BOOK REVIEW: KNOWING KNOWLEDGE

Aras Bozkurt [arasbozkurt@gmail.com], Anadolu University [https://www.anadolu.edu.tr/en], Anadolu Üniversitesi, Açıköğretim Fakültesi, Kat 7, ÖTAG, Turkey, Jeffrey Keefer [jk904@nyu.edu], New York University [https://www.nyu.edu], United States of America

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Review
“The pipe is more important than the content within the pipe. Our ability to learn what we need for tomorrow is more important than what we know today... When knowledge, however, is needed, but not known, the ability to plug into sources to meet the requirements becomes a vital skill. As knowledge continues to grow and evolve, access to what is needed is more important than what the learner currently possesses” George Siemens.

Introduction
The advent of digital and open networks promotes a free and more accessible approach to how knowledge is developed and shared through networked spaces. These online, networked, distributed learning spaces resulted with networked societies (Castells, 2004) and networked individuals (Rainie & Wellman, 2012) which necessitated the understanding knowledge and learning within current perspectives and this book intends to serve for this purpose.

The book, Knowing Knowledge, is an extension and a detailed exploration of the learning theory, connectivism, initially proposed by George Siemens (2004). The book is premised and based upon several assumptions (Siemens, 2006). First of all, “knowledge has changed; from categorization and hierarchies, to networks and ecologies. This changes everything and emphasizes the need to change the spaces and structures of our organizations.” (p.v). Second, it is claimed that “we supposedly exist in a knowledge era. Our work and our lives center on the creation, communication, and application of knowledge” (p.v). Finally, the book assumes that “networks are adaptive, fluid, and readily scale in size and scope. A hierarchy imposes structure, while networks reflect structure” (p.vii). Based upon these assumptions, the book deals with three main concepts: Knowledge, learning, and connectivism as a learning theory in a digital age.

Though first published in 2006, the book “Knowing Knowledge” remains one of the first significant works that deals with learning and knowledge in a way that acknowledges and embraces the opportunities presented through using digital tools, birthing connectivism into educational theory and practice. As we are increasingly bombarded by an overabundance of information, distributed in, through and around countless layers of networks, learning can occur through these interactions between living and non-living entities in physical and digital spaces. This text serves as a beacon to guide, challenge, and help us to understand the complexities of networked learning spaces. Almost a decade after the first publishing of the book, we witness in a networked globe that the foresights that were provided in the book have come true, which justifies and requires the review of the book.

Connectivism: The learning theory for a digital age
Connectivism explains how learning occurs throughout human and non-human networks (Downes, 2012; Siemens, 2004). As a theory, it is the integration of principles explored by
chaos, network, and complexity and self-organization theories (Siemens, 2004). Connectivism claims that there is a knowledge ecology, which is a complex, emergent, highly dynamic, open, self-controlled, self-maintained, and self-organized in the new knowledge intensive era (Chatti, Jarke, & Quix, 2010). In contrast to conventional learning theories, connectivism claims that knowledge is distributed across a network of connections, and therefore learning consists of the ability to construct and traverse those networks (Downes, 2012). Siemens (2004) proposes principles of connectivism as followings:

- 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.

**Exploring knowledge in digital age**

The book, “Knowing Knowledge” was composed of two main sections. The first section, entitled as “An Exploration of Theoretical Views of Knowing and Learning” deals with the exploration of learning, connectivism, and connective knowledge within a theoretical perspective. Siemens, firstly, indicates the changing nature of the knowledge and thus its reflections in learning dimension. This section reminds readers that life as we know is not confined to only physical ecosystems, yet life is present in digital ecosystems, too. This fundamental change naturally affects what we already know and pushes us to adopt change and become resilient.

The book also explains paradigm changes regarding the spaces where knowledge exists. Siemens claims that knowledge is not a static entity that can be transformed in learning processes, but it is a living entity that is available in digital networks, and is capable of changing the individuals that it interacts and in turn, it changes itself in a repeating loop. Accordingly, there are physical and digital spaces in our universe, and knowledge flows in and between these spaces by changing and being changed meanwhile. Similar to state of the knowledge, individuals are also present in different spaces of the universe. For instance, we are present in physical, cognitive, emotional, and spiritual spaces; all separate, but connected to each other.

The book further defines the nature of the knowledge in digital age and then it links current state of the art as a base for connectivism. It is highlighted that “knowledge can be described in many ways; an entity and a process, a sequence of continuums: type, level, and application, implicit, explicit, tacit, procedural, declarative, inductive, deductive, qualitative, and quantitative. Knowledge rests in an individual; it resides in the collective” (p.14). That is why, we need new perspectives to understand and benefit from knowledge and, in many cases, conventional perspectives do not provide the lenses that we need. In this context, the author criticizes conventional learning approaches and how they see the knowledge by stating, “knowledge is not intended to fill minds. It is intended to open them” (p.21). Connectivism sees learning as a complex nonlinear process, which is consist of several process. It further claims that individuals seek for knowledge to make sense, and learning is more about pattern recognition than cognitive processing. Therefore, learning requires creating and forming networks; and making connections. That’s why, know where and know who are more important today than know what and know how.
According to ideas presented in the book, our minds are internal, neural networks while outer space in any forms are learning networks that we continually acquire, experience, create, and connect in order to stay current. The book further claims that, visible or invisible; physical or digital, networks are all connected to each other and constitute an ecosystem. In respect to these spaces, it is explained that “the world has [connected in many dimensions and] become whole”, thus “shades, continuaums, and blurred boundaries are our new reality” (p.39). In fact, we all live in a world in flux. Therefore, “the connections that enable us to learn more are more important than our current state of knowing” (p.30). In these spaces, the roles in learning processes are not predefined: “The learner is the teacher is the learner” (p.42).

