Connectivism: Probing Prospects for a Technology-Centered Pedagogical Transition in Religious Studies[1]

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Abstract

Over the past decade, we have seen the advent of technologies (more especially Information and Communication Technologies) transforming the higher education landscape. One of the critical challenges emerging within this new landscape has been how to position the integration of technology within an appropriate learning theory. The three 'traditional' learning theories most often utilized in the creation of instructional environments, namely behaviourism, cognitivism and constructivism, have come under much criticism in the design of learning spaces for the twenty-first century learner. One such theorist coming to the fore challenging the presuppositions and relevance of the above three learning theories and offering an alternative approach has been George Siemens with his notion of 'connectivism'. Siemens' connectivism posits that knowledge is distributed across networks and the act of learning is largely one of forming a diverse network of connections and identifying the connected patterns. Hence, my aim in this paper is to ascertain the core principles of Siemens' connectivism, and probe the prospects for a technology-centered pedagogical transition in religious studies. In so doing, I propose the redesigning of learning spaces, where learning is no longer an internal, individualistic activity but an actionable process of gaining knowledge through connecting with specialized

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[1] The first draft of this paper was delivered at the annual meeting of the Higher Education Learning and Teaching Association of Southern Africa (HELTASA) on 28th November 2013 at the University of South Africa, Pretoria.

information sets that reside within networks of other people, organizations and databases.

Keywords: Learning theories, connectivism, technology-centered pedagogy, lived-experiences, networked, contextualized knowledge creation.

Introduction

In recent years, we have seen the advancements of technology set the tone for pedagogical progress within the higher education sector. The integration of technologies, particularly Information and Communication Technologies (ICTs), have challenged and transformed traditional teaching and learning environments from single instructional modes to multiple instructional modes, leading to an exponential growth in the acquisition of knowledge, strengthening the relevance of education, raising the quality of education, and fostering a more engaging and interactive learning environment (cf. Eileen, Conole, Clough & Blake 2013; Slade & Prinsloo 2013; Price & Marshall 2013). While many of these optimistic benefits have come to the fore, the use of technology to enhance the educational process involves much more than merely learning how to use specific types of hardware and software. According to Diaz and Bontenbal (2000) it requires an understanding of 'pedagogical principles that are specific to the use of technology in an instructional setting'. This is further substantiated by Sangra and Wheeler (2013) who contend that while technology is making considerable advancements in education, many contemporary educators lack comprehension of the critical role that learning theories play in the design of learning spaces and in the selection and use of appropriate technology. In addition, the presence of many learning theories that have been formulated in a pre-digital age still dominate the higher education landscape, with the aim to facilitate teaching and learning effectively within a technologically-mediated environment (Sangra & Wheeler 2013).

However, as technologies begin to dominate and transform the higher educational landscape, many new theories that seem appropriate as explanatory frameworks for teaching and learning in a digital age are coming to the fore. Some of these noteworthy learning theories are 'heutagogy' (self-determined learning), 'paragogy' (collaborative learning with peer-to-peer)

and 'rhizomatic learning' (a post-modernist approach based on acknowledging the varying contexts of learners and multiple paths of learning)[2]. This paper focuses on the latest contender in educational theory, namely George Siemens' 'connectivism'. Hence, my aim in this paper is to ascertain the core principles of Siemens' connectivism, and probe the prospects for a technology-centered pedagogical transition in religious studies.

In order to attain the above, this paper begins with an analysis of the current trends in designing learning spaces, followed by a brief discussion on the limitations of learning theories formulated in the pre-digital age. I then provide an exposition of Siemens' connectivism, foregrounded in a discussion of its definition, epistemology and ontology of learning, core principles, and criticism. I then reframe four of Siemens' core principles as a potential framework for religious studies. I finally conclude with some critical thoughts on the broader implications of the connectivist approach for teaching and learning.

Current Trends in Designing Learning Spaces

Learners of the twenty-first century have changed radically from their predecessors. As 'digital natives' (i.e. native speakers of the digital language of technology) they think and process information fundamentally differently from earlier learners (cf. Prensky 2001). Therefore, the designing of learning spaces for the contemporary learner is immensely complex and multifaceted. Keppell and Riddle (2011: 5) define 'learning spaces' as spaces where both the educator and learners 'optimize the perceived and actual affordances of space' that 'promote authentic learning interaction'. The 'process' of designing learning spaces, according to Underwood and Luckin (2013: 67) 'is the point at which theory meets practice and the partnership must be operationalized in order to enable implementation'. In addition Cross (2007: 41-45) posits that the designing of learning spaces have both opportunities and constraints and must take into consideration three important variables, namely the learners, the context, and the expected learning outcomes.

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[2] For further discussions on these learning theories see Beishuizen (2008), Corneli (2012) and Cormier (2008).

Against the above theoretical postulations, this paper explores three critical trends in designing learning spaces, which offer a conceptual framework for the discourse being articulated in this paper.

(1) Designing with Meta-Cognitive Interface Elements

The first trend I highlight focuses on the integration of meta-cognitive interface elements in the designing of learning spaces. By 'meta-cognitive' I refer to the exclusive process of 'reflecting on' and 'regulating' one's own thinking – i.e. 'thinking about thinking' (cf. Kay, Kleitman & Azevedo 2013: 124). The main goal of this process is to increase insight into what the learner understands and can do, and the learner's ability to regulate his/her learning process effectively. This is a significant process in many learning contexts and particularly where individuals are independent life-long learners. Some of the activities involved in the meta-cognitive processes are: (a) monitoring activities including feeling of knowing; (b) content evaluation – identifying the adequacy of information; (c) hypothesizing, coordinating informational sources, knowledge elaboration; (d) handling task difficulties and demands, control of context, time and effort; and (e) interest in the task or the content domain of the task (cf. ibid.). One of the critical elements of the meta-cognitive process is the degree of certainty (i.e. level of confidence) about the accuracy of one's own performance. According to Gilovich, Griffin and Kahneman (2002: 248) based on the premise that 'confidence controls action', measures of confidence in one's own knowledge, opinions and answers have proven integral in real-life domains, such as decision-making and problem-solving.

