

Connectivism Theory

Slide 1	Prior presentations have provided overviews of a variety of learning theories, but none had a focus on learning when using digital technology. This presentation will focus on one that does, labeled connectivist theory. My name is Bill Huitt and I am Professor Emeritus at Valdosta State University and Adjunct Professor at Capella University.
Slide 2	The vast majority of the learning theories were developed during the twentieth century and were heavily influenced by the industrial age
Slide 3	with learners conceptualized as machines
Slide 4	and classrooms conceptualized as factories.
Slide 5	By the middle of the twentieth century the context began to change as society moved towards the digital or information age and learners began
Slide 6	to be conceptualized as computers, but
Slide 7	the industrial model has been very slow to change.
Slide 8	In the latter part of the twentieth century, theoreticians proposed a view the learner as an active inquirer who is
Slide 9	embedded in a social, cultural, and historical context
Slide 10	and the constructivists and
Slide 11	positive psychology approaches have influenced classroom practice.
Slide 12	The connectivism theory provides an additional insight. In the modern era, knowledge resides in multiple digital databases that can be quickly accessed by anyone with access to the internet.

Slide 13	With the addition of mobile technology, access to knowledge in a dynamic form has become ubiquitous.
Slide 14	It is estimated that for the past several decades, the exponential rate of increase in data creation has resulted in the production of more bytes of data than there are stars in the known universe
Slide 15	by a factor of 40.
Slide 16	Within the next 5 years, the amount of data produced each day will exceed what could be stored on about 212 thousand DVDs. And that is just new data.
Slide 17	Unlike textbooks or journal articles,
Slide 18	these knowledgebases are constantly changing and being updated.
Slide 19	The beginning of the development of connectivism can be traced to George Siemens
Slide 20	and Stephen Downes. Siemens proposed that
Slide 21	“Connectivism provides insight into learning skills and tasks that are needed for learners to flourish in a digital era.” Some basic elements of connectivism are
Slide 22	a focus on actionable knowledge or knowledge that is somehow related to taking action, especially as it relates to creating a product or delivering a service. For example, this group of learners investigated a social service organization and then organized a toy sale to raise funds for its projects. The effort was then shared on the organization’s website.
Slide 23	A related principle is that active inquiry is critical when knowledge is ubiquitous. That is, how to access knowledge in digital databases is more important than semantic or procedural knowledge identified by information processing theorists.
Slide 24	This is a vital distinction as relatively static knowledge is the focus of most current assessments of learning. This is similar to Piaget’s conceptualization of knowledge.

Slide 25	A third principle is that learners are both consumers and producers of information and knowledge. Connectivist theorists emphasize that learning occurs as the individual interacts with a digital network; educators are encouraged to have learners not only use the digital network for inquiry, but to also contribute to the network's development.
Slide 26	From this perspective, learners are co-creators of knowledge and they operate at multiple levels of mastery, from novice to expert. As any adult knows who has asked a young person for assistance in using technology, expertise can be demonstrated at a very young age.
Slide 27	As connectivism was originally conceptualized, learners work in groups to
Slide 28	define the objectives for learning,
Slide 29	interact with the network to acquire and organize or re-organize knowledge,
Slide 30	and then create a product or service that is submitted to the network for reflection and critique.
Slide 31	One of the first uses of this theory was in the development of MOOCs or Massively Open Online Courses where learners contributed to developing the course as they were taking it.
Slide 32	The original conceptualization has morphed to provide an increasing variety of implementations of the concepts and principles developed by Siemens and Downes.
Slide 33	One alternative that has developed advocates more structure from an expert to organize topics for investigation, assist in the inquiry, and facilitate development of products that could be shared with the information databases.
Slide 34	An additional evolution was the recognition that individuals can investigate and produce products independently and that personal autonomy is an important component of the learning process.
Slide 35	A modified definition of connectivism is that It is
Slide 36	a process where individuals, either independently or in groups,

Slide 37	engage in active inquiry by using a digital network, either guided or without guidance,
Slide 38	then organize or re-organize information,
Slide 39	and produce products or services that are shared with a digital database.
Slide 40	A rich literature is developing as to how this can be done both efficiently and effectively. Drexler, Matter, Thota, and Vas and her colleagues, are just a few of the researchers who have contributed to this effort.
Slide 41	An interesting focus for contributors to this theory is on creating ecologies of networks that can be easily accessed and also providing platforms that facilitate interactions among learners where created products or services can be displayed and critiqued. Williams and his colleagues provide an excellent overview of this work.
Slide 42	Another line of the development of the theory is to recognize the relationships among constructivism, social cognition, and connectivism.
Slide 43	Research related to previously developed teaching and learning strategies such as discovery and inquiry-based learning, problem-based and project-based learning, situated learning, experiential learning, and self-regulated learning are being incorporated into the procedures and processes developed by connectivism practitioners.
Slide 44	Connectivism has been a major contributor to the concept of open education with its focus on being transparent in terms of goals and objectives, with an emphasis on holistic and authentic objectives and life-long learning as well as
Slide 45	attempts to create learning ecologies where learners are in control of their own educations.
Slide 46	There are several issues that require some additional consideration. The first is
Slide 47	work completed by Kirschner and colleagues that found unguided inquiry was not as efficient or effective as guided instruction or explicit instruction

Slide 48	<p>when standardized tests of static knowledge and skills were used as assessments of learning. This will require connectivism theorists to contribute to alternative assessments of learning that provide data on learning outcomes acceptable to parents, educators, and policy makers.</p>
Slide 49	<p>A second issue is to extend the work of Hattie and Donaghue who completed a meta-analysis and developed a conceptual model of learning strategies that have been demonstrated to be effective in traditional teaching and learning contexts. This is an especially important issue as one of the major emphases of connectivism is on self-regulated learning.</p>
Slide 50	<p>A third issue is to create a process that guides learners to use reliable and valid data in their inquiries. In essence, constructivism theory proposes that learners are peer reviewers and there must be a process that articulates the rules and standards for evaluating data and its sources when engaging in such a process.</p>
Slide 51	<p>Finally, there is a need for further discussion about the relationship of constructivism and connectivism and whether either or both are learning theories or instructional theories.</p>
Slide 52	<p>Whatever the outcome of these discussions, connectivism theorists and practitioners have made important contributions to twenty-first teaching and learning.</p>
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Developed by: William G. Huitt, *Educational Psychology Interactive*
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