A Comparison of Theories in Learning and Distance Education:

The 20th century comprised of many great contributors to the development of education in general, and despite the ever changing landscape of delivery systems in education, thanks in large part to the advancements in technology, their theories still prevail to this day. Among these pioneers is John Dewey who recognized that the way people interact with their environment, coupled with the conditions of that environment, leads to efficient learning (Dewey, p 45-50). Jean Piaget recognized that learning is a personal process that takes place from trial and error, where the learner builds new knowledge based on previous experiences or "schemata" (Piaget, 66). Finally, Maria Montessori's exploratory learner-centered approach (O'Donnell, p 10-18) to education and Lev Vygotsky's "Zone of Proximal Development" (Vygosky, P 84-91), amongst countless other contributors to theories in education, were all fundamental in establishing distance education as we have come to know it.

As these founders of modern education contributed in general learning theories such as the Direct Approach to Learning and what is known as the Constructivist Learning Theory, many other authors of theory in education contributed in a more specialized manner. Borje Holmberg developed the Interaction and Communication Theory where a synergy through didactic exchanges is established in order to promote better learning (Simonson, Smaldino, Albright, & Zvacek, p 48-50), which is similar in nature to the Discussion Approach to Learning (Carr-Chellem & Reigeluth, p 100-115). In addition, Andragogy is a specialized form of Constructivism in that it focuses on how adult learners specifically take more ownership of their own learning (Simonson, Smaldino, Albright, & Zvacek, p 50). Finally, Hilary Peraton brought much of the known educational theories together in her Combined Theory (Simonson,

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Smaldino, Albright, & Zvacek, p 51); emphasizing the common adage how two heads are better than one.

THEORIES IN LEARNING

Constructivism:

This theory is the underlying theme to distance education programs, both old and new, but there is no rightful claim to a "canonical form of constructivist theory" (Bonk & King, p 32). Despite that, it has been widely accepted and encompasses a number of other learner-centered theories, but also can embrace more traditional approaches (Carr-Chellem & Reigeluth, p 69-70). Constructivists argue that the process in which knowledge is acquired is not scientific in essence, where facts are checked by method or means of establishing validity, that is to say the scientific method, but that "reality itself is simply a product of social interaction" (Mitzes, Wandersee, & Navak, p xviii). Jean Piaget argued that knowledge was not gained by acquiring "a copy of the world" and storing that information in some organized fashion but instead had more to do with how that those new experiences were perceived by the individual and processed "as a result of our own perceptual activities" (Fosnot, p 4). What then is established in this type of paradigm is that the learner ultimately takes ownership in developing the method and content of instruction (Fosnot, p 5-10). There are many advocates of this type of approach, but there are also many critics as well.

One of the problems on relying on personal schemata as a guide to gaining new knowledge is that the new information can be improperly deciphered if prior knowledge used to understand new knowledge is already pre-existing misinformation. The problem is that since teachers now take on a less dominating role in a constructivist environment by adopting a more

passive facilitator role instead, the opportunity for overlooking how some learners might have misunderstood new information becomes greater. "With current Web-Based Training, it is difficult to monitor the learner's progress" (Khan, 17). For example, if an individual somehow misunderstands their own research on the domestication of animals and comes to believe that is harmful to the animal, then they will likely receive any new information pertaining to animal domestication with bias and look for how this new information can lead to harmful side effects for animals in any new knowledge that they are thereof exposed to. It is this type of potential domino effect that actually makes the role of a facilitator that much more important as someone that supervises the process of student-centered learning, especially in helping to prevent that type of scenario.

The adoption of online communications and technology helped put an end a much slower means of communication found in correspondence courses, and therefore some of the previous flaws found in older distance education the process. Snail mail has become instantaneous email, and has later become synchronous instant messaging and digital video communication platforms such as Skype (Reiss, Selfe & Young, p 17-23). Mobile technologies, starting with texting and later with various mobile apps and online access, have allowed for scheduling conflicts and limitations to also become a thing of the past. Interestingly enough, it seems that our ability to communicate with each other through these means has allowed distance educators to be able to create a more live and synchronous class environment, which in turn has also allowed them to be able to rely more and the old proven method of the Direct Approach to Instruction.

Discussion Approach to Instruction:

Joyce Taylor Gibson points out how the discussion Approach to Instruction shifts the focus less from the educator and more to the learner, which creates a much more exciting "partnership for learning that can be life changing, especially for students" (Carr-Chellem & Reigeluth, p 102). This approach welcomes and encourages the learner to incorporate their own perspectives on what is being taught, which helps the learner assimilate or accommodate the content being presented. Jean Piaget (1981) discusses how learners take in new knowledge from their in environment through the process of assimilation, where learners seek out knowledge that they are familiar with and add it to their knowledge base, or accommodation, where learners restructure their understanding of the world to accommodate new information that might conflict what one already knows. This type of learning helps facilitate a much deeper understanding of the content than the direct approach and also helps with retention of that information as well through "learner empowerment" (Carr-Chellman & Reigeluth, p 69).

