

Connectivism

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Overview

Connectivism is a learning theory developed by George Siemens and Stephen Downes to address the rapid expansion and complexity of knowledge available to learners. They theorize that knowledge exists in networked nodes and is networked; learning is defined as the creation of new connection between those nodes. The ability to learn, to form new connections, is more important than the accumulation of knowledge. The theory builds on concepts from many disciplines including neuroscience, cognitive science, chaos theory and network theory.

Principles of Connectivism (from <http://www.elearnspace.org/Articles/connectivism.htm>)

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn; prioritizing and evaluating the meaning of incoming information as seen through the lens of a shifting reality.

Impact on Instruction and Instructional Design (connectivism.ca)

Downes states: "To teach is to model and demonstrate, to learn is to practice and reflect."
Siemens states: "The critical role of the instructional designer is to be an educator to educators."

Siemens developed metaphors to describe the roles of both the instructor and instructional designer: Educator as Master Artist, Educator as Network Administrator, Educator as Concierge and Educator as Curator. He described learning environments as learning ecologies that are dynamic, living and evolving states. They should be informal, not structured; provide many resources, tools and opportunities for learners to interact and connect; and be decentralized and connected. Learning ecologies should encourage experimentation and be accepting of failure.

Criticism

Most criticisms of Connectivism center around the idea that it doesn't present anything new. Verhagen (2006) can 'distil no new principles ... that are not already present in other existing learning theories'. While most of the critical arguments acknowledge that there has been a change in technology and access to information, they do not believe that Connectivism is anything but a restatement of pieces of other ideas. It is seen as a useful influence on instruction and as an interesting pedagogical method, but may not stand on its own. Kop and Hill (2008) note that "[t]he utilization of ... technology in the classroom has become a feature of instruction. What remains to be established is whether connectivism holds its own as a new theoretical model..." Verhagen (2006) further argues that "the theory remains unsubstantiated philosophizing"

Others, such as Norris (2001), voice concerns that connectivism tends to map onto online interactions rather than face-to-face interactions in a classroom. citing "...the lack of critical engagement online..." and "...the temptation to connect with like-minded people, rather than [have] more challenging transactions, with experts such as the teacher in a classroom, whose role is to make people aware of alternative points of view."

Lesson Design Example

Below is an example of connectivism theories applied to a high school lesson in American Literature. While reading *The Great Gatsby*, students will participate in several online activities using a social networking site called Ning. These activities will facilitate the students' understanding connections between the themes in the book and 1920's American society and historical events. Communicating and collaborating with other students in the Ning environment will expose them to diverse opinions.

Ning is a free "create-your-own" social networking site. Anyone can quickly and easily create a site where members make personal connections, share documents, links, and multimedia. There are discussion forums, blogs, chat and endless "apps". Ning integrates with popular social networking sites such as Facebook, Twitter, and Flickr.

Lesson:	The Great Gatsby and the "Roaring 20's"
Materials & Resources:	<ul style="list-style-type: none"> • <i>The Great Gatsby</i> by F. Scott Fitzgerald • On This Day in Jazz Age Music Ning Website at http://jazzage.ning.com/ • Internet
Objectives:	<ul style="list-style-type: none"> • Students will present reasons why <i>The Great Gatsby</i> text is relevant both to themselves and to today's world. • Students will demonstrate knowledge of the political and cultural climate of the 1920's by collaborating on a timeline of the early 1900's.
Activity 1:	<p>Students: Using the Ning discussion board, create a post and list three reasons you think <i>The Great Gatsby</i>, written in the 1920's, is still required reading in the 2010's. How are the lives of the characters similar to your own life or to your friends', family members or even celebrities' lives? Read your classmates' posts and respond to two.</p> <p>Instructor: provide feedback to your students' posts. Help them draw connections between their own lives and the lives of the characters in the book. Pose questions to encourage deeper thinking and understanding.</p>
Activity 2:	<p>Students: Search the Internet for information about political, social, and cultural happenings and events from 1900 - 1925. Post dates and descriptions of events on the Timeline page in Ning. Each student should contribute 2-3 dates to this timeline.</p> <p>Instructor: add additional important dates that students do not add themselves.</p>
Activity 3:	<p>Students: The Ning site contains many photos, videos, and jazz songs from the time of <i>The Great Gatsby</i>. Browse the site and identify something that reminds you of something you read in <i>The Great Gatsby</i>. Post your observation in the discussion board and connect the image, video or song to a scene or character in <i>The Great Gatsby</i>. Feel free to post your own images, videos, etc. that depict the 1920's.</p> <p>Instructor: as students identify photos and videos that interest them, point them to additional similar resources. Pose questions to encourage deeper thinking and understanding.</p>

Job Aid for Applying Connectivism Theory in Instructional Design

Connectivism Views

- World as complex & increasing in information.
- Nodes as external entities used to form a network (people, organizations, libraries, websites, books, journals, other sources of information).
- Knowledge as dynamic networks. (A river, not a reservoir.)
- Learning as
 - on-going network formation, the process of connecting information sources (nodes).
 - distributed cognition and meaning-making.
 - recognizing patterns.
 - diversity of opinions.
 - unstructured, messy & chaotic.
 - a creation process not a consumption process.
 - continual process to nurture and maintain connections.
 - a decision-making process.
 - capacity to know more or differently over what is just currently known.
 - varying combinations of cognition, memory, emotions, beliefs and perceptions.

