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## **Distance Education: Definitions, Generations, Key Concepts and Future Directions**

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### **Abstract**

Distance Education, nowadays defined more as Open and Distance Learning, dates back to 1800s. Once considered as using non-traditional approaches and delivery methods compared to conventional campus-based education, distance education now has become a mainstream form of education increasing its popularity and use in the 21st century. Distance education has taken various forms and different definitions have been adopted depending on the age it has been developed. Technologies and pedagogies of the age along with the societal circumstances have influenced how distance education is viewed and practiced making way for different generations of distance education. Distinct concepts, pedagogies and practices for distance education have also emerged on the journey distance education has taken since the 19th century. For this reason, this article firstly provides a critical review of the definitions of distance education presenting a new definition reflecting the affordances of the digital age. Moreover, the distance education generations are presented with focus on the factors leading to the forming of these new generations. Concepts such as transactional distance and social presence and trends and practices such as OERs, MOOCs and learning analytics are also addressed. Furthermore, the role of culture in design, delivery and perception of distance education is discussed with focus on the future of distance education.

**Keywords:** Distance education, Generations, Definitions, Concepts and trends, Culture

### **Introduction**

Open and Distance Learning has gained a new breath with the turn of the 21st century with more and more courses delivered through distance education models worldwide. The impact of the new media, particularly digital connective technologies to deliver courses from a distance has triggered a new interest towards open and distance learning opportunities including the advent of Open Education Resources (OER) and Massive Online Open Courses (MOOCs) that attempt to provide learning access to a wider audience. However, albeit the renewed interest, the history of distance education dates back to 1800s when a Swedish newspaper advertised opportunity to study “Composition through the medium of the Post” (Simonson, Smaldino, & Zvacek, 2015). Similar attempts in the same century to deliver education through distance include that of Isaac Pitman of Britain with shorthand instruction through correspondence (Aydn, 2011). In the 19th century Skerry’s College in Edinburgh, University Correspondence College in London and the University of Chicago and Illinois Wesleyan University in the USA are considered among the pioneers in the tertiary level (Simonson et al., 2015). Before these early attempts to deliver education through distance, education was generally viewed as an elite endeavor that primarily male citizens undertook. The school model, which brought the subject area expert (teacher) and students together in terms of space and time, was considered the most effective teaching and learning scheme in the 19th century, and it continues to be the dominant education model today. One of the main reasons for the advent of distance education is to provide equal access to education for citizens of the society who is not among the elite and thus doesn’t have the opportunity and the resources to receive on-campus education in an educational institution. Distance education also has given the promise to deliver education to the underrepresented and disadvantaged parts of the society so that a wider audience could access equal access to education. For this reason, distance education is regarded as a more democratic form of education since it aims to reach all and every parts of the society (Gunawardena & McIsaac, 2004). However, distance education practices have been criticized to be of lesser quality and effect compared to campus based education; these criticisms still continue today, although research papers report no significant difference in terms of learning effectiveness and quality between distance and campus-based courses (Ni, 2013; Shanley, Thompson, Leuchner,

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& Zhao, 2004). Yet, some studies even conclude that distance education models are more effective than traditional campus-based education models (Shachar & Neumann, 2003).

Distance education has been engineered and reengineered by the techno-social changes in the society. Besides, the practices, philosophies and cultures of the persons attempting and developing open and distance learning have impacted how it is designed and conducted. Therefore, the philosophical, epistemological and pedagogical roots adopted besides technologies utilized have all shaped the design and delivery of distance education courses. Each generation of distance education has developed in line with the pedagogical underpinnings and technological innovations of its age. It is commonsense to observe the harmony between pedagogy and technology in distance education endeavors in that distance education depends heavily on communications technologies to bridge the geographical and temporal gap between the learners, instructors and the learning resources.

In each generation of distance education, technology and pedagogy have been under the influence of each other. Whereas some experts in distance education has primarily taken pedagogy as the driving force with technology as an aide on the side, others have placed technology in a central role directing the educational experience. Anderson (2003) offers a middle ground in pedagogical and technological determinism battle and suggests that both could be viewed as partners in a dance performance; while technology sets the music and the beat, pedagogy creates the choreography. A Learning Management System that views the world as course and content will require the development of corresponding pedagogies, while rejecting any pedagogy, which is poor in content focus. On the other hand, the technological innovations that can embrace various learning models impact on what pedagogical models can be developed. For instance; the lack of two-way communications technologies will hinder the employment of a pedagogical model that is based on social constructivist pedagogies, which require communication and interaction between learning parties.

This article maps the journey distance education has taken since its first advent in the 19th century focusing on a critical evaluation of the various definitions provided on the road. A new definition that reflects the technological and pedagogical circumstances of the 21st century distance education is also presented. Furthermore, the generations of distance education models are given along with some key trends in concepts, pedagogies and practices.

## **Distance Education: A Critical Comparison of Definitions**

Distance education has had a remarkable effect on the landscape of education since its advent in the 19th century as correspondence study. It has taken various shapes and utilized a wide variety of technologies ranging from postal technologies in 19th century to virtual reality today. Distance education has made into one of the top topics discussed in education in recent years with particular influences stemming from the “open” movement including MOOCs and OER (Simonson et al., 2015). Several definitions have been given as to the nature of what distance education is and what it entails. Earlier definitions depending on distance education models based on print materials in correspondence study, and later the definitions based on the industrial view of distance education have been revised due to advances in technologies which have reshaped the nature of learning materials and how they are produced and delivered, how interaction and communication occurs in distance education. In this part of the article, three definitions each reflecting an era of distance education will be critically reviewed and finally a new definition reflecting the conditions of 21st century will be provided.

