Modern Teaching: Connectivism and the Standards-based K-12 Classroom

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Boise State University

Abstract

Today's educators must deal with emerging learning theories that deal with the modern digital environment. The emerging learning theory of connectivism will be examined against the backdrop of the "trinity" learning theories of behaviorism, cognitivism, and constructivism in order to determine its feasibility as a learning theory in a K-12 standards-based classroom. An overview of the learning theories will be provided in order to compare and contrast connectivism and the trinity theories. The works of George Siemens and Stephen Downes provide much of the input regarding the characteristics of connectivism. Rita Kop's work provides the basis for effects on the learner and learning enhancement. Strengths and weaknesses of connectivism within the K-12 standards-based classroom will be discussed. The aspects of digital equality and full learner autonomy and their impact on the learning environment will also be examined. After analyzing connectivism's characteristics, an evaluation will be made regarding connectivism's role in the K-12 standards-based classroom.

Modern Teaching: Connectivism and the Standards-based K-12 Classroom

REDUNDANT

Today's educators are ~~currently~~ dealing with emerging learning theories such as connectivism and how ~~they are~~ to make ~~adequate~~ use of ~~connectivism~~ these theories in the classroom. Where does connectivism fit versus the trinity of behaviorism, cognitivism, and constructivism within today's K-12 classroom environment? Could connectivism, in regards to K-12 education, be more of an idea of being *virtually linked* to the learning theory trinity that every educator has learned and is familiar working with? And if so, how would connectivism be possible in a school system suffering from digital inequality? Regardless of connectivism's validity as a ~~learning~~ theory, the concept appears to have ~~garnered enough attention to have~~ staying power ~~in the field of education. With connectivism being a 21st century learning concept, it~~ and will obviously carry even more weight as ~~in~~ the field of educational technology advances. This paper will examine the characteristics of connectivism versus those of the trinity and connectivism's feasibility for the standards-based K-12 classroom.

Questions are bad form in a formal paper. I would suggest reforming these as statements of what you intend to discuss and move them to the end of the paragraph

Make this the second sentence in the paragraph

Discuss the highlighted questions here.

What is connectivism?

At its heart, connectivism ~~is the thesis~~ states that knowledge is distributed across a network of connections. ~~and therefore that learning consists of~~ As a result, the theory defines learning as the ability to construct and traverse those networks. (Downes, 2012) ~~In other words, the~~ Put another way knowledge ~~is out there. It is streamed across our world,~~ exists, available and accessible through technological advancements. ~~and it is up to the learner to engage these networks and learn through this process.~~ Learners connect to the network, and through this engagement process, learning occurs ~~It also appears that~~ Connectivist learning theory stresses an endless learning process. ~~That information is changing and updating so rapidly in today's world that~~ In today's world, information constantly changes and updates. Connectivism advocates that ~~enables~~ the learner ~~to always~~ be permanently connected to the network utilizing such tools as social media, RSS feeds and blogs. ~~and therefore always actively learning from updates~~ As a result, the learner constantly and actively updates their information on a particular subject matter. George Siemens explains connectivism as learning being a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning, defined as actionable knowledge, can reside outside of ourselves within an organization or a database and is focused on connecting specialized information sets. ~~and the~~ These connections ~~that~~ enable us to learn more and are more important than our current state of knowing. (Siemens, 2004) ~~Siemens also describes the principles of connectivism (Fig. 1.1), which~~ Siemens' Principles of Connectivism shown in Figure 1.1 should be examined to fully understand the concept.

Principles of Connectivism:

- 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 and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Fig. 1.1 Siemens' Principles of Connectivism (Siemens, 2004)

Honestly, I would be careful about block quoting what Siemens wrote. This is your paper and not Siemens'. You might want to think about summarizing or paraphrasing the principles instead of copying and pasting.

Connectivism ~~seems to be less concerned with knowledge in the form of memorization of facts, figures, equations, etc.; and to be more concerned with the ability to always improve the~~ places the learner's decision making ability ahead of rote knowledge and gears itself ~~decisions we make in the world we live in. Connectivism appears to be a learning theory geared~~ towards "thinking in the now to affect the future."

Overview of the Trinity

Is this really called the Trinity?? I'm not an education major, but the phrase seems awfully jargony (is that a word?) to me

In order to analyze possible connections between connectivism and the trinity of behaviorism, cognitivism, and constructivism, a brief overview of each of these traditional theories will be provided with examples as they pertain to the classroom.

