# PROS AND CONS OF CONNECTIVISM AS A LEARNING THEORY

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**Abstract:**

It is a clear fact that nowadays knowledge is growing faster and with the spreading of information and communication technology, the dream of network learning has become a reality, at least technically, and now a vast amount of spontaneous knowledge exchange is possible. Younger and older learners need to generate new ideas and new products that are to be innovative. In this context, this study aims to explore the nature of Connectivism (Siemens, 2004) using available literature as a traditional qualitative method. The second issue is the advantages and disadvantages of Connectivism as it is concieved by the educationalists. For this, a focus group discussion was used to obtain data. The data obtained formed the following categories: Shortness of traditional theories, the tools of Connectivism, digital literacy, flexible learning time and ecenomc competetion, learning to learn, media psychology, need for expertise, dependence on electricity and available sources. Since half of what is known today was not known 10 years ago, there should be more researches about the use, benefits and drawbacks of Connectivism in the cotext of formal and informal lerning.

**Key words:** Connectivism, Pros and cons, Educationalists, Learning theory

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## INTRODUCTION:

It is a clear fact that nowadays knowledge is growing faster than ever before and the official and private organizations using knowledge, especially educators and employers, spend a significant amount of time on continuing education programs for students or employees as taking classes is not enough because the traditional ways are not able to keep the pace with a changing knowledge and work environment. Lately, with the spreading of information and communication technology, the dream of network learning has become a reality, at least technically, and now a vast amount of spontaneous knowledge exchange is taking place through ICT. ICT has been in use so widely that, in the 21st century, the world has become interconnected and more complex. From learning perspective, in such an interconnected environment, younger and older learners need to generate new ideas, new products and need to become innovative, which reminds us "lifelong learning" or "learning to learn" as well as "digital competency" terms. Thus, the theories of eLearning and Connectivism are mentioned as network participation, access to information and software make an entirely new, cooperative and self-organising form of learning possible by interpreting and contextualizing information. In this context, learning networks are considered self-organizing systems. Self-organization is defined as the spontaneous formation of well-organized structures, patterns, or behaviours, from random initial conditions.

Considering the case mentioned above, the role of traditional educational institutions today is to be questioned. Internet access has become speedy and thus large numbers of people using high-speed internet have increasing rate of data acquisition. In addition, various new, free, mobile tools and open resource is in service. In addition, it is now possible to have blogs, wikis, file exchange programs, forums and tools to facilitate learning and teaching. Social networks are spreading rapidly. These facilities make collaborative content development possible. This way, free and usable content has appeared to serve learning. It is not hard to say that this flow of knowledge togather with the technological changes is not possible for school curricula to follow as the curricula need frequest updating in parallel with the new changes. According to Castells (in Nyíri 2006), the basic paradigm of the information age is networking and the space of flows which "reigns above the historically constructed space of places ... In other words, flows become the units of work, decisions and output-control, instead of organisations". According to Siemens (2006), the key changes facing learners and organizations today include Societal changes,

Technology, Globalization, Rapid pace of information development and Decentralization. This can be both the potential and challenge of lifelong learning. Using technology in teaching and learning has transformed traditional learning theories into technology integrated ones like web based learning, internet based learning, etc. We draw our competence from forming connections as we can no longer personally experience and acquire knowledge. According to Karen Stephenson (2004), experience has long been considered the best teacher of knowledge and since we cannot experience everything, other people's experiences, and hence other people, become the surrogate for knowledge. However, it is natural to expect many issues when traditional learning theories are seen through technology. Regarding a theory as the end point or untouchable is not possible. In this context, theorists are expected to continue to revise and evolve theories in accord with the changing conditions. If they see that the conditions that are the basis of a theory are no longer existing or fully altered, they need to create new approcahes. When we consider that the teaching and learning conditions in 21st century are entirely different from the ones when the traditional theories were putforward, it is natural and essential to form new theories in accord with the changes and edvances in our age. That is why; Connectivism is regarded as the learning theory of 21st century as the digital age.