In his paper where he states the need for “a clear definition” (p. 1), Keegan (1980) analyzes four definitions and offers “a comprehensive definition” for distance education (p. 6). According to Keegan (1980), the main elements of a definition of distance education are:

- the separation of teacher and learner which distinguishes it from face-to-face (F2F) lecturing
- the influence of an educational organization which distinguishes it from private study
- the use of technical media, usually print, to unite teacher and learner and carry the educational content of the course
- the provision of two-way communication so that the student may benefit from or even initiate dialogue
- the possibility of occasional meetings for both didactic and socialization purposes
- the participation in an industrialized form of education (Keegan, 1980, p. 6).

One of the strengths of Keegan’s definition is that his definition focuses on what distinguishes distance education from traditional F2F education. The separation of the teacher and the learner is a key concept in his

definition. However, the definition doesn't explicitly state what form of separation is present between the learner and the teacher. Is it a physical distance, a pedagogical distance or a time zone distance, or social/cultural distance? Next, the definition focuses on what makes distance education different from private study. The strength of this concept is that it focuses, though implicitly, on some form of a planned education experience. The weakness here is the question of whether one would need the influence of an educational organization to experience a planned learning scheme. One other strength of the definition is the inclusion of technical media to bridge the distance between the learner and the teacher. However, although the definition seems to suggest the use of all technical media, it primarily focuses on print. The problem here is that traditional F2F education depends heavily on print materials as well. This is not a concept that differs distance education from F2F education. What's more, this concept is even weaker in our age since the distance between the learners and the teacher can be bridged via a variety of interactive Information and Communication Technologies (ICT) that allow two/multi-way communication both synchronously and asynchronously.

It is of paramount importance that Keegan's definition places emphasis on the possibility of communication even though it does not explicitly clarify the "two-way communication". The definition seems to suggest communication between the learner and the teacher. However, due to limitless affordances of today's technology it is now possible to have a multiway communication. Not only can a group of learners/teachers engage in simultaneous communication, they also can do it on a multichannel level of communication using a variety of ICT. It is of interest that Keegan mentions the possibility of meetings even though he does not clearly state whether these meetings are F2F or mediated meetings (such as a radio or telephone conference). Finally, Keegan's definition was influenced by the industrial age and the industrial model of Distance Education described by Otto Peters. The theory of Distance Education as an industrial model is an organizational model rather than an educational model, which focuses on producing educational content in masses in a production line and distributed to mass number of learners. Whereas the industrial model brings forward the independence of learners, it sacrifices interaction, which is not cost-effective in an industrial view of instruction (Gunawardena & McIsaac, 2004).

Holmberg's (1989) offers a definition that focuses on the concepts of learner, educational organization and communication:

Distance education is a concept that covers the learning-teaching activities in the cognitive and/or psycho-motor and affective domains of an individual learner and a supporting organization. It is characterized by non-contiguous communication and can be carried out anywhere and at any time, which makes it attractive to adults with professional and social commitments (Holmberg, 1989 p. 168).

One of the strengths of this definition is that unlike Keegan's definition, it includes the three domains of learning: 1) cognitive (thinking), 2) affective (emotion/feeling), and 3) psychomotor (physical/kinesthetic) (Wilson, 2016). However, like Keegan, this definition incorporates the existence of a supporting organization. Moreover, this definition pinpoints to an individual learner whereas, learning is viewed as a social activity (Bandura, 1971). Therefore, the definition fails to include the learning benefits learners might get from interactions taking place among/with peers and teachers. Another strength of the Holmberg's definition is that it highlights learning as an activity without boundaries of time (any time) and space (anywhere). However, the fact that it characterizes Distance Education by only asynchronous communication is a pitfall. In most forms of distance Education asynchronous communication might be the dominant form of communication even though it doesn't have to be the sole form.

Finally, Gunawardena and McIsaac (2004) provide a broader definition which combine key concepts in three definitions by Rumble (1986), Holmberg (1986) and Keegan (1988).

Distance education defined the distance learner as one who is physically separated from the teacher (Rumble, 1986) has a planned and guided learning experience (Holmberg, 1986), and participates in a two-way structured form of distance education which is distinct from the traditional form of classroom instruction (Keegan, 1988).

The first dimension of Distance Education within this definition is the physical separation of the learner and the teacher. Secondly, this definition also stresses a planned and guided learning experience, which comprises the second dimension. Besides, Gunawardena and McIsaac do not confine learning experience within the boundaries of an organization. Adopting from Keegan (1988) they also characterize a distinct two-way structured form of education. However, they do not give clear explanations as to the distinctiveness of this two-

way structure of Distance Education. This definition highlights Distance Education as a distinct learning/teaching experience since the learner(s) and the teacher(s) are physically separated. In addition, as in all educational endeavors, guidance and planning are two elements of the structured learning/teaching activity. Distance Education also necessitates some form of mediated communication/interaction between learner(s) and the teacher(s), between learner(s) and the educational resources, and among learners. However, the communication the advancement of ICT, the communication possibilities have evolved to include multichannel and multi-way communication besides two-way communication.

Considering the pitfalls of the earlier definitions and the developments in social and virtual technologies, a revision of definitions is needed. A new definition is provided in the light of the arguments presented in this article:

Distance education is a form of education which brings together the physically-distant learner(s) and the facilitator(s) of the learning activity around planned and structured learning experiences via various two or multi-way mediated media channels that allow interactions between/among learners, facilitators as well as between learners and educational resources.