Behaviorism

A well established theory,

Behaviorism ~~is a well-established learning theory with~~ focuses on the observable and creating desired responses through stimuli. ~~Behaviorist learning theory focuses on the observable.~~ This includes how people behave and how to change or elicit changes in their behavior. (Harasim, 2012) Theorists such as Pavlov ~~(classical conditioning),~~ Skinner ~~(operant~~

Presumably people reading this will be familiar with the theorist's work

~~conditioning)~~, Thorndike ~~(connectionism)~~, and Guthrie have had a great impact on behaviorist theory and its applications to education. An example of behaviorism would be positive and negative reinforcement in the classroom to modify behavior. Ex: Johnny has had problems getting on task at the beginning of class. If Johnny comes into class and gets on task immediately, then he gets a star for the day. Upon his earning ten stars in a row, Johnny gets a homework pass. This would be an example of positive reinforcement in behaviorist theory. Behaviorist learning theory is best suited for learning that involves procedures, definitions, or recalling facts.

Cognitivism

Cognitivism was the successor to behaviorism. Cognitivism deals with problem solving and making connections with prior knowledge in order to learn. The teacher moves further away from direct instruction and serves as a guide for the learner, enabling the learner to learn on their own, but providing the scaffolding necessary for the learner to achieve. Piaget's stages of cognitive development, Ausubel's meaningful learning/advance organizer, Bruner's scaffolding, and Gagne's conditions of learning all reside within the cognitivism learning theory.

Constructivism

Constructivist learning theory deals with the learner constructing knowledge through their own personal experiences, social interactions, and reflection. This theory also stresses real-world interaction. In this theory the class is student-focused with the teacher in the role of facilitator. An example of constructivism in the classroom would be a history teacher giving students various historical accounts of the same event to have them analyze perspectives. The students share their perspectives with the other group members. The students must then analyze which perspectives have the most validity to the event and support their answers. The students would be using prior knowledge and the contributions of others to formulate their answers. The contributions of Vygotsky (social constructivism), Piaget (cognitive constructivism), Bruner (discovery learning), and Dewey (constructivist philosophy) regarding education fall within constructivist learning theory.

I'm not trying to be awful, but the previous three sections feel like filler to me. I honestly would try to condense the three traditional theories to a single paragraph. To me, your paper is about Connectivism and how it applies today. I began reading the paper hoping to learn about that topic. I realize you want to provide a contrast, but I think it can be accomplished in a single paragraph. I know about Behaviorism. I don't need to be given a "little Johnny" example when I already understand Pavlov's dog. I would condense and summarize the three "traditional" theories and get right to the heart of the matter. In fact, I would suggest moving the summary of the traditional to a position following your opening paragraph. Phrase it something like, "Before examining Connectivism, the three traditional theories of classroom learning should be reviewed." Then just do a quick hit on each of them. Don't provide examples. Presumably educators reading your paper know just as much as you on the traditional theories. Use the paragraph like a breath before you jump into the water. Then dive right in to what the paper is actually about. I didn't proof beyond positive reinforcement because I really think it should be cut to the bone.

Where does Connectivism Fit in the Classroom?

~~Within the field of~~ educational technology has evolved, Connectivism has ~~found a place as an~~ Oftentimes emerged as a viable learning theory. ~~It has been~~ alluded to as simply "digital constructivism," ~~as~~ it shares some of its characteristics with the trinity theory. However, George Siemens and Stephen Downes argue that Connectivism ~~is indeed its own~~ stands alone as a learning theory. ~~The debate on whether connectivism is its own theory has been debated~~ This debate has carried on for years. From a teaching perspective, whether or not Connectivism falls into the realm of a learning theory may not necessarily be as important as how the concept of Connectivism ~~can work to increase~~ succeeds in increasing learner achievement. ~~Let us look then at the critical issues in the study of learning to examine connectivism and the trinity to see where the differences are regarding how each are utilized in a classroom environment.~~

~~Schunk presented five critical issues in the study of learning~~ (Table 1.1) (Schunk, 1996).

When examining Shunk's Five Critical Issues in the Study of Learning, comparing and contrasting Connectivism with the other members of the trinity proves useful, vis a vis how each is utilized in the classroom environment.

- How does learning occur?
- What is the role of memory?
- What is the role of motivation?

- How does transfer occur?
- Which processes are involved in self-regulation?
- What are the implications for instruction?

Fig. 1.2 Critical issues in the study of learning

Move this title to the top of the bulleted list. If you are going to call it a figure, make sure it's bordered and highlighted.

Has pointed out
Brenda Mergel ~~mentioned~~ that in addition to Schunk's five questions on learning theory, Peggy Ertmer and Timothy Newby asked two more questions which apply to instructional design, specifically, "What basic assumptions/principles of this theory are relevant to instructional design?" and "How should instruction be structured to facilitate learning?"~~(Table 1.2) (Mergel, 1998).~~ These additional questions are ~~would be~~ of great interest to instructional designers and educators regarding the use of these learning theories in the classroom environment.