## The aim of the study:

This study aims to explore the nature of Connectivism (Siemens, 2004) which suggests that technology is altering the way we think, where many of the processes of previous theories of learning can now be supported by technology, and know-how and know-what is being supplemented by know-where, and the implications of eLearning applications for communication, collaboration, publishing, research and resource investigation and a range of special applications. Second issue is the advantages and disadvantages of Connectivism as it is concieved by the educationalists. Thus, the research focuses on two questions:

1. What is Connectivism ?
2. What are the pros and cons of Connectivism as a learning theory ?

## METHOD:

Since Connectivism is a relatively new and emerging learning theory, formal literature on the topic is limited. Therefore, a qualitative research approach is the most applicable method for this study. This study used a traditional qualitative design of collecting data and information from journals, books and online databases to obtain data for the two questions above. To obtain data for the second question, focus group discussion was used as a qualitative research technique to obtain the data. According to Lederman (Thomas et al. 1995), a focus group technique involves the use of in-depth group interviews, the group being 'focused' on a given topic. In addition, according to Kvale (1983: 174), a qualitative research interview is an interview whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena. The objective of the group discussion is to gain knowledge about a particular topic or need by interviewing a group of people directly affected by the issue. Focus group data can be used to collect information for many purposes. In this way, the researcher can explore the depth and nuances of opinions regarding an issue and understand differences in perspectives. In this research, the group members discussed the Connectivism as a learning theory to make its weak and strong sides visible in terms of using instructional technology in education. In this context, a seminar was organised by the researcher to give detailed information about Connectivism to the group members so that the level of knowledge they have should be levelled. Thus, the participants were said that they were experts. A room was set up for the focus group so that they can feel comfortable, neutral, private, free from distractions and easily accessible. The researcher asked questions emerging from the explored ideas of the group members. Interview was tape-recorded for accuracy with the permission obtained from the interviewee. Notes were also taken during interview to check the questions and answers recorded for subsequent transcription. Then, the information generated was coded and summarized for analysis and discovery. Transcripts were carefully read and the data were phrased and grouped into categories. Eleven participants were in the seminary but only seven were actively involved in the group discussion. 4 of the members had 20 years of teaching experince at faculty level, 2 had over 5 years. The initial letter of the name of each partipant was used to remark theri ideas. Thus, the participants were A, B, M, N, R, Y and Z. The researcher acted as a moderator and guided the discussion.

## FINDINGS AND DISCUSSION:

**1- What is Connectivism?**

Originally, as an idea but not as a theory, Connectivism and networked learning first appeared in the 1970s when Ivan Illich presented his ideas on "deschooling" education and encouraged a movement towards student-centered, socialized learning opportunities. In *Deschooling Society,* Illich (1970) says: "A good educational system should have three purposes: it should provide all who want to learn with access to available resources at any time in their lives; empower all who want to share what they know to find those who want to learn it from them; and, finally, furnish all who want to present an issue to the public with the opportunity to make their challenge known." However, George Siemens is regarded as the founder or Coonectivism theory. Connectivism is an educational term used by Siemens as a learning paradigm of the 21st century. He defines this theory as a learning theory for the digital age. According to Siemens (2004), "Connectivism presents a model of learning that acknowledges the tectonic shifts in society where learning is no longer an internal, individualistic activity". For Siemens (2004, 2005), Connectivism is a theory of learning that takes into account the way how learning is influenced by the new learning technologies. The rationale is that previous theories of learning (behaviourism, cognitivism or constructivism) were created during a time when learning was happening in different technological contexts. However, the learning models that served previous generations are replaced for greater relevance to present's needs, which include technology and connection making as learning activities. Connectivism provides insight into the dynamics of networks, environments, and ecologies that supports a continual learning process. In this context, Connectivism means network forming process and it relies on the theoretical plane on the integration of principles explored by chaos, network, complexity, and self organization theories. According to Connectivism, the basic level of learning theories based on network theory is concerned with the organisation of individual knowledge. For an individual's knowledge organisation, strong ties are represented by knowledge elements that have been connected into a formal system. Juat like the function of brain in the individual, nodes within networks follow similar aspirations. Established beliefs and learning often ensure that new information is routed through the existing network. New information is evaluated and coded reflective of the existing memory of the learning network." (Siemens 2005). Thus, using the tendencies of the network as a

basis, Siemens founded Connectivism a learning theory (Siemens 2005). In this theory, Siemens surpasses the traditional theories such as behaviourism, cognitivism and constructivism. In Connectivism, learning occurs when a learner connects to a learning community and feeds information into it. A community is a rich learning network of individuals who in themselves are completed learning networks (Siemens, 2005). These individuals can be compared to nodes, which are connective elements "through which new information is routed, or may instead simply permit connections between ideas and concepts that previously did not have connections with each other" (Siemens, 2005).