This definition focuses on the physical separation of learners and facilitators of the learning activity. The careful use of “facilitator” implies that the learner is in the center of the learning experience taking more responsibility of his/her learning as an independent learner. The separation of learners is what makes distance education a distinct form of education than campus based F2F education, which is also highlighted in this definition. Moreover, distance education entails the planned and structured learning experiences which implies that learning in distance education is not accidental but rather intentional (Moore & Kearsley, 2012). This definition, like the earlier definitions, underscores the use of technologies to mediate the interaction and communication between learners, facilitators and the learning resources. However, what this definition adds is the multi-way communication channels besides two-way communication channels. Multi-way communication refers to an enriched way of communication from two-way communication through recent web-based affordances including video conferences, social media channels and discussion forums.

## **Distance Education: Generations**

The concept of distance education has evolved through generations, correspondence, broadcast, and computer mediated distance education (Anderson & Simpson, 2012). The print technology dominated the first generation of distance education. The proliferation of a fundamental communication system, postal service, made education possible beyond the physical boundaries of university campuses (Caruth & Caruth, 2013). Aiming to bring a sense of social justice and equal opportunities, a variety of organizations adopted the correspondence education (Simonson et al., 2015). First-generation distance education sought to expand the scope of education to include the less fortunate who had limited or no access to educational resources and institutions (Anderson & Simpson, 2012). Due to limited two-way communication affordances inherited in the technology of the time, this first generation of distance education was driven by behaviorist theories of learning. Holmberg’s (1983) didactic teaching style called “guided didactic conversation” shaped the landscape of the first generation of distance education. Otto Peters was another influential theorist who shifted the focus toward the organization and delivery of distance education (Peters, 1983). Peters’s theory of industrialized education highlighted the division of labor in mass production and delivery of learning materials. Although there were no journals dedicated to distance education, the first generation of distance education witnessed the beginning of distance education research (Anderson & Simpson, 2012).

The second generation of distance education was driven primarily by broadcast technologies of radio and television. Although these broadcast technologies opened new doors for interaction opportunities, interaction between the teacher and the student was kept to a minimum (Anderson & Simpson, 2012). During this phase, the Open University in the United Kingdom (UKOU) was an exemplary distance education institution due to its effective use of television. Enabling access to education was still the driving force in distance education (Anderson & Simpson, 2012). However, there was a considerable increase in scholarly and research work in second generation distance education during which research centers, journals, conferences, and distance education-focused associations developed (Anderson & Simpson, 2012). Distance education providers were moved by the concept of economies of scale and mega distance teaching universities, such as Anadolu University in Turkey and Indira Gandhi National Open University in India, emerged enrolling large numbers of students. In the second-generation distance education learning materials were designed based on one-way

communication facilitated by the instructor. Learning was viewed as an individual activity and was based on cognitive or behavioral theories of learning (Anderson & Simpson, 2012).

Distance education has always been mediated by the use of technology and technology has defined and shaped the distance education landscape. The more affordances newer technologies inherited, the more possibilities and opportunities for distance education delivery have been possible. Next generation of distance education was driven by the two-way communication possibilities such as audio/video conferencing, synchronous and asynchronous computer mediated communication. Increased opportunities for interaction led to the recognition of the importance of interaction in distance education courses in the third generation (Anderson & Simpson, 2012). Likewise, the impact of digital technologies with the extended communication possibilities they provide have anchored the importance attached to interaction. These technologies have caused a shift of focus from organization and didactic teaching to the social construction of knowledge (Anderson & Simpson, 2012), which is in line with the social constructivist as well as connectivist theories of learning.

Recent developments still reflect the main driver for the advent of distance education practices; to bring a sense of social justice and equal opportunities for all. The impact of the “open” movement in education reflected in OER and MOOCs are examples of such new developments which are enhanced by the affordances of the connected technologies. Data mining and learning analytics allow the individualization of learning. Also, ubiquity of mobile technologies fosters anytime, anywhere learning (Anderson & Simpson, 2012). The aforementioned innovations continue to transform the distance education landscape creating new learning experiences and paradigms.

These developments are also reflected in theoretical foundations and research on distance education. Bozkurt, et al. (2015) carried a comprehensive investigation of research articles published 2009-2013. They found that theories of learning focusing on the impact of community and network, collaboration and cooperation besides higher order skills-based concepts such as critical thinking and problem solving are among the most common theoretical frameworks in distance education research (p. 344). They also report that delivery methods such as blended learning, mobile learning that use multimedia elements like cognitive load theory are emerging trends. Psychological distance (transactional distance theory) and presence (social presence theory) as well as learner dedication (self-regulated learning, self-directed learning, and motivation theory) are important emerging constructs. Their results indicate that no single theory is dominantly representative of distance education practices, which reflects the interdisciplinary nature of the field (Bozkurt, et al., 2015).

Bozkurt, et al. (2015) also highlight a paradigm shift to reflect the “open” trend in distance education. They point out that the generic term defining the field is “distance education” is not the sole descriptor of the field anymore. The term “open and distance learning” has been used more to reflect the shift toward a more social and learner centered view of learning adopting openness for more social equity. Also, in their research, Bozkurt, et al. (2015) conclude that distance education research indicates that the field responds to emerging research topics and “learning” is the major topic in the field. In addition to pedagogical concepts such as interaction and communication in learning communities, learner characteristics, and instructional design (Bozkurt, et al., 2015), distance education research continue to focus on issues of staff development (Feng, Lu, & Yao, 2015; Owusu-Mensah, Anyan, & Denkyi, 2015), universal design and disability accommodation (Barnard-Brak, Paton, & Sulak, 2012; Catalano, 2014; Elias, 2011; Rooij & Zirkle, 2016) and management of distance education institutions (Nworie, 2012; Olivier, 2014).