Content should be...

- Current.
- Accessible at the learner's point of need.
- Collective and emergent. Created, co-created, re-created.

To make strong connections the learner must be able to...

- See relevance/have motivation.
- Accept the uncertain.
- Seek out current information.
- Filter out secondary and extraneous information.
- Make decisions on the basis of rapidly altering foundations.
- Know how, know what, and know where.

Instruction Guide - Connectivism

Examples	Suggested Technologies
❖ Strive to help the learner make connections between nodes, recognizing that the following strengthen connections: motivation, emotion, exposure, patterning, logic, experience.	
Connect and expose learners to a variety of media sources on the topic and to diverse opinions from external resources. Ask the learner to reflect on and share their thoughts and feelings.	<ul style="list-style-type: none"> • Google Books, scans of original source material, informal documents (notes, etc.) • Social networking websites • Videos, text, audio, images
❖ Promote deep and reflective thinking.	
Challenge learners to identify and explore "weak" connections: those that are not obvious, but may lead to otherwise unexplored areas of knowledge and ideas.	<ul style="list-style-type: none"> • Internet/Google • Blog • Discussion Board
❖ Be democratic and learner-centric.	
Encourage learners to find their own source materials. Encourage scholarly searches and guide learners on information literacy.	<ul style="list-style-type: none"> • Google Scholar, Wikipedia • Delicious, Diigo, Stumble Upon • iGoogle, Pageflakes • Expert Blogs • RSS & Atom Feed Readers
❖ Provide diverse opinions and be adaptable to meet needs of learners at different levels.	
Provide learners with a rich array of tools and information sources and collaborative learning opportunities.	<ul style="list-style-type: none"> • Social Networking sites • Blog • Discussion Board
❖ Foster and maintain knowledge flow.	
Place less emphasis on our tasks of presenting information, and more emphasis on building the learner's ability to navigate the information.	<ul style="list-style-type: none"> • iGoogle, Pageflakes
❖ Place emphasis on informal learning: communities of practice, personal networks, etc.	
Have learners use a social bookmarking website such as Delicious or Diigo to bookmark, tag, and share online resources throughout the course.	<ul style="list-style-type: none"> • Social Networking Websites, Blogs • Twitter • Wikis
❖ Promote life-long learning.	
Have students create their own "Personal Learning Environment" using a website that allows them to pull information from various sources into one location.	<ul style="list-style-type: none"> • Search Engines • content-focused communities and boards • Social Networking sites • iGoogle, Pageflakes • Blog Tools
❖ Encourage contact between the learner and instructor.	
Instructor offers multiple ways to be of assistance including face-to-face and virtual.	<ul style="list-style-type: none"> • content-focused boards • Blog comments/trackbacks • Chat, IM, Skype
❖ Encourage Active Learning.	
Focus on a project rather than rote instruction.	<ul style="list-style-type: none"> • Lynda.com • Digital Storytelling using iMovie, Animoto
❖ Foster reciprocity and cooperation among students	
Assign collaborative projects where group constructs knowledge together.	<ul style="list-style-type: none"> • wiki, blogs • social networking websites • social bookmarking sites • web conferencing
❖ Provide prompt feedback.	
Instructor promptly responds to students' postings.	<ul style="list-style-type: none"> • Discussion Boards, blogs • Audio feedback

Additional References / Works Consulted

(In the spirit of Connectivism, we have provided social bookmarks (filtering for tag 'Connectivism'):

<http://www.diigo.com/search?adSScope=community&what=connectivism>

http://delicious.com/search?p=connectivism&chk=&context=main|&fr=del_icio_us&lc=

Books

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Websites

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<http://www.elearnspace.org/>

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.87.3793&rep=rep1&type=pdf>

<http://www.elearnspace.org/Articles/networks.doc>
<http://www.elearnspace.org/Articles/connectivism.htm>
http://www.elearnspace.org/Articles/Connectivism_response.doc
<http://www.connectivism.ca/> - Blog of George Siemens

Multimedia

<http://www.educause.edu/Resources/Connectivism/162555> (Monday, January 28, 2008) - Educause
Presentation by George Siemens