The types of meta-cognitive interfaces used to facilitate the design of these learning spaces depend largely on the instructional modes of the higher education institutions (i.e. distance learning or face-to-face). While the integration of tutors or teaching assistants have dominated much of the traditional face-to-face institutions, contemporary advancements in technology have brought to the fore critical technologically-mediated spaces such as online discussion forums, blogs and wikis that serve to facilitate the meta-cognitive processes in both distance learning and face-to-face institutions. These types of platforms, which come to the fore as Personal Learning Environments (PLEs) serve to create a 'personalised'/ 'tailored'

learning space, where learners can reflect on their individual learning processes and gain feedback from their educators, tutors and peers to increase levels of confidence.

(2) Designing with Web-Based Technologies

This brings me to the second current trend, which focuses on the integration of web-based technologies. The emergence of affordable and robust web-based technologies have fostered immense opportunities for innovative learning and pedagogical practice. An ideal example of this is the integration of Web-Based Lecture Technologies (WBTL) that are designed to digitally record lectures for delivery over the web (e.g. Lectopia or also known as iLecture). These technologies have challenged the long-held teaching traditions, such as the 'role and style of lectures', the 'nature and delivery of learning content', and the 'way the learner interacts with the educator' (cf. Ke and Zhu 2013: 358). In addition, they 'blur' the boundaries between face-to-face and distance learning. This is substantiated in the example articulated by Sköld (2012: 2-3), who contends that the emergence of web-based virtual reality platforms are turning distance learning education into an 'immersive social-present teaching and learning experience' by enabling the construction or embodiment of three dimensional (3D) identity presence (i.e. through the construction of avatars)[3]. An example of a web-based virtual reality platform is 'Second Life', which is a 3D virtual world where users can socialize and connect using avatars over voice and text-interactive chat. Second Life is used as an education platform by many institutions, including: University of Cincinnati, Oxfordshire, University of the West of Scotland, Washington University, University of Sheffield, etc. I will discuss this further in the latter part of this paper.

Three important elements come to the fore in designing learning spaces with web-based technologies, namely: (1) '*Cognitive Presence*' - which refers to the affordance of the environment in supporting the development of meaning-construction and sustained critical thinking among learners; (2) '*Social Presence*' – which refers to the establishment of a

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[3] *Avatars* = a graphical representation of the user or the user's alter ego character.

supportive environment, in which both the educator and learners can project their identities into the class community and thereby presenting themselves as 'real and functional people'; and (3) '*Teaching Presence*' – where the educator facilitates the learning process and provides direct instruction when needed (cf. Ke & Zhu 2013: 359ff.). Research of Ke (2010) and Garrison, Cleveland-Innes and Fung (2010) contend that teaching presence influences social and cognitive presence. In essence, teaching presence directs the cognitive and social processes for the primary purpose of achieving meaningful learning outcomes. Thus, the structure and organization of facilitation associated with teaching presence creates the environment where social and cognitive presence can be cultivated.

(3) Designing with Collaborative Learning Elements

This brings me to the third trend, which focuses on the design of learning spaces with collaborative learning elements. According to Cress (2013: 416) the integration of web-based technology in education not only gives the learner access to vast amounts of data, information and knowledge, but it also posits a distinction between 'consumer' and 'producer' of knowledge. Web-based technology (more explicitly Web 2.0 – socially-mediated and collaborative tools) provides learners with the opportunity to contribute information, which might be a small portion, but nevertheless relevant in the collective development of knowledge[4]. Cress briefly explains this collaborative knowledge production process in the following:

> When people contribute information others might rely on it, link it to other contributions or even modify it. In an interactive process, the collective can make use of anybody's contribution and shape it in such a way that it fits the needs the community. Through such collaborative processes the community can enhance its knowledge base and build new knowledge. But it is not only the community that learns, it is also the individual that benefits and whose knowledge is expanded. In mass collaboration with Web 2.0 tools these individual

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[4] A common platform for these types of collaborative engagements are Wikis, Twitter, and file sharing platforms such as Google Docs.

and collective processes of learning and knowledge building are greatly intertwined (2013: 416).

In terms of the design of learning spaces with collaborative learning elements, two levels of analysis needs to take place. On the 'individual level', analysis occurs with a focus on the 'internal processes of learning' – i.e. how much content has the learner produced, and how many contributions from others has the learner read? On the 'community level', analysis occurs with a focus on the 'external processes of learning' – i.e. the liveliness of the community, its ability to bind its members and stimulate relevant activities, and the broader quantitative (external assimilation) and qualitative (external accommodation) developments.

Thus, for Held, Kimmerle and Cress (2012: 39) with the integration of social software tools in the design of learning spaces, the collaborative product is 'not a linear text, but a network of references'. In addition each learner brings to the learning space their own experiences and frameworks of interpreting that experience, which is then enhanced within the collective through their own experiences and frameworks of interpretation (cf. Aviv, Erlich & Ravid 2003). This shift in the design of learning spaces from 'individual' to 'collective' vis-à-vis 'personal' to 'collaborative' posits an ideological and pedagogical shift in the adaptation of learning theories.

Limitations of '*Traditional*' Learning Theories

By using the term '*traditional*' I refer to those learning theories formulated in the pre-digital age. In this section, I want to briefly discuss the limitations of such learning theories for the digital age. Hence, I explore the complexities of the three epistemological traditions that have dominated the education landscape, namely *behaviourism*, *cognitivism* and *constructivism*.

(1) Behaviourism

Behaviourism is an ideological position, which sees the process of learning as a 'mechanical process' of associating stimulus (incentive) with response (cf. Ertmer & Newby 1993). The learner is regarded as a 'clean slate' or 'essentially passive', with the process of learning shaped through positive or

negative reinforcements[5]. The behaviourist perspective is largely associated with its proponent Burrhus Frederic Skinner (1974) who posited that the mind at work cannot be observed, tested or understood, and hence the focus on 'actions' (behaviour) becomes imperative in the process of knowing, teaching and learning[6]. For Gredler (2005) the behaviourist approach to learning is based on three assumptions: (1) observable behaviours is more important than understanding internal activities; (2) behaviours should be focused on simple elements – specific stimuli and responses; and (3) the process of learning is defined by behaviour change. Hence, behaviourists emphasize change in behaviour due to the influence and control of the external environment, rather than the internal thought processes of the learner (cf. Merriam & Caffarella 1999).