It is clear that the future of distance education will be directed by learning processes occurring in informal, non-formal as well as formal learning environments. Enhancing the initial goal of distance education, social equity and openness for all, and reflecting the community-based and socially driven approaches to learning, it seems that the field of distance education (or open and distance learning) will be seeing more of OERs and MOOCs.

## **Key Concepts and Trends in Distance Education**

In this part of the article, some of the key concepts and trends in distance education will be discussed. Theories of particular relevance to distance education such as transactional distance, social presence and connectivism; concepts which require an unconventional lens in distance educational practices such as learner and culture; and finally, educational trends that are rooted in distance education paradigms such as OERs, MOOCs and learning analytics will be addressed.

### **Transactional Distance and Control in Distance Education**

The theory of Transactional distance was developed by Moore (1991). Transactional distance views distance not as a geographical distance but as pedagogical distance (Moore & Kearsley, 2012). This distance is determined by the amount of dialogue occurring between the learner and the instructor, and the amount of structure within the design of the course (Gunawardena & McIsaac, 2004). Greater transactional distance occurs when there is more structure and less learner-instructor dialogue. Although transactional distance might seem like an issue for distance education courses, it might be present in a traditional F2F course such as in a big-sized auditorium-style class where there is little, if any, dialogue between the learner and the instructor. The amount of control that the instructor exerts into the course adds to the structure of a course, which increases the transactional distance. There might be other types of distances present in a course such as intellectual (the level of knowledge or prerequisite learning), cultural (language, age, gender, religion etc.), and social distance (support, closeness, affinity) (Gunawardena & McIsaac, 2004).

It might seem relatively easy to improve the amount of dialogue in a F2F course compared to a distance education course. However, the advent of web tools, social network tools in particular, which enable high levels of interactivity, dialogue and connectivity, might serve as useful tools to decrease the transactional distance stemming from the lack of dialogue between the learner and the instructor. Yet, the existence of such connective tools would not in themselves be sufficient to foster further dialogue between the learner and the instructor unless the required pedagogies of social learning are implemented throughout the course.

As previously stated the amount of control by the instructor adds to the structure of the course thereby increasing the transactional distance. Some form of instructor control might be desirable to keep the learners in track of the learning objectives of a course. However, too much instructor control might put the learner off due to the rigidity and inflexibility of the course, which might prevent the learner from identifying himself/herself with the course. One of the ways to diminish the structure in a course would be when the instructor acts as a guide rather than a source of all knowledge in the course. Also, giving the learner the choice to choose between a set of resources might help the learner to direct his/her own learning according to his/her needs and interests. Similarly, presenting the learner with choices as to what tools to use to represent his/her opinions, identity, creativity and productivity etc. might add to the flexibility of the structure of the course. Finally, involving the learner into decision-making process in course instructional design might be helpful in decreasing transactional distance created by otherwise a rigid structure.

### **Control in Distance Education**

The ultimate goal of adult education is to encourage learners to develop skills that allow them to plan, organize and conduct their own learning experience. In order to better guide learners to develop independence and self-directed learning skills, it is vital to explore the concept of control. According to Garrison and Baynton (1987), control, which is characterized as the opportunity and ability to influence, direct, and determine decisions related to the educational process, is composed of three dimensions; independence, power and support. The dynamic balance between these three components enables the learner to develop and maintain control over the learning process. Independence refers to the learner's freedom to choose the learning objective, learning activities and the methods of evaluation. Independence is associated with the freedom to choose what, when, how and where to learn. Within distance education, independence is a desirable process that should be encouraged in a distance learner. The second component of control, power, refers to the ability or the capacity to take part in and assume responsibility of one's own learning. Power is viewed as a psychological dimension and is associated with and influenced by learner variables of attitude, emotional maturity, cognitive style, self-concept and motivational level. The final element, support refers to resources (courses, learning materials, instructors, media etc.) that the learner needs to carry out the learning process. Support has two dimensions; financial (logistical) and emotional. While financial (logistical) support includes the availability of educational materials, emotional support refers to support that the learner gets from the instructor, peers, friends and family. Emotional support is the human touch in a distance education course. However, a balance of independence and support should be taken into consideration since too much instructor interference in terms of support might be detrimental to control. Support should be designed in a way to enhance greater degrees of control on the part of the learner. The three components are in a dynamic relationship with each other, and throughout the learning process, control can only be achieved when there is balance among these concepts. In an educational program, of the three dimensions, one dimension of control might be weaker the other two, which might diminish learner

control over the learning experience. In this case, the other dimensions must be made stronger to make up for the weaker dimension unless the remaining dimensions are already strong enough to compensate the reduction.

On condition that we can achieve a good balance among these three dynamic concepts composing learner control over the learning experience, any individual can learn within distance education. When individuals are provided with the freedom to diagnose their own learning needs and formulate their own learning goals (independence), when the individuals possess the needed intellectual ability, study skills and motivation (power), and when educational materials as well as emotional encouragement is available to individuals (support), and when all these conditions are met in concert with each other, each learner will successfully achieve a distance education course. However, individual differences and/or contextual requirements/restrictions might cause one dimension to fall short compared to other dimensions causing learner control to be reduced. Then, the educational institution and/or the instructors, aware of the shortcomings, should take informed action to increase the reduced learner control to enable effective learning experiences on the part of the learner.