Whether Connectivism is a learning theory or not is a question among educationalists. Verhagen (in William, 2008) suggests that Connectivism is not a learning theory, but instead may be a pedagogical theory. However, Siemens defines his theory as a learning theory for the digital age. For him, the conditions in 21st century are entirely different from the ones when the traditional theories were putforward. Coonectivism presents itself as the theory of 21st century taking the rate of communication and ICT use in learning environments. In addition, Connectivism anayses how learning occurs using ICT. That is why, according to Siemens, Connectivism is a learning theory, which is contextualized in a digital era characterized by the influence of technology in the field of education. Connectivism gives primary importance to networks where the connections among nodes occur. The probability that a concept is linked depends on how well it is currently linked (Siemens, 2004). A node is a connection point to a larger network. Then, many nodes make up a learning community (Giesbrecht, 2007). According to Siemens (2004) "learning is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of individual". Siemens (2006) defines learning "as chaotic, continual, co-creation, complexity, connected specialization, continual certainty". Chaos is a new reality that is unpredictable and considers that meaning exists. The network structures Siemens defines are given as a table in Kesim (2008), the pioneer of the connectivist theory in Turkey, as follows:

| Property | Behaviourism | Cognitivism | Constructivism | Connectivism |
|---|---|---|---|---|
| How learning occurs | Black boxobservable behaviour 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 experienceswhere reward and punishment are most influential | Encoding, storage, retrieval | Prior knowledge remixed to current context | Adaptive patterns, representative of current stat, existing in network |
| 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 |

**2- Pros and cons of Connectivism as a learning theory**

Connectivism integrates principles explored by chaos, network, and complexity and self-organization theories (Siemens, 2005). In Connectivism, learning is a process of drawing connections between seemingly disparate pieces of data in order to form a more complete

comprehension of a subject; nurturing and maintaining connections is needed to facilitate continual learning; ability to see connections between fields, ideas, and concepts is a core skill. There is a fast flow of information and new information is continually being acquired. However, the ability to draw distinctions between what is important and unimportant is vital. Besides, what is right today may be wrong tomorrow due to fast flow of information. Therefore, Siemens put the following seven principles for Connectivism (Siemens, 2004):

- 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.

According to Verhagen (in William 2008), Connectivism is not a learning theory, but a pedagogical theory. For Giesbrecht (2007), Connectivism presents itself as a pedagogical approach that affords learners the ability to connect to each other via social networking or collaboration tools. Siemens (in Giesbrecht, 2007) states that the role of the educator is to create learning ecologies, shape communities, and release learners into the environment. Giesbrecht (2007) stresses some limitations about course environments, which are represented as one point of view of a subject and presented in isolation. In addition, Giesbrecht (2007) points out that Connectivism is founded in connections where learners should interact with elements that extend the learning practice beyond the classroom and allow real life experiences. Under the

Connectivism principles, education is holistic, where balance between learner needs and institutional needs is essential. Spencer (2004) mentions some positive aspect of using technology for instance and expresses that ideas and discussions among students can continue beyond the classroom meeting time, dialogical participation is encouraged, students gain new options for participating, among others. In addition, Suppens (in Schunk, 2000) defines theory as a scientific set of principles that provide frameworks for interpreting environmental observations and serve as bridges between research and education. Merriam et al. (2006) point out that learning is a process rather than an end product. Thus, Connectivism can be regarded as a learning theory, because Siemens explains and interprets what happens when learning is taking place, specifically within a network. However, according to William (2008), Verhagen suggests that Connectivism is not a learning theory, but instead may be a pedagogical theory. However, since Connectivism is a relatively new and emerging learning theory, formal literature on the topic is limited. In order to obtain data to determine the pros and cons of Connectivism, focus group discussion was used as a qualitative research technique. The discussion was tape-recorded for accuracy and matched with the notes taken during interview. The participants were A, B, M, N, R, Y and Z. The transcripts were carefully read and the data were phrased and grouped into the following categories:

## Shortness of traditional theories:

The participants agree that behaviourism, cognitivism and constructivism fall short especially when non-formal and informal learning are concerned considering that our age is net-worked and technology-based arena. However, B mentions the learning stages used in cognitivism and connnectivism can not be an alternative to cognitivism as Connectivism uses the same learning stages and schemes in the process. N disagrees with this idea and he expresses that "Connectivism can be an alternative to these traditional theories considering the informal learning processes". N and Z emphasizes "the place of conectivism in the learning process is out of the formal education environments". R and Y stresses the common use of connected tools in daily life and they claim that "in the formal class, students focus on the connected tools and in this way they are distracted from lessons. In this way, in the formal learning environment, connected tools can prevent learning as students make themselves busy with them ignoring what

is given during lessons". In order to apply Connectivism learning theory into an instructional echnology course, consideration must be given to the physical classroom space, and a rationale for deciding to meeting in a face to face environment. Many of the theories put forward recently are meant to be used to explain the happenings and problems in the formal education environments. However, Connectivism is regarded by the participants as a main approach to explore informal learning but not enough in itselt to explore everything involved in learning. Although Connectivism learning theory is often referred to as networked learning, it is about more than just the technology used to achieve the end result. It can be seen as a networked construct encompassing neural, conceptive and external processes. While neural and conceptive processes take place within the individual, technology is the only external construct that lends itself to the learning process.

## The tools of Connectivism:

The participants emphasizes that the tools used in the context of Connectivism can not be limited to the tools used today. As technology advances, there will be more tools. According to B, N, Y and Z, as it is related with technology, the technological advance is the main factor to determine this limit. All the participants participants accept that the internet and mobile telepnones are the main tools that can be used in instruction today. Y and B mentioned the cables used at homes just to make some tools connected. N also mentioned the "smart homes" that can run with the help of internet or cell phones even while the individuals are out. However, all the participants are not sure what other tools will come out tomorrow and which of them will take the place of current tools.

## Digital literacy:

B, N and Y gives examples of the individuals who have difficulty in using even simple connected tools and they draw attention to digital literacy. Digital literacy is the ability to locate, organize, understand, evaluate, and analyze information using digital technology. Taking the rapid advances in technology and Connectivism is the learning theory of the digital age into account, digital literacy appears to be a problem especially for certain groups in the society lide the elderly

or digitally illiterate individuals. However, according to M, "the digitally literate individuals can turn out to be illiterate if they can can not cath up with the new advances". Prior to the 21st century, "literate" term defined a person's ability to read and write, separating the educated from the uneducated. With the advent of a new millennium and the rapidity with which technology have changed society and the concept of "literacy" has got new meanings. Y explains that "according to many national key competences, digital literacy is one of the basic skills that is to be acquired in the lifelong learning process". It is the competencey meaning to effectively navigate the multidimensional and fast-paced digital environment.

## Flexible learning time and economic competition:

R, B, Y and N mentions the importance of academic learning time of the individuals. They claim that with the use of connected tools, individuals can make well use of their personal academic learning time. If individuals feels like learning something, Connectivism helps them to have access to the sources immediately. Conversely, when an individual does not want to work on a planned activity, Connectivism can give him the chance to do that in the right time he or she likes. Thus, according to B, Y and N, flexibility in learning is provided in the best way. Considering the work conditions of the modern world, people dont have time to spend on learning something new. In that stage, Connectivism is a very important support for them. Z gives example of a businessman who has to travel a lot and work hard. "Even while travelling, he can make use of connected tools and can learn something he needs or likes to know. That business man does not need to create axtra time for learning activities". Thus, flexibility can be regarded as another virtue of coonectivism. Flexible learning is an option available for those who cannot attend classes to learn in formal and organized programmes due to work, location difficulties or family commitments. Besides, nowadays knowledge is growing faster than ever before. Employers spend a significant amount of time on continuing education programs for employees. Taking classes is not enough because the traditional ways are not able to keep the pace with a changing environment. Employers require employees to be connected with other nodes capable of cooperatively finding solutions to particular problems. Rethinking learning is essential to prepare competitive employers in a competitive global workplace (Siemens, 2006).

## Learning to learn:

All the participants agree that Connectivism has a major role in learning to learn as it allows individuals to discover learning. In this case, individuals learn more effectively and they become learners for life. B and N stresses that "Connectivism helps individuals to know how they prefer to learn and their learning strengths, how they can motivate themselves and have the self-confidence to succeed, how they can improve their memory or make sense of complex information". N and Y expresses that the ability to learn is possessed by humans, animals and some machines but "learning is not compulsory". It does not happen all at once and by force. So, when individuals know what and how to learn, they themselves meet this need using especially connected learning tools. Connectivism is a return to the basics: learning from one another, trust in the creative process, and mentorship between teacher and pupil. Active participation is required by all involved in the learning process. The theory serves as an excellent model for life-long learning.