The behaviourist approach to teaching and learning relies on so called 'skill and drill' exercises, which provide the consistent repetition necessary for the effective reinforcement of response patterns (cf. Wray 2010: 44). Behaviourist teaching methods have proven most successful in facilitating mastery of content (i.e. memorization) and more especially where the learning environment is time conditioned. Pedagogically, this would include giving the learner immediate feedback, breaking down of tasks into smaller steps, repeating instructions as many times as possible, giving positive reinforcement, etc. However, the limitations of behavioural theory is that it tends to diminish the possibilities of human learning, and does not take into consideration the effect of the broader environment in shaping the behaviour of the learner (Wray 2010: 44). This does not suggest an absolute rejection of behaviourism but, instead, to question the means rather than the ends.

(2) Cognitivism

One of the major proponents of the development of cognitivism was Jean Piaget (1952) who contended that the behaviourist approach failed to account for high order thinking skills and the critical position of the mind in the learning process. Hence, cognitivism acknowledges the associations establi-

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[5] Positive reinforcement is the application of a stimulus and negative reinforcement is the withdrawal of a stimulus.

[6] Cf. Spillane (2002: 380) for a more elaborate analysis of Skinner's thesis.

shed through 'contiguity and repetition' and 'reinforcement', but view learning as 'involving the acquisition or reorganization of the cognitive structures through which humans' process and store information' (cf. Good & Brophy 1990: 187). This implies that the process of learning is defined as a change in the learner's *schemata* (an internal knowledge structure). Hence, learning is seen as an internal process, with the amount of learning dependent upon the processing capacity of the learner, the depth of processing, and the learner's existing knowledge structure (cf. Ally 2008 :19). The cognitivist approach to teaching and learning involves memory, thinking, reflection, abstraction, motivation, and meta-cognition. According to Ertmer and Newby (1993: 56) knowledge acquisition is described as 'a mental activity that entails internal coding and structuring by the learner', with the learner being 'an active participant'. In addition, the learner's thoughts, beliefs, attitudes and values are considered to be valuable in the learning process (Ertmer & Newby 1993: 56).

Cognitivists strive to make knowledge more meaningful by helping learners link it to existing knowledge. Some of the techniques employed in the cognitivist approach are: (1) emphasis on the active involvement of the learner in the learning process; (2) use of hierarchical analysis to identify and illustrate prerequisite relationships; (3) emphasis on structuring, organizing, and sequencing information to facilitate optimal processing; and (4) creating learning environments that allow learners to make connections with pre-existing knowledge (cf. ibid.). The limitations of cognitivism is that learning is teacher-centred and information must be presented in an organized manner in order to achieve the most efficient learning, which may by default position the learner as a passive participant. Furthermore, due to learning being very structured, it becomes difficult for the learners to adapt to changes in what has already been processed and learned (cf. Ertmer & Newby 1993: 56). Also, since working memory has limited capacity, information needs to be organized in appropriate sizes or 'chunks' to facilitate effective processing (cf. Ally 2008: 22).

(3) Constructivism

In the past decades, we have seen a major shift towards the constructivist approach. According to Merriam and Caffarella (1999: 260) constructivism

is an assimilation of both behaviourist and cognitivist ideals. The constructivist approach positions learners as active rather than passive. The learner is seen as part of a process where the attaining of knowledge is seen as a function of how he or she creates meaning from his or her own experiences (Ertmer & Newby 1993: 63; Merriam & Caffarella 1999: 260). This implies that knowledge is not received from the outside or from someone else, but through the individual learner interpreting and processing what is received through the senses in order to create knowledge (cf. Ally 2008: 30). However, constructivists differ from the behaviourists and cognitivists in that they do not believe that knowledge is 'mind-independent' and can be 'mapped' onto the learner (cf. Ertmer & Newby 1993: 64). A critical proponent of constructivism, namely Jerome Brunner (1985), posits that learning is a process in which the learner is able to build on present and previous information. Hence, learning within the constructivist approach is learner-centered, where the learner is at the center of the learning process, with the educator acting as an advisor and facilitator. Another major emphasis of the constructivist approach is that it is 'situated-learning' – i.e. regards learning as contextual (cf. Ally 2008: 30).

While constructivism dominates much of current pedagogy, there are also known limitations in its applications. Firstly, learners create meaning as opposed to acquiring it. Since there are many possible meanings to acquire from any given experience, Ertmer and Newby (1993: 63) contend that a predetermined 'correct' meaning cannot be achieved. Secondly, there are implicit assumptions that self-directed learners have sufficient prior knowledge and skills to engage effectively and productively with their learning activities (cf. Rowe 2006: 101). Thirdly, it demands curriculum outcomes that are identical to the behaviourist and cognitivist approach – i.e. a demonstrated ability to perform by applying appropriate procedures to a given situation, in order to arrive at a correct result according to agreed conventions (cf. Klinger 2008: 199).

(4) Limitations for Application in a Digital Age

It is not the intention of this paper to discredit the above learning theories, as one can argue that each of the above theories have a significant place within religious studies. However, my intention is to simply highlight some of the

limitations of the above theories for the digital age. In order to do so, I now turn to one of the leading educational theorists of the twenty-first century, namely George Siemens.

Siemens' critique of the above three learning theories is largely premised on his thesis that the linear models of learning (process) and knowing (state) is not conducive for learning in the current digital age (2005: 3). Siemens (2006) contends that the exponential developments in knowledge production and the increased complexities of a technologically-mediated society have brought to the fore a paradigm shift, causing educators to rethink what constitutes knowledge. Thus, what was traditionally embraced as the constitution of knowledge, has been altered with new epistemologies and ontological theories coming to the fore within the digital age (cf. Siemens 2006: 3). Siemens (2005) articulates the limitations of behaviourism, cognitivism and constructivism with the following three assessments:

a. Firstly, behaviourism, cognitivism and constructivism holds an intrapersonal view of learning, which is based on the domain of the individual and necessitates his/ her physical presence (i.e. brain based) in learning.
b. Secondly, it fails to address that learning can also occur outside of people (i.e. that learning can be stored and manipulated by technology).
c. Thirdly, behaviourism, cognitivism and constructivism focuses on the actual processes of learning and not with the value of what is being learned.

In addition, Siemens (2005) contends that while many of these theories have been revised and recontextualized with several modifications, there comes a point where modification is no longer sensible and a new approach is needed. Thus, Siemens (2005: 4) posits that any learning theory coming to the fore in a digital age, must consider the following:

a. How are learning theories impacted when knowledge is no longer acquired in a linear manner?
b. What are the adjustments that need to be made to learning theories,

when technology performs many of the cognitive operations previously performed by learners (i.e. storing and retrieving information)?

c. How does the learner stay current in a rapidly evolving information ecology?

d. How do learning theories address the impact of established networks on the learning processes?