### **Social Presence in Distance Education**

Gunawardena (1995) and Gunawardena & Zittle, (1997) provide a solid theoretical framework for Social Presence (SP). However, Tu & McIsaac (2002) further elaborates on the SP concept, expands it to include further dimensions. They also give practical guidelines that can be easily translated and implemented into online learning environments. According to Gunawardena (1995) and Gunawardena & Zittle (1997), SP is defined as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships...” (Short et al., 1976 p. 65 cited in Gunawardena, 1995). Two concepts are associated with SP; intimacy and immediacy. Intimacy depends on factors such as physical distance, eye contact, smiling, and personal topics of conversation. Immediacy is a measure of the psychological distance that an individual puts between himself/herself and others. Verbal, as well as non-verbal cues such as physical proximity, formality of dress and facial expression, etc. are indicative of immediacy. Both intimacy and immediacy enhance SP.

SP is dependent upon the qualities of both the medium and the communicators. Computer mediated communication (CMC) is considered to be low in non-verbal and social cues. However, Equilibrium Theory holds that the lack of one form of communication cue might be compensated through the utility of other forms of cues. What it means is that that a communicator tends to adopt other forms of communication relay non-verbal messages (Gunawardena, 1995). Therefore, a communicator in a CMC environment will use verbal replacements such as “I agree”, and non-verbal cues such as emoticons to convey his/her message better. In a f2f environment, teacher immediacy behaviors include both verbal and nonverbal actions such as gesturing, smiling, using humor, vocal variety, personalizing examples, addressing students by name, questioning, praising, initiating discussion, encouraging feedback and avoiding tense body positions. Although some of these elements may not be available in CMC (e.g. vocal variety), other elements might be replicated in CMC such as addressing the students by name etc.

SP has been identified as a potentially key component for learning and teaching effectiveness in both F2F and distance education courses. In a CMC environment, participants create SP through a variety of strategies such as constructing communities and reflecting their identities in these communities in addition to supplementing online communication with further verbal and non-verbal cues. The development of SP and a sense of an online community becomes key to promoting collaborative learning and knowledge building. SP projected by both the instructors and learners in the online community will impact on the perception of the social and human qualities of the medium. Interactivity, collaboration, and reflectivity concepts might not be naturally inherent within the medium, however, these concepts can be manipulated by design elements, moderator/participant roles, and participation and involvement patters (Gunawardena & Zittle, 1997).

Tu & McIsaac (2002) redefine SP as “the degree of feeling, perception, and reaction to another intellectual entity in the CMC environment” (p. 146). They further expand on the concepts of intimacy and immediacy to include the dimensions of social context, online communication and interactivity. Social context, such as task orientation and recipients/social relationships is constructed from the CMC users’ characteristics and their perception of the CMC environment. According to Tu & McIsaac (2002), social context cues that have a positive influence on SP are:

- familiarity with recipients,
- informal relationships,
- better trust relationships,

- personally informative relationships,
- positive psychological attitude toward to technology, and
- more-private locations

In an online environment, participants need some digital literacies such as typing, reading, and writing. Tu & McIsaac (2002) recommend that the conversations should start with light/casual topics. They highlight that training students to use the medium comfortably contributes to the success of collaborative learning. Interactivity includes the activities in which CMC users engage and the communication styles they use. According to Tu & McIsaac (2002), interactivity issues that have positive impact in SP are:

- timely response to CMC messages,
- use of stylistic communication styles,
- casual conversations, communication strategies,
- appropriate message length,
- planning, creativity, intellectual, decision-making, and social tasks, and
- appropriate communication group size.

### **Connectivism: A new learning theory for Distance Education?**

Connectivism is a learning theory that incorporates the principles of chaos, network, complexity and self-organization theories into our understanding of how people learn in the Digital Age. According to Siemens (2005), the three broad learning theories of Behaviorism, Cognitivism and Constructivism were developed at a time when technology wasn't prevalent in our learning experiences at such scales. Current developments in technology and social software are significantly altering how learners access information and knowledge, and how they construct dialogue with their peers and instructors (Siemens, 2008). The rapid development of technology and exponential growth in the use of the web tools plus mobile developments make new and different educational structures, organizations, and settings a possibility (Kop & Hill, 2008). For these reasons, Siemens argue that we need a new learning theory that addresses the impact of technology on traditional thinking and learning models (Siemens, 2005). According to Constructivism;

Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing. (Siemens, 2005, p. 7)

#### *How does Connectivism Differ?*

What makes Connectivism distinct from other learning theories is that, unlike earlier theories of learning which view learning as a process occurring "inside" an individual, Connectivism posits that learning can happen outside of an individual. Connectivism views not only individuals but also organizations as learning organisms. The theory also pinpoints "learning stored and manipulated by technology" (Siemens, 2005, p. 5). He also suggests that knowledge does not only reside in the mind of an individual but it is also distributed across a network (Siemens, 2006). Therefore, learning is not viewed "as schematic formation structures", but learning is viewed as "the act of recognizing patterns shaped by complex networks" (Siemens, 2006, p. 10). According to Siemens (2006), the networked act of learning exists on two levels:

1. *Internally as neural networks* (where knowledge is distributed across our brain, not held in its entirety in one location)
2. *Externally as networks we actively form* (each node represents an element of specialization and the aggregate represent our ability to be aware of, learn, and adapt to the world around). (p. 10)

Even though Constructivism and Connectivism both highlight the complexity and chaotic nature of learning, Connectivism encourages the individual to create new networks or recognize the existing networks of knowledge that will help him/her to learn. While Constructivism views learning as meaning making process, Connectivism values not only meaning-making activities but also recognizing patterns of existing meanings and forming connections within communities of practice. Previous theories focus on how learning takes place but not on what is learnt. However, in an age when the learners are exposed to exponential growth of knowledge,

Connectivism values “the ability to evaluate the worthiness of learning something as a meta-skill that is applied before learning itself begins” (Siemens, 2005, p. 2).

