issues. *International Review of Research in Open and*

Distance Learning, *1(1)*. Retrieved April 10, 2009, from

http://www.irrodl.org/index.php/irrodl/article/viewFile/2/22

Gokool-Ramdoo, S. (2008). Beyond the Theoretical Impasse: Extending the applications of

Transactional Distance Theory. *International Review of Research in Open and Distance*

Learning, *9*. Retrieved April 9, 2009, from

http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/41/a6/7
5.pdf

Jonassen, D., Davidson, M., Collins, M., Campbell, J., & Haag, B. (1995). Constructivism and

Computer-Mediated Communication in Distance Education. *American Journal of*

Distance Education, *9*. Retrieved April 9, 2009,from http://www.c3l.uni-

ldenburg.de/cde/media/readings/jonassen95.pdf.

Kang, H. & Gyorke, A. S. (2008) *Rethinking distance learning activities: a comparison of*

transactional distance theory and activity theory. Open Learning: The Journal of Open

and Distance Learning,23(3). Retrieved April 19, 2009, from

http://pdfserve.informaworld.com.libproxy.boisestate.edu/275467_731202444_90426228
4.pdf

Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past?

International Review of Research in Open and Distance Learning, *9*. Retrieved April 5,

2009, from http://www.irrodl.org/index.php/irrodl/article/viewArticle/523/1103.

Maddux, Cleborne D. (2003). "Fads, Distance Education, and the Importance of Theory".

Computers in the schools, 20 (3). Retrieved April 7, 2009, from

http://web.ebscohost.com.libproxy.boisestate.edu/ehost/pdf?vid=3&hid=3&sid=1d72fb8
3-b1cd-4395-8452-1398dfd06b07%40SRCSM2

Moore, M. (1972). Learner Autonomy: The Second Dimension of Independent Learning.

   Convergence, *5(2)*. Retrieved April 23, 2009, from

   http://www.ajde.com/Documents/learner_autonomy.pdf

Moore, M. (1991). Distance Education Theory. *The American Journal of Distance Education*,

   5(3). Retrieved April 19, 2009, from http://www.ajde.com/Contents/vol5_3.htm

Moore, M. (1997). Theory of transactional distance. In D. Keegan (ed.) *Theoretical Principles of*

   Distance Education (pp. 22-38). New York: Routledge. Retrieved April 20, 2009, from

   http://www.aged.tamu.edu/research/readings/Distance/1997MooreTransDistance.pdf

Sargeant, J., Curran, V., Allen, M., Jarvis-Selinger, S., & Ho, K. (2006). Facilitating

   Interpersonal Interaction and Learning Online: Linking Theory and Practice. *The Journal*

   of Continuing Education in the Health Professions, *26*. Retrieved April 11, 2009,from

   http://web.ebscohost.com.libproxy.boisestate.edu/ehost/pdf?vid=4&hid=101&sid=29ae0

   6fa-5c6d-4a7c-bdcc-500c6e8c76b8%40sessionmgr104

Shepard, L. A. & Educational Resources Information Center (U.S.) 2000 *The role of classroom*

   assessment in teaching and learning [microform] / Lorrie A. Shepard Center for the

   Study of Evaluation, National Center for Research on Evaluation, Standards, and Student

   Testing, Graduate School of Education & Information Studies, University of California,

   Los Angeles ; Center for Research on Education, Diversity and Excellence, University of

   California, Santa Cruz ; U.S. Dept. of Education, Office of Educational Research and

   Improvement, Educational Resources Information Center, Los Angeles, CA : Santa Cruz,

   CA : [Washington, DC] :

Siemens, G. (2005, January). Connectivism: A Learning Theory for the Digital Age.

International Journal of Educational Technology & Distance Learning. Retrieved April

21, 2009, from http://www.itdl.org/Journal/Jan_05/article01.htm

Simonson, M., Schlosser, C., & Hanson, D. (1999). Theory and Distance Education: A New

Discussion. *The American Journal of Distance Education*, *13*. Retrieved April 18, 2009,

from http://www.c3l.uni-oldenburg.de/cde/found/simons99.html

Stacey, E. (1999). Collaborative Learning in an Online Environment. *The Journal of Distance*

Education, *14*. Retrieved April 5, 2009, from

http://www.jofde.ca/index.php/jde/article/viewArticle/154

Vrasidas, C. (2000). Constructivism versus objectivism: Implications for interaction, course

design, and evaluation in distance education. *International Journal of Educational*

Telecommunications, *6*. Retrieved April 16, 2009, from

http://www.cardet.org/vrasidas/pubs/continuum.pdf