## Media psychology:

Media Psychology is the study of media, technology and how and why individuals, groups and societies behave. B stresses the risk of "getting addicted to technolgy and thus getting isolated from social life". In this case, it can be a harmful way for the individuals as they prefer virtual reality whenever they have probelms in society and life. B pays attention to the psychological problems it can cause if it is not used in the right way. Therefore, while Connectivism can be a strong impetus to motivate learning to learn, it can also be harmful and risky when individuals are left aside.

## Need for expertise:

B, R, N and Y claims that Connectivism is not well known both by the instructionists in the formal learning environment and individuals in the infromal learning process. They give examples of "teachers who can not use even smart boards placed in the classrooms, the software packages used in the classes with the help of computer technology". They agree that the young

generation is more infromed about their use than the older generation. This may emerge from both the reluctance to learn or digital illiteracy. This means that there should be experts in governmental or non-govermental organisations to encourage the individuals to make use of connected tools in a favourable way. Otherwise, there will be teachers who are not reluctant to use technology in instruction and there will be students who can use the most recents technological devices in and out of classroom. That is why, individuals who live in the middle of this connected world should have at least some expertise. Otherwise, according to M and Y, connected implementation can also be time consuming and the life of individuls will be full of postponed activities.

## Dependence on electricity and available sources:

B and R see Connectivism as a potential area of addiction to technology. They claim that to be so much connected is not good for the physical and psychological heath of the individuals. There is the risk of avoiding the real world by hurrying into the virtual and technological world. Considering that human beings will never be machines that we use connectively, Connectivism should be limited to the extend we need. If we let them penetrate into our social and private life, there will be no other space for our personal life. N, Y and Z also agree on this risk and they remark that however hard we are connected, all technology runs depending on electric energy. When we plug a connected tool out, nothing works. Therefore, we can say that no electricity, no technology and no Connectivism. Another point stressed by M is the importance of sources to be used in the context of Connectivism. He says "lack of proper training, limited access to sufficient quantities of sources and the extra time required for many implementations should be taken into account as the drawbacks of connectivis".

## CONCLUSION AND SUGGESTIONS:

Although Siemens defines Connectivism as a learning theory for the digital age, there is a question among educationalists regaringd whether Connectivism is a learning theory or not. For example, Verhagen (in William, 2008) suggests that Connectivism is not a learning theory, but instead may be a pedagogical theory. For some authors, Connectivism should not be considered a

new theory of learning (Kerr, 2007; Kop & Hill, 2008) but it is possible to position Connectivism as the development of constructivism to the current scenario of the use of technology in education, functioning though as a philosophy of education. Suppens (in Schunk, 2000) defines theory as a scientific set of principles offered to explain a phenomenon. Merriam et al. (2006) point out that learning is a process rather than an end-product. It seems that the discussion about if Connectivism is really a learning theory will probably continue. Connectivism is not the final statement in educational theory. As digital technology evolves and new methods for integrating instructional technology into education emerge, new learning theories will develop.

To put clear lines between the advantages and disadvantages of Connectivism is nearly impossible, as something that seems to be advantage in one context can be a disadvantage in another. Therefore, it is proper to sum up the research without forming a clear-cut classification.

In fact, the focus group discussion indicates that Connectivism is not easily understood by the educators as the traditional theories. The discussion applied to obtain data about the advantages and disadvantages of Connectivism is limited to how the members conceive the use of Connectivism. However, the participants agree that behaviourism, cognitivism and constructivism fall short especially when non-formal and informal learning are concerned. The learning stages used in cognitivism and connnectivism can not be an alternative to cognitivism. The place of conectivism in the learning process is out of the formal education environments as in the formal class, students focus on the connected tools and in this way they are distracted from lessons. Furhetrmore, in the formal learning environment, connected tools can prevent learning as students make themselves busy with them ignoring what is given during lessons. In order to apply Connectivism learning theory into an instructional echnology course, consideration must be given to the physical classroom space, and a rationale for deciding to meeting in a face to face environment.