The Discussion Approach was not much of an option for distance education programs before telecommunications were made available, but has evolved much since through the establishment of asynchronous learning networks (ALN), which "have become a commonplace" (Reiss, Selfe & Young, p 17). The first sign of this may have been with educational institutions utilizing closed circuit television to bring classrooms together that were intra-institutional but separated geographically, like what the University of South Carolina was still doing through the campus facilities of Horry-Georgetown Technical College in 2002. This crude method in delivering distance education had features were much more limited compared to means used in the advent of modern online video streaming technology. For example, the University of

North Carolina Wilmington has utilized a number of state-of-the-art commercial learning management systems and virtual classrooms that allowed traditional classroom students to collaborate synchronously with online students that were located in various parts of the region.

Problem-Based Approach to Instruction:

It is worth noting that the Discussion Approach and the Problem-Based Approaches to Instruction do overlap. The Problem-Based Approach to Learning (PBL) is where a group of students collaborate on a project for one unit and devise the means for solving a problem that has been assigned (Savin-Baden, p 23). This can be a difficult process to adapt to for students that are more familiar with a more traditional Direct Approach to Learning, where the learner remains more passive (Reigeluth & Carr-Chellman, 69). Learners in this approach generally have to learn how to incorporate multimedia tools in their learning, in addition to having to adopt to a new method for learning and acquiring team-building skills as well (Savin-Baden, p 23-24).

As described before, there are many benefits and drawbacks to this approach. They are both designed to be focused on a learner-centered approach to instruction. The biggest difference between the two is that the learner is assigned a real-world problem to solve (Carr-Chellman & Reigeluth, 2009). The learners are expected to take this problem and figure out the process of how it will be solved on their own and, in essence, they will be defining their own content, delivery system and learning outcomes in the process. Consequently, learners will also adeptly gather, process, synthesize and even retain new knowledge much more effectively. Most of all, this approach thusly becomes ideal for the age of information.

The problem with this approach, in relation to the period pre-online video conferencing, is that the learner did not have instantaneous feedback or synchronous learning available and therefore could have possibly succumbed to the misinterpretation of new knowledge like what is described above. This is evident when looking at distance education programs offered by Western Governor's University, even as recent as 2006. To instruct students on how to become Earth Science teachers, they would use postal mail to send students packages containing computer discs and DVD documentaries containing general Earth Science knowledge and would then use an asynchronous Learning Management System (LMS) to administer assignments and assessments. The student would then be given a problem to solve as an assignment and be given very little to no assistance by a facilitator.

DISTANCE EDUCATION THEORIES

Interaction and Communication Theory:

Borje Holmberg(1995) established a distance education theory that is a part of the larger category of communication theory. Holmberg's theory involves cooperation, questioning and answering, and establishing community as a part of the effectiveness of teaching. Holmberg's theory includes assumptions such as the foundation of teaching is interaction between the learners and what is being taught, learner motivation is influenced by learning pleasure, learning pleasure is affected by the learner's emotional attachment and personal relationship, learner participation in decision making about their studies positively effects learner motivation, learning is facilitated by strong learner motivation, teaching effectiveness is represented by the learner's learning of the material that has been taught and

personable tone and ease of access to content support learner motivation and learning pleasure.

Holmberg (1995) acknowledges that his theory is merely made of hypotheses can be tested and do not cover every aspect of distance education. He later organizes his theory into eight sections/ideas.

1. Distance education serves a heterogeneous group of students that do not want to use face-to-face teaching.
2. Distance education promotes learner freedom of choice and independence. Learners are no longer held to others' decisions about place, time or term.
3. Society benefits from distance education provisions in the areas of liberal studies and professional training.
4. Distance education is also important to lifelong learning and equity and free access to learning.
5. Learning involving cognitive skills, cognitive knowledge, affective learning and some psychomotor skills are effectively provided for through distance education.
6. Distance education learning is guided and supported by communication that is noncontiguous and based on pre-produced course materials.
7. Distance education is open to all modes of learning including cognitive, behaviorist, constructivist, etc.
8. Personal relationships, learning pleasure, and empathy are at the center of distance education.

Holmberg (1995:2) calls his theory a theory of "didactic conversation" and characterizes it as using a conversational style for the course and addressing students on a personal level. Holmberg (1995) prescribes the following actions for creating a distance education program that supports learning pleasure, learner motivation and teaching effectiveness:

- Make content relevant to the learner and his or her needs.
- Create a rapport and feelings of a community between the learning and the distance education program.
- Facilitate access to course materials and content.
- Engage learners through discussion, activities and decision-making.
- Cater to communication to and from the learner that is helpful.

Andragogy Theory:

Andragogy is a theory that focuses on adult learners and was developed by Malcolm Knowles. Knowles defines andragogy as a theory of helping adults learn based on assumptions of how children and adults differ as learners. In Knowles' eyes, being an adult learner means that the learner is self-directed and views his or her self as having autonomy. Knowles' theory of andragogy is based on the following assumptions (Clardy 2005):

- Self-concept of autonomy and self-directed learners
- High level of life experience and background.
- Understanding the reasoning behind learning is needed.
- Personal need motivates learning.