~~• What basic assumptions/principles of this theory are relevant to instructional design?~~

- How should instruction be structured to facilitate learning

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Fig. 1.3 Questions regarding learning theory application to instructional design

Based on these questions, Siemens presented a table on how the different learning theories relate (Fig. 1.4) (Siemens, 11). From this table we can see the differences in each of the learning theories and their applications in the classroom becomes more apparent.

Property	Behaviorism	Cognitivism	Constructivism	Connectivism
How learning occurs	Black box- observable behavior main focus	Structured, computational	Social, meaning created by each learner (personal)	Distributed within a network, social, technologically enhanced, recognizing and interpreting patterns

Influencing factors	Nature of reward, punishment, stimuli	Existing schema, previous experiences	Engagement, participation, social, cultural	Diversity of network, strength of ties
Role of memory	Memory is the hardwiring of repeated experiences— where reward and punishment are most influential	Encoding, storage, retrieval	Prior knowledge remixed to current context	Adaptive patterns, representative of current state, existing in networks
How transfer occurs	Stimulus, response	Duplicating knowledge constructs of "knower"	Socialization	Connecting to (adding) nodes
Types of learning best explained	Task-based learning	Reasoning, clear objectives, problem solving	Social, vague ("ill defined")	Complex learning, rapid changing core, diverse knowledge sources

Fig. 1.4 Learning Theory Characteristics

Connectivism in the Classroom Environment

According to Fig. 1.4, learning occurs through connectivism when it is distributed through a technologically enhanced social network ~~that is technologically enhanced~~. Basically, a learner connects to a community of ~~other~~ learners fellow to add to, and withdraw from, the community that which they require. ~~and feeds into and learns from the community.~~ This concept shares similarities with ~~is very similar to~~ the concept of communities of practice in Constructivist learning as defined by Lave and Wenger (Larson & Lockee, 2013). The primary difference between ~~where~~ Connectivism and other theories of learning lies in its use of technology ~~is concerned is the technological aspect~~. Rather than learning through the observation of and interaction with peers in a physical community of practice, Connectivist learners access and actively engage knowledge stored in ~~different~~ nodes of a digital network as a web of interconnecting. The model frames learning ~~in terms of learners~~ ~~connecting to~~ nodes on this network, suggesting that knowledge does not reside in one location, but rather that it is a confluence of information arising out of multiple individuals seeking inquiry related to a common interest and providing feedback to one another (Kop, 2008). The more valid nodes a learner ~~can~~ connects to, the more learning can occur. The word valid should be stressed as not all nodes ~~are destined to be of~~ the same level of validity.

Connectivist learning depends upon the ability of the learner

~~Part of the connectivist' learning is~~ to determine the value or validity of particular nodes as they relate to their specific learning objectives ~~to their objective~~. ~~Can~~ students in the K-12 classroom ~~adequately perform this function?~~ This is In some cases such determinations prove difficult for where the role of the educator in connectivism comes into play. An educator in a K-12 classroom using connectivism for learning would ~~need to~~ serve less as a facilitator ~~(as most higher-education online instructors function)~~ and more in a direct instructional capacity ~~in that they would need to~~ teaching the learner how to navigate through nodes and determining their validity as it relates and usefulness, ~~and to determine the validity of that node~~ to the topic at hand. ~~It could be assumed that the~~ Younger ~~the~~ students~~,~~ or students with less exposure to digital interaction would need more guidance from a teacher than those more experienced learners ~~with more experience who can determine~~ capable of determining the validity of ~~a~~ nodes on their own ~~(for example, a third grader vs. a college student)~~. In a K-12 environment, the educator may set up a predetermined set of valid nodes for learners to access on a particular topic, but ~~in~~ doing so ~~do~~ by they ~~take away~~ may detract from the learning experience in the Connectivist sense. Instead, educators utilizing Connectivist theory should concentrate on directly teaching ~~directly in regards to~~ navigation of networks and determination of a node's validity ~~and~~ Eventually~~, providing thoughtful, useful feedback to the node.~~ having mastered these two prior skills, the learners would be taught to provide thoughtful and useful feedback to the community Once students ~~are able to~~ mastered these functions, ~~this would increase~~ the node's

effectiveness and attraction to other learners searching for a useful node to bring into their network would increase.

