# The theory of connectivism in enhancing leadership/management competences in e-learning in higher education

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## ABSTRACT

The quality of the change leadership towards curriculum and e-learning in higher education institutions can either advance or inhibit the noble cause being undertaken by online learning initiatives. The main locus of contradiction which contributes to the weak and unclear management and leadership competence for online learning is the lack of proper knowledge of an e-learning environment. This paper argues that there is a shift from the pre-digital management and leadership understanding of curriculum and learning to the new model of management and leadership for e-learning environments. A new type of leadership needs to guide institutions towards online learning. Therefore the aim of this paper is to exploit the affordances of the qualitative and transformative shift that connectivism supported by the socio-technological perspective contributes towards change management in e-learning environments. A literature review supported by case studies at two institutions was observed for reflection on practice in change management towards online learning. An interesting conclusion to this paper points to the need for management and leadership of this century to be continuously and consistently searching for new knowledge from theories of e-learning that can guide them towards the truths and information about e-learning environments. Committing to quality leadership and management creates a flexible and supportive environment that fosters student access and success.

**Keywords:** Higher education, online learning, e-teaching and learning, connectivism, socio- technological perspectivetheories of e-learning, e-learning, leadership, management, competence.

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## INTRODUCTION

The higher education sector and specifically in open distance learning institutions, have been going through a period of profound change towards e-learning. Though the reality of change towards e-learning has brought with it elements of discomfort and anxiety it is more so to the leadership and management of this change. The quality of the change leadership towards e-learning in higher education institutions can either advance or inhibit the noble cause being undertaken by e-teaching and learning initiatives. Motivation to work by the leadership and management for e-learning is high in most areas of the university, however the knowledge, that drive leaders and managers with skills needed to guide an e-learning project in a university is lacking or is not clear.

Leadership and management for e-learning in this paper is pointing to the people who plan, design develop and implement the strategies for the university to go on line. As the process towards e-learning in higher education institutions gain ground each day, the key questions need to be directed to the intellectual persona towards the pedagogical, philosophical, social and political commitment to e-learning. The question is "What knowledge is needed by the leaders and management of universities going towards e-learning so that they can become competent in achieving their goals?" The most effective way to create effective leadership and

management of e-learning is to enable them to understand the kind of knowledge that manifests itself when people are learning in online environments.

## Context of the paper

The world is going through increasingly chaotic changes of the Fourth Industrial Revolution (World Economic Forum (WEF), 2016). One of the main drivers of this chaos is the technological drive towards e-learning in universities. Disruptive changes are coming very quickly and the impact on institutional leadership and management is not smooth. Many organizations are slow to adapt to all of these changes, and those that do not may fail. The main locus of contradiction that contributes to weak and unclear management and leadership competence for e-learning is the lack of proper knowledge of how e-learning environments work.

Leaders and managers need to develop a deep understanding of how students learn online today. Reasons that companies or organization fail in e-learning initiatives are well documented (WEF, 2016). Most of the reasons are human failures, including failure to read the market and customer needs, failure to be competitive, failure to adapt, failure to deal adequately with disruptive technologies and innovation, and failure to manage human failures (WEF, 2016). Universities are not excluded in this great challenge in which new initiatives tend to disarm the existing leadership in institutions. It would be very difficult for universities to allow most of its old leaders and managers of teaching and learning to leave the institution and the only way to solve this problem would be to empower them. Therefore within this era of continuous technological innovation higher education institutions need to take cognizance of the changing nature of the leadership and management of e-learning and therefore be more responsive to their needs.

Emerging innovations and in particular e-learning innovations have serious implications for higher education institutions. Since the present century has been calling for online learning, innovations in technology together with the use of the internet have transformed teaching and learning practices within open distance learning (ODL) institutions. Though the reality of change towards e-learning has brought with it elements of discomfort and anxiety, it is more so to the leadership and management of this change. Leaders and managers who existed in the pre-digital teaching and learning era find themselves leading and managing in e- learning environments without the required competences. They continue to push for an e-learning agenda that is not clear to them. Therefore universities end up being led by managers and leader who are not clear about the issues around e-learning environments. What result from this

situation is a lack of proper project support, inadequate resource allocation and resistance to uninformed and autocratically governed instructions by the followers.