The second section is entitled as “Changes and Implication—Moving toward Application” provides a description of the changes relating to knowledge today. According to Siemens, “change is happening in the context, in which knowledge occurs, and the flow and characteristics of knowledge itself” (p.69). In such a time when the nature of change also changed, “individuals have more control, more capacity to create and to connect than in any era in history” (p.72).

In this section, the author explains and highlights the importance of some terms. For instance, “Half Life of Knowledge” (p.81) which is about the shrinking life span of knowledge. In order to be up-to-date and current, individuals should have the ability to connect, recombine, and recreate the knowledge today. This emerges as a need because we live in physical and digital ecologies, and these ecologies are “nurtured and fostered…instead of constructed, organized, and mandated” (p.90). This naturally requires new skills to survive and new learning theories to be able to adopt and embrace the changes in our digital knowledge age. This issue is also related to where the distinction between connectivism and conventional theories appear. Siemens suggests that as in the conventional theories, “hierarchy adapts knowledge to the organization”; and as in the connectivism “a network adapts the organization to the knowledge” (p.90).

Siemens also uses artist as a metaphor to describe role of teaching. Accordingly, “the artist is the individual who sees the magic in learning. They may not know exactly why something worked well, but can see (and dare I say, feel?) that the learners are changing, growing, and developing. The artist of learning sees beauty in the dialogue, in the interaction, in the connections formed between what is known and what is becoming known. The artist sees (and accepts) the beauty of uncertainty and values learning as both a process and a product. In creating a knowledge environment, the artist splashes the magic of learning across the entire canvas of life” (p.108). The artist as a teaching role is somehow very innovative considering that learning as a lifelong endeavour and teachers as artist are there to inspire the learners, design the learning processes, and make the magic of learning. It is for sure that new learning spaces requires new roles to perform. In connectivism what Siemens proposes is more than “sage on the stage” or “guide on the side”; yet artist as a “source of magic in learning”.

Conclusion
The ability and capacity of online networks are recognized by educators, and we have witnessed that learning ecologies in physical and digital worlds are intertwined; and it is difficult to say where one starts and the other ends. As a theory for learning in a world of growing complexity, the book intends to reflect and explain the transformation in digital knowledge age.

The promise of the book lies in the perspectives it provides about knowledge and learning in digital age and connectivism. In a time when networks reached to spaces beyond one’s imagination, and both physical and digital networks connected within blurring borders, the book provides a critical lens to understand ongoing changes, transformations, and paradigm shifts in learning sphere. It further provides ontological and epistemological perspectives, which are needed to raise as a theory, yet there is a need to further explain these
Thus, the book also plays an important role in the development and emergence of a pedagogy whose ideas stemmed from tectonic shifts in online-networked learning landscapes.

According to conventional theories, learning is a cognitive process that happens biologically in our brains which is actually a network of our neurons. From a digital perspective, connectivism indicates that online networks constitute a collective, global brain; and as a metacognitive process, learning can also happen in these networks. Therefore, it is thought that, it would be a mistake to define and confine learning as an internal, biological, individualistic activity as asserted in many conventional theories. However, it would be another mistake to try explaining learning only as an external, digital, and collective activity. This text asserts that connectivism attempts to explain learning in online networked spaces by not ignoring the role of conventional learning theories, yet it was also indicated that they are inadequate to explain learning in online networked spaces. Therefore, we believe that there is a need to clearly map territories of conventional theories and connectivism and demonstrate where their borders separate or overlap.

The online networked technologies affecting, shaping, redefining, or enriching the learning processes; influencing existing theoretical viewpoints, and in such a time, there is a need for new theoretical grounds to better understand and meet the necessities in learning processes to provide better learning experiences for those wandering as lifelong learners, in other words, knowmads in online networked spaces. The ideas framed through connectivism inspired many researchers in various fields, though it should be carefully noted that while the book and other related works on connectivism are significant references, they do not warrant acceptance of connectivism as a theory. The book mostly deals with semiotic approaches and therefore follow up studies should focus on empirically testing the ideas presented to forge the principles of the connectivism.

In conclusion, the book enables individuals to discover the ideas of the Siemens’s seminal work “Connectivism: A learning theory for the digital age”. In this ground, it is possible to refer it as Magnum Opus for those who wants to understand paradigm shift and pursue knowledge and learning in online networked spaces.

References