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*by* Heather Michel

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Connectivism

## Connectivism

The purpose of this essay is to explain connectivism and its application to distance education practice. Connectivism is an extremely recently developed theoretical framework which emphasizes the relationship between knowledge, experience, and learning. According to this theory, people learn through contact with their world and making connections between experiences to form knowledge. As online education evolved and new technologies emerged, some authors suggested that none of the three canonical approaches (behaviourism, cognitivism and constructivism) was sufficient to describe the new types of learning that were happening. In light of this new technological interaction, “connectivism emerged much more like a bird breaking out of its shell than an explicit creation of theorists. They simply described what they were seeing” (Barnett, McPherson, & Sandieson, 2013, p. 685). There are so many ways to apply this theory in the field of education that imminent scholars of connectivism may sound like they are disagreeing or describing entirely different theories when in fact they are merely pointing out different ways one can make connections.

### **Theoretical Definition**

According to Siemens, who coined the term connectivism, there are networks whose nodes represent learning resources, organizations, information, data generating and storing machines, images, feelings, ideas, people, communities, and anything that can be connected to another node. “Learning occurs as individuals discover and build connections between nodes” (Anderson, 2010, p. 34). Siemens believes that the connections which enable learning are more important than the amount of knowledge held. “We derive our competence from forming

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connections” (Siemens, 2005, p. 5). The goal is to be able to see and traverse the network and create connections between nodes; however, not all connections are of equal strength. Rather than concentrating on memorizing facts and concepts, connectivism focuses on learning how to create paths to knowledge at the point of need, thus increasing network complexity. <sup>2</sup> The ability to make decisions on the basis of acquired information is integral to the learning process as well (Kop & Hill, 2008). Siemens said in his interview with Schwier that he focuses more on the sociological and psychological angle of connectivism while his research partner, Stephen Downes, concentrates on the philosophical and artificial intelligence aspects of connectivism (2011).

<sup>7</sup> According to Downes, at its core, connectivism asserts that “knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks” (2007, para. 1). He believes that knowledge is not a thing to be acquired; rather it is “*literally* the set of connections formed by actions and experience” (2007, para. 4). Knowledge has little to do with the linguistic structures that other theories speak of and is not transferred, made, or built. There is no intentional construction, as connections form naturally by association. The activities of learning are more like developing ourselves (Downes, 2007).

According to Anderson, who explains many different learning theories, there are three contexts in which connectivism is found. The first context is familiar groups, which are secure places where students congregate and undertake independent and collaborative learning. This context is characterized by closed environments, strong teacher leadership, and being bounded by a time frame. Learners supporting each other build levels of trust that allow the group to

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actively engage with and critique each other. The second context is “networked learning activities that expand connectivity beyond the Learning Management System (LMS)” (Anderson, 2010, p. 35) to foster networked learning opportunities between students, alumni, and the general public. The network environment is more open <sup>4</sup> than that of groups; leadership is emergent rather than given; and networks continue long after formal learning is over. The third context is learning in collective which involves synthesizing the various activities of the Internet and applying any knowledge gained to specific situations. Searching through large resources and “filtering them for perceived value or for use” (Anderson, 2010, p. 36) allows the mining of the activities of tens of thousands of people. An individual’s connective networks benefit from recommendations of others, creating paths to connect more easily to learning resources.

#### **Practical Definition**

Utilizing the connectivist type of learning, one is able to make connections among different angles of the theory taken by various theorists. The true definition of connectivism is the summation of all the angles taken together. Every one of the nodes together make the knowledge of the definition of connectivity. The discovery of the intricacies of the theory of connectivism is ever-growing, due to more people constantly adding their angle of understanding to the common awareness of the theory.

The scholars of today are looking at as many angles as they can find to describe the theory more fully. Ten years ago, when it was first introduced, connectivism was not fully accepted as a learning theory because it had no place to fit within the theories pertaining to the web-based wave of distance education (Kop & Hill, 2008). However, in the last four years, many articles have been written on how connectivism relates to distance education today. Due to

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advancements in technology, to paradigm shifts in distance education, and to growing awareness of its existence, connectivism is becoming a reality in the minds of educational academia. It is commonly used to describe the effect of technology on how people communicate and learn and has been explained as <sup>3</sup> the understanding of where to find knowledge when it is needed. It emphasizes the role of context, which makes it particularly suited for those who are most comfortable with high-context language and thinking paradigms.