Another point is that the tools used in the context of Connectivism can not be limited to the tools used today. All the participants accept that the internet and mobile telepnones are the main tools that can be used in instruction today. The cables used at homes just to make some tools connected and the “smart homes” that can run with the help of internet or cell phones can be seen as a part of Connectivism. However, it is not clear what other tools will come out tomorrow and which of them will take the place of current tools.

Some individuals have difficulty in using even simple connected tools as they lack digital literacy. Digital literacy appears to be a problem especially for certain groups in the society like the elderly or digitally illiterate individuals. However, it is probable that the digitally literate individuals can turn out to be illiterate if they cannot cath up with the new advances. According to many national key competences, digital literacy is one of the basic skills that are to be acquired in the lifelong learning process.

There is the risk of getting addicted to technolgy and thus getting isolated from social life. Individuals may prefer virtual reality whenever they have probelms in society and life. In addition, connected tools may cause psychological problems if not used in the right way. Therefore, while Connectivism can be a strong impetus to motivate learning to learn, it can also be harmful and risky.

With the use of connected tools, individuals can make well use of their personal academic learning time. If individuals feel like learning something, Connectivism helps them to have access to the sources immediately. In Connectivism, flexibility in learning is provided in the best way. Considering the work conditions, people dont have time to spend on learning something new. In that stage, Connectivism is a very important support for them. For example, a businessman who has to travel a lot and work hard can make use of connected tools and can learn something he needs or likes to know without needing to create axtra time for learning activities. In Connectivism, flexible learning is an option available for those who cannot attend classes to learn in formal and organized programmes due to work, location difficulties or family commitments. In addition, employers can use connecticism without spending a significant amount of time on continuing education programs for employees.

Connectivism has a major role in “learning to learn” as they can learn more effectively and become learners for life. It helps individuals to know how they prefer to learn and their learning strengths, how they can motivate themselves and have the self-confidence to succeed, how they can improve their memory or make sense of complex information because learning is not compulsory. They can learn from one another and thus the theory serves as an excellent model for life-long learning.

Media Psychology is the study of media, technology and how and why individuals, groups and societies behave. B stresses the risk of "getting addicted to technolgy and thus getting isolated from social life". In this case, it can be a harmful way for the individuals as they prefer virtual reality whenever they have probelms in society and life. B pays attention to the psychological problems it can cause if it is not used in the right way. Therefore, while Connectivism can be a strong impetus to motivate learning to learn, it can also be harmful and risky in some other cases.

It is clear that Connectivism is not well known both by the instructionists in the formal learning environment and individuals in the infromal learning process. There are teachers who can not use even smart boards placed in the classrooms or the software packages used in the classes with the help of computer technology. However, young generation is more infromed about their use than the older generation. This means that there should be experts in governmental or non-govermental organisations to encourage the individuals. Individuals who live in the middle of this connected world should have at least some expertise. Otherwise, connected implementation can also be time consuming and individuals will have the habit of postponing daily activities.

Finally, Connectivism has the potential addiction to technology as being so much connected is not good for health. There is also the risk of avoiding the real world by hurrying into the virtual and technological world. Connectivism should be limited to the extend we need becasue if we let them penetrate into our social and private life, there will be no other space for our personal life. Moreover, however hard we are connected, all technology runs depending on electric energy: no electricity, no technology and no Connectivism. Using sources is anothyer point to be stressed in the context of Connectivism. Lack of proper training, limited access to sufficient quantities of sources and the extra time required for many implementations are other limitations.

As the research indicates, Connectivism is a new theory both in terms of the time and in terms of the literature where Connectivism and its implementation is focused on. The discussion about if Connectivism is really a learning theory will probably continue. Connectivism is not the final statement in educational theory. As digital technology evolves and new methods for integrating instructional technology in the education emerge, there will be new learning theories. Half of what is known today was not known 10 years ago. Besides, a new model of knowledge validation is emerging, where „the community is the curriculum" (Cormier, 2008). Therefore, there should be more researches about the use, benefits and drawbacks of Connectivism based on the

motehods covering the stakeholders of formal and informal lerning. The further researches can focus on the following:

- Clear, defined role of the educator and the student within a connectivist framework
- The options for restructuring physical classroom spaces to best employ connectivist principles,
- Rearranging curriculum, research, and assessment in a connectivist environment
- The connectivist strategies to be used for information loading
- The future role of the formal education organisations like universities,
- The future actions for granting degrees and the accreditation process

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