Connectivism as an Alternative Learning Theory

As a proposal to address the limitations of behaviourism, cognitivism and constructivism, Siemens proposes 'connectivism' as a learning theory for the digital age. But what exactly is connectivism?

(1) Defining Connectivism

Let me begin by providing a working definition. In its simplest form, connectivism asserts that in a digital age, 'knowledge is distributed across networks and the act of learning is largely one of forming a diverse network of connections and recognizing attendant patterns' (cf. Siemens 2008: 10). For Siemens, 'networks' are connections between entities, which he calls 'nodes' and defines it as 'individuals, groups, systems, fields, ideas or communities' (Siemens 2008: 10). In proposing connectivism as a learning theory for the digital age, Siemens borrows largely from the science of complexity, which includes chaos theory, networking and self-organization (cf. Klinger 2008: 159). Siemens' postulation of connectivism, differs from the behaviourist, cognitivist and constructivist approaches, in that while these approaches focus primarily on human activity, connectivism embodies both human and non-human material objects in its symmetric analysis (cf. Bell 2010: 529).

(2) Epistemology and Ontology of Learning

For Siemens (2006) 'knowledge' within the current digital age is seen as decentralized and too diverse and rapid flowing to be held in the human

mind. Hence, the production of knowledge within the connectivist approach draws on Snowden's four ontologies of knowledge, namely (a) simple; (b) complicated; (c) complex; and (d) chaotic (cf. Siemens 2006)[7]. In addition, Cormier (2008) contends that Siemens' connectivism also draws on 'rhizomatic' knowledge, which is 'negotiable community-based'.

Connectivism is also largely based on a 'pluralist' epistemology, which entails acknowledging diversity of opinions as in constructivism (cf. Bell 2010: 529). However, connectivism differs from constructivism in that that the objective of connectivist learning is to produce accurate and up-to-date knowledge (cf. Siemens 2005). This distinction is further enhanced with Downes (2006) who posits that ontologically connectivism brings to the fore the critical skills of dealing with diversity, autonomy, openness and emergent knowledge. Bell (2010: 530) draws from his personal experience as a learner within the connectivist teaching approach and posits that connectivism has the ability to foster 'creative dialogue', with learners 'strengthening their links with resources, and more especially with each other, as they begin to cite other learners' contributions and engage with online collaborations'[8].

It should be noted that the characteristics highlighted by both Downes and Bell are integral to the learning processes of religious studies.

(3) Core Principles of Connectivism

As a result of the exponential developments in knowledge production over technologically-mediated spaces, the learner within the connectivist approach is continually confronted with new information that is gained through his/her established networks. Hence, for Siemens (2005: 6) the learner must achieve the critical ability to 'draw distinctions between important and unimportant information' and 'recognize when new information alters the landscape based on previously made decisions' (Siemens 2005: 6).

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[7] For a further exposition of Snowden's four ontologies of knowledge cf. Kurtz and Snowden (2003).

[8] For a good example of the connectivist approach see the online course offered at University of Manitoba, namely CCK08 "Connectivism and Connective Knowledge", which details the transformational aspects of learning technologies and the needed change.

Pollard (2008) illustrates some of the core principles of connectivism by asserting that the learning process within connectivism is about making connections, which can be defined as (1) neural – 'know-what'; (2) conceptual – 'know-how'; and (3) social – 'know-who'. The establishments of networks (or the 'loci of knowledge') is found in online communities – i.e. those with shared knowledge and shared learning interests.

Siemens (2004) further posits eight core guiding principles within the connectivist approach, which I summarize in the following:

a. *Learning and knowledge rests in diversity of opinions*: implies that diversity exists in the sources that inform the learning process as well as in the forums and other socially engaged online platforms where people interact and collaborate.
b. *Learning is a process of connecting specialized nodes or information sources*: learning occurs through learners connecting themselves, their writings and their sources.
c. *Learning may reside in non-human appliances*: implies the incorporation of inter-networked technologies such as Web 2.0 products and services.
d. *The capacity to know more is more critical than what is currently known*: as a knowledge network, the objective is for the learner to increase his/her capacity in related but unexplored areas, through boundary crossing-activities.
e. *Nurturing and maintaining connections is needed to facilitate continual learning*: this implies the critical skills to manage the tension between extending networks, maintaining networks and managing information overload.
f. *The ability to see connections between field, ideas, and concepts is a core skill*: implies the ability of the learner to use information over a wide range of disciplines.
g. *Currency in the form of accurate and up-to-date knowledge is the intent of all learning activities*: this implies the ability to balance information researched over open platforms as well as traditionally published data that is available via online publishing houses.
h. *Decision-making is ultimately a learning process*: the act of choosing what to learn and the meaning of incoming information is

seen through the lens of a transitioning reality. This implies that while it may be a correct answer today, it may be a wrong answer tomorrow due to the alterations by new information affecting the decision.

(4) Criticism of Connectivism

At this point, let me briefly underline some of the critique against connectivism, before proceeding to advance a discourse on a connectivist approach for religious studies. For Vehagen (2006) one of the emerging challenges is whether connectivism can be perceived as a 'learning theory'. Vehagen contends that generally learning theories are complementary, while in connectivism there is no scope for the enlarging of existing principles with other theories (Vehagen 2006). Thus, for Vehagen, connectivism should be regarded as a set of pedagogical skills rather than a learning theory. However, Merriam, Caffarela and Baumghatner (2006: 52) challenges Vehagen's thesis by contending that learning in connectivism is a 'process' rather than an 'end-product'.

For Sahin (2012: 439) as a learning process, connectivism is dependent upon resources, such as institutional infrastructure and access to the internet for both the educator and learner. However, in some institutional environments this can be problematic. This certainly emerges as a critical issue for higher education institutions in Africa, who render services for underprivileged learners.

Bells (2010) contends that a critical factor in connectivism is the issue of 'control'. Within the connectivist approach control is reduced and the educator is placed on the periphery of the learning process.

For Downes (2013) some of the major challenges facing connectivism are: (a) cognitive overload resulting from excess information, which compromises the learner's ability to successfully 'retain' and 'process'; (b) the failure of educators to nurture the meta-cognitive elements in learning; and (c) the failure to be a node or the failure to connect.

Similar to the traditional learning theories that I discussed earlier, connectivism also has its known limitations. However, Boitshwarelo (2011) contends that despite these limitations, it is clearly a 'fresh' way of looking at learning.