## E-learning

E-learning is part of the new dynamic that characterises educational systems at the start of the 21st century. E-learning is not an easy term to define since it encompasses a lot of issues about learning online (Mayadas et al., 2015). Furthermore it is defined differently in different circumstances, be it education, industry or by particular professional approaches and interests. In one way e-learning is clarified as "The use of any electronic technology to aid in the acquisition and development of knowledge and understanding in order to demonstrable and positively influence behaviors (Mayadas et al., 2015). In general terms, e-learning is electronic learning, and typically this means using a computer to deliver part, or all of a course whether it is in a school, part of your mandatory business training or a full distance learning course. It had actually been confused for learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In this paper e-learning is defined as courses that are specifically delivered via the internet either in the classroom or to somewhere other than the classroom where teaching or learning is taking place.

The major goals of e-learning include, improving access for both traditional and non-traditional students who are not otherwise able to attend a traditional, campus-based program. It also improves student choice over when, where, and how to engage in the learning process. It involves improving efficiency and effectiveness by using e-learning media and methods to control cost or provide other efficiencies or to make large-enrollment courses more effective for students.

From the above definition it is clear that, e-learning is more than just a suite of platforms, tools, and solutions to bring more technology into education. Fully embraced, e-learning carries with it a whole philosophy that changes the role of learner, lecturer and leader (Keramida, 2016). Understanding this relationship can, transform the approach that leaders and managers of e-learning take to achieve e-learning goals. The purpose of this paper is to justify connectivist theory as providing the necessary knowledge needed by leaders, in order for universities to manage the blockages to service delivery of online learning especially caused by leadership and performance deficiencies.

## Background of the problem

There is a leadership crisis in e-learning environments

today in most universities in the world (Copeland, 2015). Leaders and management for e-learning are trying to achieve agendas that are not clear to them. They are not well informed about the continual changes that come with e-teaching and learning on the ground. For example minimum standards for alternative assessment online have not been clarified in most higher education institution, yet the leaders and managers of e-learning are expected to plan towards online assessment methods and practices. Within this era of continuous technological innovation higher education, institutions need to take cognizance of the changing nature of the leadership and management of e-learning and therefore be more responsive their needs.

There are some theories written about e-learning, but the balance between theory about online learning (written in sometimes huge documents) and the real practice is vague and broken. It is therefore important that leaders and management for e-learning should be led by the principles of relevant e-learning theories in order, for them to be efficient, effective; and accountable. As much as the ethical and collective responsibility of the leaders and managers for e-learning is genuine, and is guided by their wish for innovation and excellence, but if they do not get relevant support, their collective competence towards this good cause will be wasted. With cognizance of the complexities that surfaced from the process towards e-learning over this century, it remains an indisputable fact that leaders and management of e-learning cannot continue to work without being afforded the necessary knowledge for these environments.

The theoretical and knowledge base for developing e-teaching and learning environments has been widely pursued in a variety of forums. For example, initiatives like the Vision 2020, in Malaysian higher education, envisioned the higher education sector's contribution to the development of first class human capital for the country. Malaysian higher education missions and goals, identifies five broad domains of competencies which attribute to the success of leaders in higher education which include broad-based impact , influence, acknowledged areas of expertise and a directory of research (MoHE, 2009). Furthermore, their National Higher Education Policy on e-learning carries several important agendas of providing appropriate and friendly e-learning infrastructure. Higher Education Leadership Academies have also been set by other countries (MoHE, 2009). However all these initiatives have not looked at what knowledge a leader requires in order to prepare for quality e-learning structures. The knowledge from relevant e-learning theories is a major missing link that is not only important but necessary for the leadership of e-learning.

Theories of e-learning can begin to move leaders and management of e-leaning towards designing technology oriented spaces. Leaders without this knowledge keep

planning for the old pre-digital educational spaces and learning development with patches of online ideas in it. For example some higher education institutions are using an open distance learning (ODL) pedagogy into an open distance and e-learning (ODeL) pedagogy. Vambe (2005) called it a process of cyclostyling old approaches. This means bringing a particular type of pedagogy of education into another type of education and praying that all teaching and learning will remain the same. For example, a face to face pedagogy can be brought into online distance education pedagogy without any serious changes to the way things are done. This study discusses connectivism as a theory that can be the driver of the knowledge needed by higher education leaders to achieve an e-learning agenda, vision and mission for higher education institutions.