#### *How does Connectivism Relate to Distance Education?*

The media that distance education models are heavily dependent on have evolved considerably especially in the 21st century defined as the Digital Age. Many distance education models have incorporated technological tools that encourage further interaction between learner-learner, learner-teacher and learner-resource. In line with this development, Connectivist learning paradigm uniquely envisions enriched, connected and networked learning that incorporates the impact of technology. The enriched media has the capacity to transform the teacher-learner relationship. The teacher, now a facilitator of learning, guides the learner in developing meta-skills for creating/recognizing specialized information sets, and the connections (Siemens, 2005). Learners creating their own learning paths and personal learning networks develop their ability to see connections between fields, ideas, and concepts as a core skill. Connectivism centers the learner in the learning experience but acknowledges learning “as a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual” (Siemens, 2005, p. 7). Therefore, the theory puts special emphasis on continual learning, decision-making as a learning process and capacity-to-know. It seems that Connectivism has been influencing the instructional design of distance education courses. The concept of MOOCs is a good example of connectivist impact on how courses are delivered at a distance. Another indication of the impact is the attrition of teacher/content centered Learning Management Systems. More and more distance education courses, as well as traditional courses, are adopting various social network tools to connect learners, facilitators and resources (what connectivism calls “specialized nodes”).

#### **Massive Open Online Courses**

Massive Open Online Courses (MOOCs) have proved to be one of the most controversial topics in education throughout human history. While some view MOOCs as “a major revolution in education”, others view them as “just another example of the overblown hyperbole often surrounding technology” (Bates, 2014, p. 154). Two types of MOOCs; xMOOCs and cMOOCs have emerged in the process. Bates (2014) provides a comprehensive comparison of philosophy and practice between xMOOCs and cMOOCs.

xMOOCs rely heavily on behavioristic and cognitivist theories of learning and depend mainly on the transmission of information utilizing various media to deliver content. Assessment is generally automated through multiple-choice tests marked by computers. There is almost no or very little direct contact between an individual learner and the facilitators of the course. In this sense, xMOOCs seem to reflect the first generation of distance education courses, correspondence study in which the learners were responsible for studying the available resources with very limited or no interaction with the instructor, and Otto Peter’s industrialized education in which high quality content is produced for masses. The differences are the delivery medium and the quality and quantity learning resources available for the learners. Although learners also have chances to interact with each other, there is no feedback or guidance on their discussions and the quality of the discussion depends on the expertise of learners. Also, the automated evaluation system inherent in xMOOCs resemble pen and paper tests learners in a massive scale distance education course take. Bates (2014) provides a list of the qualities of a typical xMOOC.

- specially designed platform software
- video lectures
- computer-marked assignments
- peer assessment (wide variations in expertise between the different members of a group and different levels of participation cause problems in peer assessment strategies)
- supporting materials
- a shared comment/discussion space
- no or very light discussion moderation
- badges or certificates (for completion of the course)
- learning analytics

The educational underpinnings of cMOOCs, in comparison, are rooted in different philosophies in that cMOOCs are grounded in Connectivist and Social Constructivist theories of learning. cMOOCs are dependent upon community based approaches to learning with comparatively self-directing learners in constant interaction

with other learners and facilitators across a network built around various platform including social media. cMOOCs primarily focus on co-construction of knowledge and collaborative meaning making. In this sense, knowledge sharing platforms such as discussion forums or special interest groups on social media play an important role. There is a loosely-set curriculum, if any, and participants learn from the contributions of others, from the meta-level knowledge generated through the community, and from self-reflection on their own contributions (Bates, 2014). Bates (2014) also identifies four key design practices in cMOOCs:

- use of social media (courses are loosely supported by a range of ‘connected’ tools and media)
- participant-driven content (content is decided upon and contributed by the participants themselves)
- distributed communication (communication is a self-organising network with many sub-components)
- assessment (participants decide for themselves whether what they have learned is appropriate to them)

### Open Educational Resources

The idea that sparked the advent of Open Educational Resources (OER) movement is the idea that the world’s knowledge is a public good and that technology in general and the Worldwide Web in particular provide an opportunity for everyone to share, use, and reuse it (Smith & Casserly, 2010). In other words, OER movement was also driven by the social responsibility which aims to provide equitable and universal access to knowledge and web platforms particularly serves as distribution platforms. This driving force behind the OER movement has encouraged multiple initiatives around the globe to provide access to a wide range of educational resources including lecture materials as well as educational materials.

Two official definitions are available for OER; one from UNESCO and one from OECD. UNESCO’s previous definition (UNESCO, 2002, p. 24) was refined to include not only digitized but also other forms of resources as OER.

teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. (UNESCO, 2012, p. 1)

digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research. (OECD, 2007, p. 10)

Both definitions highlight the “openness”, the “digital” formats, and “reusability/adaptation” or resources. What do we mean by openness? Nti (2015) provides a somewhat comprehensive concept of what open means in OER. The paper distinguishes 4 levels of openness in OER:

- Level 1: Access and Accessibility. Access refers to free availability of the resources as well as the provision of required technical infrastructure. An educational resource might not be considered accessible if it is distributed on a web platform for users with no access to the internet. Accessibility refers to the design of products, devices, services, or environments for people with disabilities. The fact that an educational resource is out there on the web doesn’t ensure its accessibility for disabled people unless it comes with some form of assistive technology. Also language barriers might undermine the accessibility of a resource. Most OER are in English, which might pose accessibility issues for non-speakers of the language. Cultural, economic and social factor might also pose accessibility issues.
- Level 2: Right and capability to use: OER resources come with the rights for the users to use them for their learning/teaching or researching purposes. However, the user’s capability to use a certain tool on which OER is presented determines its usability.
- Level 3: The provisions that allow for users to be able to modify, reuse, and repurpose content. This level deals with the copyright licenses such as creative commons. While some OER come with the licenses that enable the users to modify, reuse, and repurpose the resource, others might not allow modification or repurposing.
- Level 4: Redistribution of resources. This level is the highest level which enables users to redistribute the resource they have modified or repurposed. Redistribution is also associated closely with copyright licenses.