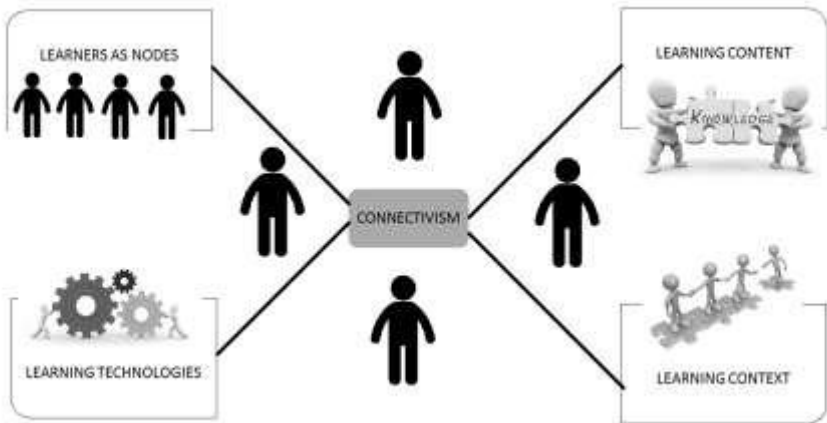## Towards a Connectivist Approach in Religious Studies

Figure 01: A Connectivist Framework

The advancements of technology in education has certainly not left religious studies unabated. In retrospect, its integration in education has created much more innovative prospects for the facilitation of religious studies in the twenty-first century. The integration of technology has the potential to expand the current knowledge base, with critical insights and up-to-date knowledge on global events intertwined with religion, as well as stimulate critical reflection between learners and between learners and the educator. Nevertheless, discourses on pedagogy in religious studies have often given way to discourses on method and theory in the study of religion. Hence, it is my aim in this paper to refocus some of the attention on pedagogy by putting forward a proposition for a technologically-centered pedagogical transition in religious studies, which is based on the core principles of connectivism (as discussed earlier). In order to do so, I propose a discussion of four critical theoretical constructs (cf. Figure 01), namely (1) learners as nodes; (2) learning content; (3) learning context; and (4) learning technologies.

(1) Learners as Nodes

Learners enter the connectivist approach as single nodes (a single entity). Each learner emerges as a point of information containing personal knowledge, which is shaped by their own experiences, ideas, feelings, opinions, etc. Thus, each learner maintains their own unique identity. According to Siemens (2005: 7) the aim of each learner is to expand their personal knowledge by connecting to other nodes (i.e. other people, data, ideas, etc.)[9]. This process of 'connecting' is the central metaphor for the learning process. The ultimate goal is to establish multiple connections, which then culminate with a 'network'. This process describes the social, interconnected and community-based characteristics of learning in contemporary times, and mirrors ways in which people engage in socialization and interaction online. Thus, learning within the connectivist approach can be seen as intensely social, where knowledge is generated in contact with others in the community through mutual exchange, contribution and sharing of ideas. Shared motives and common interests become the critical factors in maintaining and expanding these networks.

With the current advancements in information and communication technologies, the notion of a 'networked-community' is becoming much more dynamic with local and global participation. As learners begin to extend their networks and immerse their responses and contributions within these dynamic communities, it provides them with valuable feedback and reciprocity, which enhances the intellectual processes of learning (cf. Owen Grant, Sayers & Facer 2006). Hence, this brings to the fore the core principle of connectivism, which highlights 'diversity of opinions'.

For religious studies, connectivism offers much opportunity for the transitioning of contemporary religious studies to a 'lived religion' approach. In connectivism, learners maintain their own unique religious worldviews and are able to network with other nodes (learners and other sources of information) both locally and globally. These interactions can be further enhanced by learners expanding their networks to include learners of different religious traditions, in order to gain insight into their beliefs, rituals, festivals, morals, etc. This process of interaction helps learners to expand

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[9] Downes describes this product as "connective" or "distributive" knowledge (cf. Downes 2012: 15).

their knowledge on world religions, and encounter traditions, which they may not necessarily be exposed to within the classroom context (for example interaction with an adherent practicing Candomblé – an Afro-Brazilian religion practiced mainly in Brazil comprising a mixture of traditional beliefs originating from different regions in Africa). It further assists learners to engage with other nodes on global issues that are intertwined with elements of religion, and through processes of contributing to discussion forums and other socially-mediated platforms, they are able to gain insights into the broader thought processes of local and global participants.

Connectivism, thus offers a pedagogical shift to a space beyond the traditional lecture hall.

(2) Learning Content

Content is a critical issue in any learning process. The critical question is what constitutes 'legitimate' knowledge? Traditional approaches to teaching and learning are typically based on pre-selected teaching materials. Educators position themselves as the custodians of knowledge by stipulating the content that feeds into the curriculum (which more often than not is ideologically based). Religious studies is no stranger to such discourses, educators in religious studies also frame curricular within specific approaches – i.e. historical criticism, literary criticism, phenomenology, etc. In addition, content embodied in selective prescribed books also serve to expose students to 'selective' scholarship (i.e. schools of thought).

The reality, however, is that contemporary learners perceive little value in the absorption or learning of information embodied within traditional prescribed materials (cf. Berg, Berquam & Christoph 2007). With the advancements of technology in education, students are being exposed to diverse content, in the forms of Open Educational Resources (OERs), online journals, wikis, Google search engines, etc., which serve to expose students to different schools of thought. Drawing from personal experiences, this is clearly evident with students plagiarising online content with little focus on what is contained within the prescribed reading materials.

Adding to this complexity, connectivism brings to the fore a new type of knowledge - i.e. 'connected knowledge' (cf. Siemens 2005: 8). As members of open online spaces, learners are finding new ways to contribute,

communicate and collaborate, using a variety of accessible tools that empower them to develop and share ideas. As a result of these developments, learners are now constructing their own knowledge. There is a general transition from being mere 'consumers' of knowledge to also 'producers' of knowledge (i.e. 'prosumers'). Thus, for McLoughlin and Chan (2008) as new comers to a community of practice, learners not only engage in 'legitimate peripheral participation' to develop their own mastery of knowledge, but also have a responsibility to take part in the continued advancements of the community's existing body of knowledge, as they move towards full participation as 'curators' in a knowledge building community. This inevitably leads to knowledge being produced and consumed that are up-to-date, which is essentially a core principle of the connectivist approach.