### **Educational Applications**

In the practice of distance education today, connectivism promises to change how teaching and learning roles are viewed. “Connectivism sees the need for formal education to expand beyond classrooms and bounded learning management systems to embrace and to become involved with the informal” (Anderson, 2010, p. 34). Both the classroom and the structured LMS are relatively small contexts in which to build connections. Learners will have to be responsible for their own acquisition of knowledge. “In order for connectivism to make an impact beyond a small cluster of heavy web-users, skills, literacies, and competencies will need to be defined and developed” (Siemens & Canole, 2011, p. 2). Teachers will have to guide <sup>6</sup> students into developing the skills, literacies, and competencies they need to make connections.

As Downes notes, “Learning ... occurs in communities, where the practice of learning is the participation in the community. A learning activity is, in essence, a conversation undertaken between the learner and other members of the community” (2006, “A Network Pedagogy,” para. 5). Studies show that almost all <sup>1</sup> of the social networking websites have created <sup>1</sup> learning networks and online communities within their pages. Educational institutions have taken advantage of social networking websites to host their teaching and learning activities. “Social

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networking websites which offer connections in the form of friendships provide a context for the implementation of Connectivism” (Tinmaz, 2012, p. 234).

Organizations can use the connectivism theory, which embodies a holistic perspective, to teach those entering the workforce, for example, in the medical field or police work where clues given by interviews with people must be connected with prior knowledge and peer advice in order to fully understand the situation and correctly apply a workable solution. In this way, learners increase the resources from which they can draw, thus becoming valued resources for others. The connectivism theory can also be used in the artificial intelligence field since connectivism allows for the learning by any machine that can be programmed to make connections between different pieces of information. These machines are being used today for mining data from large Internet resources and for performing learning analytics in order to further the knowledge available to institutions concerning the learning needs and styles of their students (Schwier, 2011).

### **Analysis**

It does seem that one way people learn is by making connections in their situations unintentionally. This should not be considered opposed to making an effort to construct meaning from situations, but rather in addition to it. Human beings are certainly able to focus on a particular set of knowledge for the purpose of internalizing it for later use. In this way, they learn the material by making meaning out of it. Humans are also able to subconsciously take in information from their environment and learn by making meaning of what they happened to experience or observe. A third way humans are able to learn is what the theory of connectivism describes: drawing connections between nodes of information sources in order to form a

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complex web of knowledge and understanding from which to draw conclusions, modify beliefs, and make decisions. This way of learning seems particularly well-suited for sifting through and learning from the massive amount of information available today on the Internet. It also seems to accurately describe the ability of a large community of people to co-create knowledge that each individual can then use in their own life and that society as a whole can use as well.

Bell wrote <sup>5</sup> a critique of connectivism as a theory of learning in which he voices a concern that “connectivism is perceived as relevant by its practitioners but as lacking in rigour by its critics” (2011, p. 98). He offers five options for needed research that will help support the theory of connectivism. At this point in its life, the theory of connectivism is influential; however, until a substantial research base is developed to confirm the ideas it contains, it will not be fully accepted as a theory of learning.

### **Conclusion**

In 2004, Siemens and Downes published their thoughts on a new way of learning that seemed particularly appropriate to the 21<sup>st</sup> century. Siemens, now called “the father of connectivism”, explained that people learn by making connections between various aspects of their lives. These connections, according to the theory, are the knowledge itself, and the act of connecting is the act of creating knowledge. This description of learning can be applied to individuals, communities, and even smart machines, all of which can make connections and produce new knowledge. Distance education has been impacted by these ideas in the area of the roles of teachers and learners. Teachers are called upon to guide students into acquiring the skills needed for the students to make connections and add to the knowledge of the ages. The main application of connectivism is found in the social networks that education has begun to utilize.

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