Connectivist learning depends upon the ability of the learner

~~Once the connection to a network has been made then~~ learners can then further their learning through activities. ~~It is envisaged that learning is enhanced by four major types of activity:~~

Four major types of activities enhance Connectivist learning:

1) aggregation, access to and collection of a wide variety of resources to read, watch, or play; *2) relation*, *after* reading, watching, or listening to some content, the learner might reflect and relate it to what he or she already knows or to earlier experiences; *3) creation*, after this reflection and sense-making process, learners might create something of their own (i.e., a blog post, an account with a social bookmarking site, a new entry in a Moodle discussion) using any service on the Internet, such as Flickr, Second Life, Yahoo Groups, Facebook, YouTube, iGoogle, NetVibes, etc.; *4) sharing*, learners might share their work with others on the network. This participation in activities is seen to be vital to learning (Kop, 2011). However in Connectivism, the choice to participate in activities would be up to the learner, as learner autonomy is a crucial part of connectivist learning. ~~Would the activity be useful for the learner to gain insight on the topic or should they move on to another node?~~

Bullet these

The learner determines if the activity will add insight on a given topic. Should the topic fail this litmus test, the learner should move to another node.

Another issue that would ~~have~~ need to be addressed regarding Connectivism in the classroom would be that of digital inequality. The lack of digital media to access or the ability to create nodes would negate much of the impact of Connectivism in the classroom. Connectivism might thrive in a classroom with a 1:1 computer ratio, but ~~what about~~ schools ~~that may have limited to no~~ having limited technology resources may experience difficulties in implementing this learning strategy. The learning a connectivist experiences is largely due to the access to their digitally connected nodes. ~~which, for all intents and purposes in connectivism, would likely be connected digitally.~~ If the classroom does not have access to computers on a regular basis, then the effectiveness of Connectivist learning would diminish as learners could not access their existing nodes nor add new nodes to their network. Learning through Connectivism in this environment would deteriorate. This is where connectivism falls short in comparison with the trinity. Behaviorism, Cognitivism, and Constructivism ~~are not as dependent upon technology~~ do not depend on technology to succeed. Connectivism is a 21st century learning concept, ~~but also~~ which requires 21st century resources to thrive.

Learner autonomy, a Connectivist strength, could possibly be a weakness in the K-12 environment as well. Connectivism is very self-directed and requires a great deal of self-motivation and confidence, not to mention a set of 21st century skills. People learning on an

informal network will choose the subject they want to learn about or the activity they want to engage in, but in a Connectivist environment they have to make other choices as well. Connectivism depends on a learner's ability to ~~For instance, they have to~~ manage time, set ~~their own~~ learning goals, find resources, and try out new tools and make them work. In a formal classroom, these choices would ~~in a formal classroom~~ be the instructor's responsibility, but are in an autonomous learning environment these are ~~linked to~~ tasks that the learner will carry out independently, which could be problematic (Kop, 2011). K-12 learners possessing no experience with a Connectivist learning environment, or lacking 21st century skills, would have to be taught these skills directly and phased into learner autonomy. As they acquired these tools, ~~learned how a connectivist learning environment was supposed to work~~, their confidence and management skills would grow and they would be given more autonomy until they were able to form their own valid network and contribute to other nodes.

Connectivism. Feasible for Standards-based K-12?

Connectivism may not be the best approach in K-12 education. Connectivist methods could be taught and eventually students could be given full autonomy over their learning experience. But in a K-12 standards-based classroom with "The Student Will Be Able To"

(TSWBAT) clear targets, total autonomy for learners may not be feasible as students would always be directed to what they were going to learn, rather than having a choice on the matter. Digital inequality would also be a key factor in the success of a truly connectivist learning environment.

The digital age we live in is rapidly changing. ~~as far as~~ New technologies and information are growing at an exponential rate. But connectivism in its purest sense may not be the best choice for K-12, due to its complete learner autonomy and lack of a clear learning path. Connectivism is a possibility for learners in higher education or open-learning settings that do not operate on standards-based instruction. Constructivism, with its collaborative nature, lack of need for total autonomy, and ability to be collaborative in a digital sense would be the closest theory related to connectivism that could operate in a K-12 environment. However, due to the standards-based nature of formal K-12, the behaviorist and cognitivist theories would probably be best utilized as they provide measurable results. In any case, the concept of a digitally connected learning environment in K-12 and use of valid nodes for modern learners to glean/share information in order to learn reach their clear target is worth pursuing.

A couple of concluding comments.

I had to read the whole paper to eventually determine your opinion. Oftentimes its best state your opinion up front and use the body of the paper to prove it.

Stay away from questions asked in the body of a formal paper.

Throughout I added capital letters to the theories. I'm pretty sure these should be capitalized. If I'm wrong I apologize.

If you're looking for more content to replace what I suggested you cut, you might want to consider what are called "digital natives" This is the generation that Connectivism targets.

You clearly understand the theory behind Connectivism. Add more of what you know and keep the writing tight and you'll have a great paper.

Again I apologize for all the comments and suggestions. I am actually trying to help you write a better paper and get a better grade. I hope this helps

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