Finally, The OER review by The William and Flora Hewlett Foundation provides a comprehensive list for OER:

1. Learning Content: Full courses, courseware, content modules, learning objects, collections and journals.
2. Tools: Software to support the development, use, re-use and delivery of learning content including searching and organization of content, content and learning management systems, content development tools, and online learning communities.
3. Implementation Resources: Intellectual property licenses to promote open publishing of materials, design principles of best practice, and localization of content (The William and Flora Hewlett Foundation, n.d.)

### **Learning Analytics**

Data mining tools within an online course help to track learner behaviors by recording variables such as number of posts, time spent on the platform, number of clicks, engagement and involvement patterns as well as resilience and retention of concepts (Johnson, et al., 2013). Learning analytics (LA), in this sense, is defined as “the analysis and representation of data about learners in order to improve learning” (Clow, 2013, p. 683). According to the 2013 Horizon Report, LA has positive implications for administrators, policy makers, instructors, designer and learners alike to improve the educational experience.

Administrators and policy makes can make use of LA to target at-risk students, assess the quality of their programs and see if their retention improvement interventions are working. LA can also help the administrators and policy makers to locate areas for improvement and make better informed decisions as to the allocation of resources. All of these outcomes might lead to development of well-informed policies and effective pedagogies which can be assessed continuously in terms of efficiency and effectiveness through LA. LA also has the potential to allow instructors identify strengths and weaknesses of the learners since instructors can track learners’ online learning behaviors and preferences, which will provide instructors with further insights into what learners are experiencing. Relying on LA data, instructors can make calculated adjustments and suggestions to motivate learners, locate areas for improvement. LA also enables the development of adaptive learning environments that respond to a student’s progress in real-time. The design of learning software might be reshaped to enhance learner engagement and involvement within an online course. Early warning or encouragement systems might help learners to see how they are doing and enable them to take timely an informed action. All in all, by allowing the aggregation of large amounts of data on learner behavior, LA helps to tailor learning to learners’ personal needs and interests. LA also has the potential to foster personalized learning environments that adapt to the learning behaviors of students.

### **Learner in Distance Education**

Learner engagement and drop-out rates have been important issues for distance education and several studies attempted to discover factors that inhibit or enhance learner engagement and reduce drop-out rates in distance education courses (Grau-Valldosera & Minguiñón, 2014; Fozdar, Kumar, & Kannan, 2006; Yates, Brindley-Richards, & Thistoll, 2014). Yates et al. (2014) identify “enablers” and barriers to learner engagement in distance education courses through distance education staff perspectives. Student-focused approaches and high-quality course and resource design were among the enablers according to the staff taking part in the study. Yates et al. (2014) underscore the importance of catering for individual learner needs and providing social support to increase learner engagement. They also found out that learner-teacher and learner-learner interactions were key determinants in making the students feel part of a learning community and to create a sense of belonging, which contribute to learner engagement. According to the staff course, resources and course design were important enablers in student engagement. On the other hand, poor quality course materials were among the barriers detrimental to learner engagement. Another barrier was negative attitudes toward learners. Resistance to change was also identified as a further barrier that negatively affected learner engagement because some staff were reluctant to change or improve the quality of their instructional resources and techniques. Yates et al. (2014) also identify four student-related enablers that help course completion; correct course and program choice, monitoring, use of support services, and involvement in a learning community. Their study emphasizes the importance of guiding learners into the appropriate courses as well as amount of study and resources. Careful monitoring of learner progress was an important aspect of encouraging engagement as well. The need for students to be supported academically and availability of various resources are also determinants in learner engagement. The final enabler for learner engagement was involvement in a learning community, which highlight the importance of creating learning communities of staff and learners. The first learner-related barrier

was students lacking necessary skills. Learners who were unprepared for the independent learning in terms of motivation, intellectual skills such as writing skills affected learner engagement negatively. Also learners' social and family commitments were barriers to their engagement within the course. Finally, lack of F2F contact was identified as a student-related barrier to engagement. The lack of F2F contact was reported as a barrier to establishing relationships with students to encourage engagement and connection with the institution.

A number of studies also investigated learner attitudes toward distance education (Lenka & Kant, 2012; Simon, Burton, Lockhart, & O'Donnell, 2014; Smidt, Bunk, McGrory, Li, & Gatenby, 2014). Although these studies do not report gender as a determinant in learner attitudes toward distance education, Lenka and Kant conclude that biographical factors such as locality, stream, and caste play a vital role to develop positive attitude towards distance education. Smidt et al. (2014) underscore the importance of providing clear structure and guidance in terms of course expectations and responsibilities for positive learner attitudes. They also report that it's also important to offer well-designed and creative tasks such as audiovisual content for multiple learning styles. Interaction with both other learners and instructor is also emphasized as a contributing factor for positive attitudes (Farooq, Al Asmari, & Javid, 2012; Simon et al., 2014).