**Problem formulation**

Academic epistemological change towards a new phenomenon like e-learning requires the disruption and rupture of entrenched ways of acting, relating and performing within the institution. For leaders and managers in higher education, the knowledge of e-learning environments is a major missing competence that is not only important but necessary for the fitness of purpose in terms of them achieving the e-learning goals. The theory of connectivism is suggested as a defining pedagogy for e-teaching and learning, although there is debate about whether it is a learning theory or a theoretical framework (Siemens, 2005; Bell, 2011).

**Research questions**

The main locus of contradiction which contributes to the weak and unclear management and leadership competence for online learning is the lack of proper knowledge of an e-learning environment. The question is what knowledge is needed by the leaders and managers of e-learning in order to become competent in leading and managing e-learning environments in higher education?

**Aim and purpose**

The aim of this paper is to exploit the affordances of the qualitative and transformative shift that connectivism supported by the socio-technological perspective can contribute to change management in online learning environments. The purpose of this paper is through the connectivism theory, to manage the blockages to service delivery of online learning that are especially caused by leadership and performance deficiencies.

## METHODOLOGY

This was a conceptual paper where a literature review and reflection on practice was used to collect the data for analysis. The formulation of the problem statement originated from reflection on practice where the researcher's experiences on change management while working in e-learning environments was used. A thorough study of the concept of connectivism supported by the socio-technological perspective was carried out to prove its ability to guide e-learning leaders and manager in e-learning environments. The focus of the literature review was to justify connectivism as the necessary learning theory that can guide leaders and managers for e-learning with knowledge needed for e-learning environments. The paper critically reviewed, analysed and discussed the strengths and shortcomings of connectivism as a guiding construct for e-learning environments. The primary data is collected through references from various sources such as libraries, information centres, websites and other educational institutions.

### E-learning leadership

Many factors can contribute to the institutions' success towards e-learning, but its strength is held in the leadership quality. Leadership can be defined as the ability to influence others towards a common goal that is spelt out, in the vision, missions as well as in the policy of an organization. Strong and effective leadership is pertinent in ensuring the sustainability of e-learning in higher education institutions. Effective leadership will help set not only the institution's vision to be achieved, but also to motivate and mobilize academia to transform and sustain accordingly. Leadership development will expand the capacity of the individual's ability to perform in leadership roles within the organization (Fullan and Scott, 2009). Transformation of higher education towards e-learning demands the changing of the mindset of the leaders. Research has demonstrated that effective leadership is crucial for change to happen and that leadership can be taught (Zenger, 2007). This paper therefore looks at the knowledge needed by leaders for e-learning in order for them to carry out the mandate of an e-learning university.

### Leadership and management knowledge transformation

Today higher education is globally under pressure to produce knowledge that is relevant to social and economic needs, more representative of the diversity of its knowledge producers and more inclusive of the sites where knowledge should be produced (Ministry of Higher Education, 2006). One of the greatest contributions higher education has made to sustainable development is by enabling online learning in its curriculum and learning. This implies that pedagogies and teaching online approaches should be consciously chosen to enable authentic learning, re-assessment, reshaping and reforming of the purpose of an e-learning curriculum.

The process of online learning must be seen to infuse relevance that is built into its establishment. It must follow the normal principles of curriculum development which includes the epistemological (What should count as knowledge or as knowing?), political, economic, ideological (What knowledge is of most worth? Whose knowledge is it?), and technical and ethical (Hultgren, 2006). The contribution of relevant theories of e-learning should be seen as the starting point to the necessary knowledge for the leadership and management for e-learning.

In this era, learning has fallen into various categories that include learning outside the classroom, independent learning, and networked learning. Learning can also occur in platforms of technology or in organizations that have non-human appliances. This has resulted in the need for new theories that describe this type of learning. In some cases learning is carried out without a clear learning design (Bell, 2011:2). For example learning that results from Freire's pedagogy of the oppressed that links education practise to liberation is connected to 'power relations' and therefore appreciate formal and informal learning (Ally, 2004).

Technology has significantly disturbed the normal channels of access for information, communication and interactions that were previously available for successful learning. Rather learning networks have resulted within this turbulence. Previously developed learning theories like behaviourism, cognitivism and social constructivism have been based mostly on learning in the pre-digital era. They were based on' three broad epistemological frameworks of objectivism, pragmatism and interpretivism, where consecutively, knowledge is gained through experiences, constructions and negotiating those experiences, and constructs (Stephenson, 2004; Driscoll, 2000). The theory of behaviourism is about learners' behaviour while cognitivism is about how learners process information and social constructivism looks at learners' construction of knowledge. These theories became inadequate in their failure to recognize learning that occurs outside the human being (Siemens, 2005). As a result, some important theories of learning that align to the digital age have erupted, They acknowledge frameworks that are based on learning that is composed of connections and networked entities (Downs, 2006). The theories of collagogy, chaos, connectivism and the Socio-Technological Perspective are some of the theories that were identified in their own rights as being

relevant to digital and e-learning.