Thus, this posits a refocus on designing of learning content, which moves the religious studies educator from the position of custodian of knowledge, to a guide in the construction of 'connected' knowledge.

(3) Learning Context

Learning context is understood as the 'set of circumstances that are relevant when someone needs to learn something' (cf. Figueiredo 2005: 127). Literally, this implies the learning activities, situations of learning and teaching, theoretical learning, concept learning, skill learning, practice learning, learning through real situations, etc. (cf. Figueiredo 2005: 127). Two of the emerging trends in designing learning contexts are 'collaborative learning' and 'simulation'. I have focused much on the issue of collaborative learning in my earlier discussions under 'current trends'. In this section, I want to expand on the significance of 'simulation' as a learning context for religious studies within the connectivist approach.

Simulation attempts to copy various activities from 'real life' and position them in a virtual environment (cf. Figueiredo 2005: 132). Typical examples of these are flight simulation, war games, business games, and role play simulation. One of the major simulation platforms dominating the higher education environment is 'Second Life'. As noted earlier, Second Life is an online virtual world, which enables users to interact with each other using avatars. Avatars can then explore virtually constructed worlds, meet other avatars, socialize and participate in individual and group activities.

Second Life is built on 3D modelling software that is purposed to simulate real life environments. In terms of religious studies, Second Life already hosts an array of environments such as 'Library of World Religions', 'Spirituality and Belief', as well as virtual sacred space such as synagogues, mosques, and churches. Some of these sacred sites are designed in such a way that it replicates the experiences of visiting the actual physical site. In addition, Second Life hosts an array of 'spaces', where learners can enter and engage in critical discussions with other learners, as well as educators that are internationally based. Thus, Second Life offers an immersive experience for learners within religious studies.

A pioneering example of teaching religious studies in Second Life is that of the University of Southern Queensland (Australia). It hosts an island (space) situated in the New Media Consortium educational precinct and comprises a number of religious buildings including a church, a mosque, a synagogue, an ancient Greek temple, a Freemasonic lodge, a Zen Buddhist temple, and a Hindu temple dedicated to Ganesha. According to Farley (2010) these simulated spaces allow students the exposure of other religious traditions and the ability to engage and interact with its adherents. Hence, it fosters empathy to different religious traditions and provides the basis for religious tolerance, which translates to the real world (Farley 2010).

Platforms such as Second Life offer much scope for innovative as well as contextualized learning experiences.

(4) Learning Technologies

Learning technologies are critical in the expanding and shifting of spaces and structures for a new learning approach. The acquisition of knowledge and skills by the modern-day learner and educator is immensely influenced by technology (cf. Selwyn 2011). The rapid advancements in technologies over the past two decades compels the education sector to be abreast the many developments that can contribute to more sustainable, relevant and productive educational practices. The 2011 Horizon Report (cf. Johnson, Smith, Willis, Levine & Haywood 2011) identified six emerging technologies that will mostly likely dominate the education environment and contribute to a paradigm shift within the next 5 years.

The first technology is 'Cloud Computing' – web based tools, where

learners and educators can collaborate online at affordable rates and minimum resources.

The second emerging technology is 'Mobile Technology' – mobile devices such as cell phones, smart phones, android tablets, etc. that are less expensive than most laptops and require lesser infrastructure to support them.

The third emerging technology is 'Gaming and Simulation Software' – where the productive role of play and simulation allows for experimentation, the exploration of identities and even failures (e.g. 'Second-Life' and 'Open Simulation').

The fourth technology refers to 'Open Content' – a type of technology that has evolved away from the idea of authoritative repositories of content towards the broader notion of content being freely available (such as OERs).

The fifth emerging technology which is speculated to dominate the education sector within the next 4-5 years is 'Learning Analytics'. It harnesses the power in data mining, interpretation and modelling to help educators design systems and approaches to better measure student outcomes and faculty developments.

The sixth emerging technology, which features highly noticeable in the current era, is 'Personal Learning Environments' (PLEs). PLEs which are largely constituted by social software (i.e. Facebook, Twitter, E-Blogger, YouTube, Flickr, etc.) offer an alternative technology and approach (from the traditional Learning Management Systems) that is individualized by design, and hence different from person-to-person. PLEs also function as 'open' spaces beyond the traditional institution firewall and are often unregulated or 'minimally' regulated.

In addition to the above six emerging technologies, we also witness an advancement in traditional Learning Management Systems from general administrative systems to much more interactive and collaborative open environments (such as the new developments in Sakai, Blackboard and Moodle).

The above trends reflect the realities of the time, both in the sphere of education and the world at large and offer an innovative space for developing a connectivist approach in religious studies. One of the critical challenges facing our higher education institutions is the lack of exposure to such developments and its relevance for adoption to the African context.

Conclusion

There is no doubt that the numerous advancements made in technology is challenging the way we 'do' education in Africa. The integration of techno-logy in education is offering new and innovative ways to teach and learn. However, this integration also calls for a revising of traditional pedagogical practices that have dominated the educational landscape for decades.

This paper focuses on probing the prospects for a technology-centered pedagogical transition in religious studies. In order to do so, I began this journey with a look at the current trends in designing learning spaces within the digital age. Three trends came to the fore, namely (1) designing with meta-cognitive interface elements; (2) designing with web-based technologies; and (3) designing with collaborative learning elements. These three current trends are an indication of how the current educational landscape in Africa can be transformed to meet the demands of the digital generation of learners. However, in order to make this transition, we need to understand some of the limitations of the 'traditional' learning theories that have dominated our learning spaces. Hence, I attempted to discuss the complexities of behaviourism, cognitivism and constructivism. Moreover, using one of the leading twenty-first century educational theorist, namely George Siemens, has a point of reflection, I highlighted the limitations of the above theories for the digital age.

In response to these limitations, I note that there are many other theories, however, my focus is on Siemens theory of connectivism which comes to the fore as one of the most leading theories contesting for legitimacy alongside the traditional behaviourist, cognitivist and constructi-vist approaches. Siemens theory basically posits that learning takes place when the learner establishes connections with other learners, communities, data and ideas to establish a 'network'. The process of learning than takes place when the learner expands these networks to gain more knowledge. However, the learner is not passive and also takes the role of constructing knowledge. In order to expand this discussion further, I focus on the episte-mology and ontology of learning within connectivism, its core principles, and some of the critique coming to the fore to highlight its limitations.