### **Culture in Distance Education**

Culture has a central but neglected role in design, perception and effectiveness of the learning experience. With the widespread use of connective digital technologies, it has now become possible to connect with individuals from diverse cultural orientations enabling learning communities to form that foster intercultural communication (Saykili, 2018). In his paper where he proposes new directions for research into culture in online learning, Goodfellow (2008) argues against the essentialist approaches to in Distance Education instructional design, particularly that of online learning. While it is commonsense to assume that people brought up in different cultural and socio-linguistic backgrounds will develop their own perceptions and assumptions for learning contexts, in terms of instructional design of a multi-cultural distance education course, a reductionist approach that is rooted in stereotypical national or ethnic cultural differences is also problematic for a number of reasons (Goodfellow, 2008). Goodfellow posits that culture is mainly associated with nationality, which poses a problem for distance education since it confines communication in distance education courses as communication between people of different nationalities. The conceptualization of culture as a national trait also enforces the view of "the suitability of materials or interfaces designed by people of one nationality for use by those of another" (p. 553). However, the drivers of change in distance education reinforce the problems associated with a 'single cultural identity' view. The growth of widening participation, which necessitates the consideration of increasing diversity of learners, their community, and educational and professional backgrounds, is a concern for the new learning ecologies of the digital age. Also, the spread of internet community, networked socializing and informal learning communities are beginning to influence educational development through the incorporation of web2.0 technologies into course design.

The increasing multinational nature of distance education courses requires the reconsideration of prevalent western approaches to distance, particularly online, education. The problem with instructional design is single cultural identity being imposed on culturally diverse learners, and the key to this problem is seen as providing culturally appropriate instruction. However, the issue here is the question of how to cater for an audience of culturally diverse backgrounds. A reductionist approach that is rooted in stereotypical national or ethnic cultural differences is also problematic since it doesn't encompass the new cultural and social identities formed in virtual learning communities that are rooted in a combination of contemporary cybercultures of the internet and the systems of cultural relations inherited from conventional settings. Today, it is not only the national or ethnic characteristics that form the basis for one's cultural identity, but also the virtual communities of practice shape the individual cultural identities. Thus, the question lies in how to make sense of the new cultural/social identities in virtual platforms and how to reflect these identities in course design.

Recent research into culture in distance education handle the problem of designing and implementing courses for non-western cultures. These research are mainly grounded in Hofstede's characterizations of national culture (Hofstede, 2001). Hofstede categorizes cultures as 'individualistic' cultures (focused on self-interest) and 'collectivistic' cultures, (centered on the interests of family and the wider community); or between 'high-context' cultures (using the entire social context of an interaction: physical location, status of participants, body language etc. to interpret its meaning), and 'low-context' cultures (focusing on the direct content of messages, seeking specific information and/or expecting particular responses). The essentialist conceptions of culture, such as that of Hofstede, tend to view culture as a manifestation of individual behavior and disposition. In distance education, this translates into instructional design as the need to tailor the design of learning environment to suit

individual cultural differences. The problem with this view is that this perspective will not be helpful in managing unpredictable configurations of heterogeneous and dispersed individuals. It might be considered beneficial to focus on the collective national characteristics where large groups of mono-culture individuals are working together. However, when we are dealing with multi-cultural learning ecology, where the interaction is cross-cultural, the collective national characteristics won't be exhibited. Citing from Scollon & Scollon (2001), Goodfellow (2008) underscore that it is not the cultures but the individuals that talk to each other. For these reasons, the view of culture primarily as an issue of birth or upbringing is problematic in a multi-cultural learning ecology influenced by the contemporary cybercultures of the internet in the face of the new cultural and social identities in virtual communities. Therefore, it becomes of paramount importance for instructional designer to consider not only the engrained cultural dispositions and conceptions, but also the manifestations of individual and collective behavior which reflect the emergence of new systems of values and ways of communicating about learning (Goodfellow, 2008).

## **Distance Education: The Future**

Technological innovations hand in hand with the pedagogical underpinnings have been shaping and reshaping how distance education is structured and delivered. New technologies along with the social conditions help advancement of appropriate pedagogical models. The cognitive-behaviorist pedagogical models which have given direction to distance learning practices in the first generation of distance education were developed at a time when two or multiple way communication possibilities were scarce and much of the learning/teaching activities were dependent on the print-based technologies. Although cognitive-behaviorist models are still in effect today, social-constructivist models were developed in the age of web 2.0 technologies that allow two and multiple ways of communication and interaction. Still, connectivist pedagogy took hold in a time when technology has begun to enter the social domain seamlessly and technology impact on learning has reached a peak such that previous learning models have started to fall behind, thus giving way to new generations of distance education.

Some experts predict that future models will be shaped by technological innovations such as web 3.0, semantic web, mobile devices, augmented and virtual reality (Hendler, 2009). Even though the technological innovations play a vital role in shaping the future of distance education, it is doubtful that they will trigger a paradigm shift similar to the previous technological innovations since it doesn't seem that the nature of communication will change. On the other hand, data mining and learning analytics along with the communities of learning which is rooted in the network of learners and resources will help the construction of 'collective mind' which will guide the distance education models and pedagogies.

## **Conclusion**

Distinct technologies and pedagogies guide distance education definitions and generations. Even though one single pedagogical model alone fails to answer all the questions associated with how learning occurs, these pedagogies together support and supplement each other. As the new technological innovations emerge, new areas of learning, new practices and thus trends on distance education emerge. Distinct learning experiences and processes necessitates the use of appropriate learning activities and contexts. Distance education experts, therefore, need to formulate the most effective mix of technology and pedagogy. The primary actors of all distance education generations are learners, instructors and resources; thus, the formulation of any effective distance learning experience must consider how the relationship of these actors are constructed depending on the pedagogy employed and technologies available. Whether the primary actors in a distance education undertaking are placed in a central or non-central role, for an effective learning experience all learning models including behaviourist, cognitivist, constructivist and connectivist pedagogies each have a vital role to play. Culture also has a central role impacting the effectiveness of a given distance education practice and pedagogy.

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