The concept of collagogy grounded in learning theory explains a new set of practices and strategies that enable social learning (Lehman, 2010). The basic set of strategies in collagogy include providing an environment for social, networked, collaborative learning, ensuring that learners have the knowledge and skills necessary to access and use the social learning environment and processes effectively. On the other hand the theory of chaos is a science that recognizes the connection of everything to everything (Gleick, 1987:5). Chaos derives its meaning from "a cryptic form of order" (Calder, 2013:3) and is "the breakdown of predictability, evidenced in complicated arrangements that initially defy order" (Siemens, 2014:3). This can be understood in that there is order in disorders. Because knowledge is disorderly one is encouraged to recognize the order in the patterns in order to find meaning in the knowledge. Therefore meaning-making and connections between specialized and unique communities of e-learning is important. Therefore, the ability by leaders and managers for e-learning to provide self-organization in a complex structure of chaos is important. Self-organization is defined as the "spontaneous formation of well- organized structures, patterns, or behaviors, from random initial conditions" (Calder, 2013). As much as the two theories described above seem enough for an online environment, this study suggests the theory of connectivism to be more relevant to e-learning initiatives than the two described above.

## Connectivism

Connectivism is a learning theory established in 2005 through the exploration of the theories of chaos, network, and self-organization. Epistemological principals of connectivism are unique in that learning may occur outside the individual. Knowledge is complex in that new information is continually being acquired. This is because information has grown to enormous proportions and has become too complex for individuals to manage it in single units, hence the need to network it. Since no one person can experience and manage everything all the time, therefore other people or other things have to experience and manage it for them (Stephenson, 2004). A human being cannot be in complete control of such complex knowledge especially the one that occurs outside of a human being. In this view, knowledge is made up of connections that emerge and are adapted based on the context that gives connectivism its epistemological framework that grounds it as a learning theory (Kop and Hill, 2008).

Due to the fact that information has now become digital, its flow has increased to a point of becoming too complex for an individual to keep up with it all. The learner thus finds a need to create an external network of valid sources such as people or content of information in order for the individual learner to organize up-to-date knowledge that can be accessed when needed. This puts the value on the external environment in which knowledge is filtered and transferred as opposed to how it is internalized by the learner (Siemens, 2005:5). Connectivism provides the needed shift in learning skills and activities in order to provide a successful and up-to-date learning environment through the use of online tools and resources (Siemens, 2005). Downes (2007) described it as, "… the thesis that knowledge is distributed across a network of connections, and therefore enabling the learner the ability to construct and traverse those networks in social learning" (Downes, 2007).

## Implications of the theory of connectivism in e-learning environments

The theory of connectivism has become a defining theory for the pedagogy for teaching and learning online, although there is debate about whether it is a learning theory or a theoretical framework (Bell, 2011). The fact that connectivism has integrated principles originating from the theories of collagogy, chaos and self-organization in its formulation has made it the preferred choice for the knowledge needed by leaders and managers for e-learning environments. A single theory cannot be complete in its support for e-learning, since several theories might need to complement each other as powerful tools for creating an effective online learning environment (Bell, 2011). The theory of connectivism is understood in terms of how learning occurs in a digital mediated environment and therefore has positive implications for e-learning in higher education.

Connectivism is characterized as a reflection of our society that is changing rapidly, complex, connected socially, global, and mediated by increasing advancements in technology. People are thinking differently in this century. The "know-how and know-what is being supplemented with the know-where (the understanding of where to find knowledge needed)" (Siemens, 2011:1). This is because in this era students do not appreciate universities only because of the nature and quality of modules, but mostly by what they experience both internally (within the institution) and externally (outside of the institution). For example students get discouraged if they get out into the world and work places without proper communication skills and cannot work in online teams.