Following this, I then turned my focus explicitly to the pedagogical practices within the study of religion. It was noted that the advancements made in technology have certainly ushered a new and innovative

environment which religious studies could tap into. In order to further a discourse on possibilities for a pedagogical transition to a connectivist approach in religious studies, I highlighted four areas, namely (1) the learner as a node; (2) the learning content; (3) the learner context; and (4) learning technology. All four areas provide a scope for the advancements of religious studies into a technologically-mediated learning environment.

However, my intention in this paper is not to propose a 'model' or 'framework' for such transition. The intention of this paper was to probe the prospects for a transition to a technologically-mediated pedagogy. In doing so I looked at connectivism as one possible learning theory. My conclusions are:

a. Connectivism offers much potential for a transition, especially if one intends on engaging with religious studies within a lived religion approach, where individual experiences become fundamental in the learning process.
b. Connectivism in itself offers much potential for educators to legitimize what they are doing with the integration of technology through immersing themselves within communities of educators.
c. Connectivism offers a creative platform for learners to contribute to the knowledge base by producing their own content based on their own lived experiences in religious studies, thereby becoming both consumers and producers of knowledge.

Against the above background, I offer this paper as a work in progress to open a discourse on pedagogical practices for religious studies in a digital age.

References

Ally, M 2008. Foundations of Educational Theory for Online Learning. In Anderson, T (ed): *The Theory and Practice of Online Learning*. Athabasca: AU Press.

Aviv, R, Z Erlich & G Ravid 2003. Cohesion and Roles: Network Analysis of CSCL Communities. In Devedzic, J, D Spector & K Sampson (eds):

Advanced Learning Technologies: Technology Enhanced Learning. Los Alamitos: IEEE Computer Society.

Beishuizen, J 2008. Does a Community of Learners Foster Self-Regulated Learning? In *Technology, Pedagogy and Education* 17,3: 183 - 193.

Bell F 2010. Network Theories for Technology-Enabled Learning and Social Change: Connectivism and Actor Network Theory. In *Proceedings of the 7th International Conference on Networked Learning*. Available at: <http: //www.lancaster.ac.uk/fss/organisations/netlc/past/nlc2010/abstracts/PDF s/Bell.pdf. (Accessed on 13 November 2013.)

Berg, J, Berquam, L & K Christoph 2007. Social Networking Technologies: A 'Poke' for Campus Services. *Educause Review* 42,2: 32 - 44.

Boitshwarelo, B 2011. Proposing an Integrated Research Framework for Connectivism: Utilizing Theoretical Synergies. *International Review of Research in Open and Distance Learning* 12,3: 161 - 179.

Bruner, J 1985. Models of the Learner. *Educational Researcher* 14,6: 5 - 8. Available at: <http://www.jstor.org/discover/10.2307/1174162?uid=2& uid=4&sid=21103227161201. (Accessed on 01 November 2013.)

Cormier, D 2008. Rhizomatic Education: Community as Curriculum. *Innovate* 4,5. Available at: <http://www.innovateonline.info/index.php? view=article&id=550. (Accessed on 17 October 2013.)

Corneli, J 2012. Paragogical Praxis. *E-Learning and Digital Media* 9,3: 267 - 272.

Cress, U 2013. Mass Collaboration and Learning. In Luckin, R, S Puntambekar, P Goodyear, B Grabowski, J Underwood & N Winters (eds): *Handbook of Design in Educational Technology*. New York and London: Routledge Taylor and Francis Group.

Cross, N 2007. From a Design Science to a Design Discipline: Understanding Designly Ways of Knowing and Thinking. In Michel, R (ed): *Design Research Now: Essays and Selected Projects*. Basel, Switzerland: Birkhauser Verlag.

Diaz, DP & KF Bontenbal 2000. Pedagogy-Based Technology Training. In Hoffman, P & D Lemke (eds): *Teaching and Learning in a Network World*. Amsterdam, Netherlands: 105 Press.

Downes, S 2006. An Introduction to Connective Knowledge. Available at: http://www.downes.ca/cgibin/page.cgi?post=33034. (Accessed on on 13 November 2013.)

Downes, S 2012. *Connectivism and Connective Knowledge: Essays on Meaning and Learning Networks*. Available at: http://online.upaep.mx/campusTest/ebooks/conectiveknowledge.pdf. (Accessed on 13 November 2013.)

Downes, S 2013. Connectivism and the Primal Scream. Available at: http://halfanhour.blogspot.com/2013/07/connectvism-and-primal-scream.html. (Accessed on 13 November 2013.)

Eileen, S, G Conole, G Clough & C Blake 2013. 'Interdisciplinary Knowledge Creation in Technology-Enhanced Learning'. In Hernández-Leo, D, T Ley, R Klamma & A Harrer (eds): *Scaling up Learning for Sustained Impact*. Berlin, Heidelberg: Springer.

Ertmer, PA & TJ Newby 1993. Behaviourism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective'. *Performance Improvement Quarterly* 6,4: 50-72. Available at: <http://dx.doi.org/10.1111/j.1937-8327.1993.tb00605.x. (Accessed on 01 November 2013.)

Farley, H 2010. Teaching First Year Studies in Religion Students in Second Life: UQ Religion Bazaar. In *Proceedings Ascilite Sydney*. Available at: <http://www.ascilite.org.au/conferences/sydney10/procs/Farley-concise.pdf. (accessed on 13 November 2013.)

Figueiredo, AD 2005. Learning Contexts: A Blueprint for Research'. *Interactive Educational Multimedia* 11: 127 - 139.

Garrison, DR, M Cleveland-Innes & T Fung 2010. Exploring Casual Relationships among Teaching, Cognitive and Social Presence: Student Perceptions of the Community of Inquiry Framework'. *The Internet and Higher Education* 13,2:31 - 36.

Gilovich, T, DW Griffin & D Kahneman 2002. *Heuristics and Biases: The Psychology of Intuitive Judgement*. New York: CUP.

Good, TL & JE Brophy 1990. *Educational Psychology: A Realistic Approach.* White Plains, NY: Longman.

Gredler, ME 2005. *Learning and Instruction: Theory into Practice*. Upper Saddle River, New Jersey: Pearson Education.

Held, C, J Kimmerle & U Cress 2012. Learning by Foraging: The Impact of Individual Knowledge and Social Tags on Web Navigation Processes. *Computers in Human Behaviour* 28: 34 - 40.

Johnson, L, R Smith, H Willis, A Levine & K Haywood 2011. *The 2011*

Horizon Report. Austin, Texas: The New Media Consortium. Available at: http://net.educause.edu/ir/library/pdf/hr2011.pdf. (Accessed on 13 November 2013.)