- Real-life and relatable application of learning is needed.
- Intrinsically motivated learners.

The model of andragogy is created with two ideas that adults are a distinctive group of learners and there are set guidelines and procedures to better educate adults. Knowles outlines the outcome of the andragogy model being more things learned and more purposeful learning. From the previous statement the following hypotheses can be derived when comparing andragogical learners to other learners (Clardy 2005):

- Self-directed learners are more motivated
- Self-directed learners are more purposeful and intentional
- Self-directed learners have increased learning
- Self-directed learners make better use of their learning
- Self-directed learners have better satisfaction with learning experiences

Knowles' andragogy theory has met some criticism for its early defining of pedagogy to be used with strictly children and andragogy used with strictly adults. Later revisions of his theory, show that Knowles acknowledges that situational influences effect the decision to use andragogy or pedagogy. He has also come under criticism for his use of the ill-defined term "better." Knowles simple says that self-directed students learn better than other students, but does not state specifically what is being measured to conclude that the learning is better (Clardy 2005).

Even with its criticisms, Knowles' andragogy theory and model has implications for practices in instructing andragogical learners. Knowles outlines the following four questions as structuring

the learning experience and being answered and implemented by the learner in the andragogy model (Clardy 2005):

1. What content should be covered?
2. How should content be organized?
3. What should be the sequence of presented material?
4. What is the most effect method to transmit material?

The following instructional practices can be prescribed from Knowles' Andragogy theory (Clardy 2005):

- Inform students of the learning program
- Create a conducive learning environment
- Involve learners in the planning process
- Diagnose learning needs
- Specify clear learning objectives
- Design the learning program with learner input
- Operate the program as a facilitator instead of the independent expert

Combined Theory:

Perraton's distance education theory is a combination of components of other existing theories of communication and diffusion, as well as, educational philosophies (Simonson 2012). Perraton argues that no single theory can be used in isolation from others. All existing theories need to be used to address questions and problems in distance education (Perraton 1987).

Perraton's theory is expressed in the form of hypotheses such as, any medium can be use to teach any content, distance education eliminates restrictions to expansions of programs due to staffing limitations and ratios, distance education can be less costly than traditional education under certain circumstances, distance education reaches audiences unable to be reached by traditional education, distance education can be structured to enable dialog, the role of a tutor in distance education shifts from content communicator to learning facilitator, group discussion is an effective learning tool for distance education, and in most cases, there exist distance learning resources that are cost effective and effective for learning(Simonson 2012).

Perraton (1987) outlines five theoretical statements dealing with methods of teaching for distance education.

1. Communications media are all equal in their effectiveness.
2. Use of multiple media has a higher success rate than use of single media.
3. Combination usage of immediate and delayed feedback leads to effective learning. However be aware of the length of delay as there is a negative correlation between the amount of delay and amount of effective learning.
4. Simultaneous two-way communication or face-to-face tutoring increase distance education effectiveness.
5. Presentation devices with text and coherent structure of content increase distance education effectiveness.

Perraton (1987) acknowledges that these statements are very broad and merely a starting point for addressing the issues and problems that arise in the practice of distance education.

Equivalency Theory:

Equivalency theory is based on the idea that students in face-to-face settings and online settings need equivalent and appropriate learning experiences instead of identical experiences. In this theory, Simonson uses the idea of distant learners and local learners. Simonson(2000) states that local and distant learners can be equivalent in their learning outcomes given equivalent learning experiences. He emphasizes that equivalency is not the same as equality and is achieved through using several approaches and resources for instruction. Simonson (2000) outlines four steps for choosing technologies in order to achieve equivalency in the online setting.

- Assess available technologies- During this process balance technology efficiency with effectiveness and choose technology that all students are able to use.
- Determine course learning outcomes- Determine what measurable or observable behaviors will demonstrate learning has been achieved.
- Identify the learning experiences and pair them with appropriate and available technologies- The common mistake is to assume that face-to-face material can just be converted into online form. A more complicated process should take place and involve first organizing content into modules, followed by deciding the learning experience for each module and the technology needed to deliver the experience.
- Prepare learning experiences for online facilitation- Decide whether online delivery strategy is going to involve instruction that is linear programmed, branch programmed, hyper-programmed, or student programmed.

Simonson highlights that while using several forms of media in an online setting can achieve equivalency, it is important to let instructional reasons lead media choices. Equivalency is difficult and time-consuming to achieve, but is effective. The key is to recognize the differences in local and distant learners and acknowledge these differences when creating learning experiences (Simonson 2000).

Conclusion:

The 20th century theories of learning and distance education have proven to stand the test of time. John Dewey, Jean Piaget, Maria Montessori are examples of contributors that laid the foundation to learning theories that are a part of distance such education as we see it today. General learning theories as the Direct Approach to Learning and the Constructivist Learning Theory, along with more specialized theories such as Holmberg's Interaction and Communication Theory, Knowles's Andragogy and Hilary Peraton's Combined Theory can be and often are intertwined to create a successful distance education program. Each theory includes its own assumptions, hypothesis and implications, but all theories are equally important to the field of distance education.

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