Kay, J, S Kleitman & R Azevedo 2013. Empowering Teachers to Design Learning Resources with Metacognitive Interface Elements. In Luckin, R, S Puntambekar, P Goodyear, B Grabowski, J Underwood & N Winters (eds): *Handbook of Design in Educational Technology*. New York and London: Routledge Taylor and Francis Group.

Ke, F 2010. Examining Online Teaching, Cognitive and Social Presence. *Computers and Education* 55,2: 808 - 820.

Ke, F & L Zhu 2013. Role of Web-Based Technologies in Framing Teaching Presence'. In Luckin, R, S Puntambekar, P Goodyear, B Grabowski, J Underwood & N Winters (eds): *Handbook of Design in Educational Technology*. New York and London: Routledge Taylor and Francis Group.

Keppell, M & M Riddle 2011. Distributed Learning Places: Physical, Blended and Virtual Learning Spaces in Higher Education. In Keppell, M, K Souter & M Riddle (eds): *Physical and Virtual Learning Spaces in Higher Education: Concepts for the Modern Education Environment*. New York: IGI Global.

Klinger, CM 2008. Experience the Difference: Maths Attitudes and Beliefs in Commencing Undergraduate Students and Pre-Tertiary Adult Learners. In Donoghue, J (ed): *Proceedings of the 14th International Conference on Adults Learning Mathematics, Limerick, Ireland*. Limerick: ALM.

Kurtz, CF & DJ Snowden 2003. The New Dynamics of Strategy: Sense-Making in a Complex-Complicated World. *IBM Systems Journal* Fall, Available at: http://www.valuenetworksandcollaboration.com/images/ Cynefin_NewDynamicsOfStrategy.pdf. (Accessed on 13 November 2013.)

McLoughlin, C & MJW Lee 2007. Social Software and Participatory Learning: Extending Pedagogical Choices with Technology Affordances in the Web 2.0 Era. *ICT: Providing Choices for Learners and Learning*. Singapore: Ascilite. Available at: http://www.ascilite.org.au/conferen ces/ singapore07/procs/mcloughlin.pdf. (Accessed on 13 November 2013.)

Merriam, DB & RS Caffarella 1999. *Learning in Adulthood: A Comprehen-*

sive Guide. San Francisco, CA: Jossey-Bass.

Merriam, SH, R Caffarela & L Baumghatner 2006. *Learning in Adulthood: A Comprehensive Guide.* San Francisco: Jossey Bass.

Owen, M, L Grant, S Sayers & K Facer 2006. *Social Software and Learning*. Bristol, England: Futurelab. Available at: http://www.futurelab.org.uk/ download/pdfs/research/opening_education/Social_Software_report.pdf. (Accessed on 13 November 2013.)

Piaget, J 1952. *The Origins of Intelligence in Children*. New York: International Universities Press.

Pollard, D 2008. Understanding Connectivism. Available at: http://blogs.salon.com/0002007/2008/10/03.html#a2255. (Accessed on 13 November 2013.)

Prensky, M 2001. Digital Natives, Digital Immigrants. *On the Horizon* 9,5. Available at: http://www.marcprensky.com/writing/Prensky%20- %20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf. (Accessed on 17 October 2013.)

Price, S & P Marshall 2013. 'Designing for Learning with Tangible Technologies. In Luckin, R, S Puntambekar, P Goodyear, B Grabowski, J Underwood & N Winters (eds): *Handbook of Design in Educational Technology*. New York and London: Routledge Taylor and Francis.

Rowe, K 2006. Effective Teaching Practices for Students with and without Learning Difficulties: Issues and Implications Surrounding Key Findings and Recommendations from National Inquiry into the Teaching of Literacy'. *Australian Journal of Learning Disabilities* 11,3: 99 - 115.

Sahin, M 2012. Pros and Cons of Connectivism as a Learning Theory. *International Journal of Physical and Social Sciences* 2,4: 427 - 454. Available at: http://www.ijmra.us/project%20doc/IJPSS_APRIL2012/ IJMRA-PSS1296.pdf. (Accessed on 13 November 2013.)

Sangra, A & S Wheeler 2013. New Informal Ways of Learning: Or are we Formalizing the Informal. *Universities and Knowledge Societies Journal* 10,1: 286 - 293.

Selwyn, N 2011. *Education and Technology: Key Issues and Debates*. London: Bloomsbury.

Siemens, G 2005. Connectivism: A Learning Theory for a Digital Age. *International Journal of Instructional Technology and Distance Learning* 2,1: 3 - 10.

Siemens, G 2006. Knowing Knowledge. Available at: http://www.knowing knowledge.com. Accessed on 13 November 2013.)

Siemens, G 2008. Learning and Knowing in Networks: Changing Roles for Educators and Designers. *University of Georgia IT Forum*. Available at: http://it.coe.uga.edu/itforum/Paper105/Siemens.pdf. Accessed on: 13 November 2013.)

Siemens, G 2009. ELearning Space. Available at: http://www.elearnspace. org/blog/. (Accessed on 12 November 2013.)

Skinner, BF 1974. *About Behaviourism*. United Kingdom: Vintage Books.

Sköld, O 2012. The Effects of Virtual Space on Learning: A Literature Review. *First Monday* 17,2: 1-7.

Slade, S & P Prinsloo 2013. Learning Analytics: Ethical Issues and Dilemmas. *American Behavioural Scientist* 57,10: 1509-1528. Available at: http://oro.open.ac.uk/36594/2/ECE12B6B.pdf. (Accessed on: 27 December 2013.)

Spillane, JP 2002. Local Theories of Teacher Change: The Pedagogy of District Policies and Programs. *Teachers College Record*104,3: 377 - 420.

Underwood, J & R Luckin 2013. Introduction. Luckin, R, S Puntambekar, P Goodyear, B Grabowski, J Underwood & N Winters (eds): *Handbook of Design in Educational Technology*. New York and London: Routledge Taylor and Francis Group.

Vehagen, PW 2006. Connectivism: A New Learning Theory. Available at: http://elearning.surf.nl/e-learning/english/3793. (Accessed on 13 November 2013.)

Wray, D 2010. Approaches to Learning: Behaviourism, Constructivism and Social Constructivism. In Arthur, J & T Cremin (eds): *Learning to Teach*. Abingdon, Oxon: Routledge.

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