Connectivism promotes the idea of staying current, dreaming about tomorrow and cover situations where 'performance is needed in the absence of complete understanding (Siemens, 2011). It is the orchestration of

a complex disarray of ideas, networked to form specific information sets. Ways of knowing are derived from a diversity of opinions. The individual does not have control, rather it is a collaboration of current ideas as seen from a present reality. The core skill is the ability to see connections between information sources and to maintain that connection to facilitate continual learning. Decisions are supported by rapidly altering fundamentals as new information is quickly integrated to create a new climate of thinking. This constant update and shift of knowledge also can be contained outside the learner, such as in a database or other specialized information source. For the learner to be connected to the outside world, knowledge is more important than his or her existing state of knowing. Personal knowledge consists of a system of networks, which supplies an organization that in turn gives back to the system through the connection they will have created. Within any defined social network, there is a focus for groups of people with a common goal who can promote and sustain a well-organized flow of knowledge (Siemens, 2004).

In connectivism, learning is defined as actionable knowledge. It can reside outside of human beings (within an organization or a database), and is therefore focused on connecting specialized information sets (Siemens, 2005). Therefore learning has fallen into various categories that include learning outside the classroom, independent learning and networked learningand is complex in that new information is continually being acquired (Downes, 2006). Learning can occur in platforms of technology or organizations that are non-human appliances and can be informal (Siemens, 2004). It is therefore important for leaders of e-learning to take all these different spaces of learning seriously. For example there is need to seriously support any informal learning, work related learning, learning for graduateness, be it independent, unguided, or occurring in a network and can be enculturated into practice (Brown, 2002). If the structures to support such learning are inadequate, other external intuitions that are not registered for higher education learning will take over.

## Leaders and connectivism

Learning more has become more important than our current state of knowing. The theory of connectivism appreciates access for more knowledge (e.g. decision making) in addition to the current or previous knowledge (Cronon, 1998:14). For leadership this can open up the possibility for them to prepare e-learning for unexpected eventualities. For example, the budget can be planned for on stand-by future developments. This is in contradiction to the previous mindset of stocking resources that normally ended up never being used. Discarding these wasted resources has always been a loss to the institutional budget.

Understanding connectivism allows leaders to develop performance goals that can be measured or observed, understand the e-learning course audience and show how acquired knowledge converts to real-life action. The leaders and managers need to prepare for resources that help with possible and meaningful connections among complex elements. For example, audio or just voice mail can be just as important as real conversations, since in distance learning this could be the only possible communication for some societies or communities. In Africa some students are still using the cell phones that are not smart phones and hence they can only talk to or listen to their lecturers or coordinators through audios or voice mail. This kind of environment surely needs a different type of a leader who is prepared to bridge this transactional distance challenge.

Connectivism is driven by the understanding that decisions are based on rapidly altering foundations and that the ability to draw distinctions between important and unimportant information is vital (Siemens, 2004). It is therefore critical for leaders to prepare for the alternation of new information of the e-learning landscapes based on decisions made yesterday. For example, for the student, being educated is described as being able to see connections, work online, communicate on line and most of all being able to select what is important or not important for learning.

In summary, the principles of connectivism define:

1. Learning and knowledge that rests in diversity of opinions.
2. Learning as a process of connecting specialized nodes or information sources.
3. Learning that can reside in non-human appliances.
4. The idea that knowing more is more critical than what is currently known
5. Nurturing and maintaining connections that are needed to facilitate continual learning.
6. The ability to see connections between fields, ideas, and concepts.

Leaders and managers must be sensitive to providing accurate and up-to-date knowledge about curriculum and learning development, systems, alternatives etc. For example if a learning management system is to be installed proper checks must be made as to what it is capable of providing in order to achieve e-learning objectives for the students. In all these discussions connectivist is key for e-learning environments.

## Socio-technological perspective

Miller in 1998 suggested systems that existed in critical interactions with external factors, such as the political

environment, managerial and organizational issues, and the personal and professional settings of the participants. A framework for the socio-technical perspectives that was well aligned to e-learning environments was developed (Miller, 1998). It consists of five subsystems:

1. Technical (educational activities and curriculum)
2. Psycho-socio (interactions, expectations, values of the participants)
3. Organizational structure (materials and tutoring)
4. Institutional (structural working of institution)
5. Environmental (workplace and personal environment).

Social networks are therefore important for connectivism as the starting point of the institutional inter-connections of the individual, the organizations the institution, and then back to the individual (Kleiner, 2002).

The socio-technological perspective provides a way of understanding the processes of interaction between the social beings and the technological space around them. If structural interactions within the distance education environment are not taken into considerations, then the leadership of the institution will not be able to control and manage the e-learning space. For connectivism, this is the perspective that puts together all the knowledge systems that are important for the leadership of e-learning.

## DISCUSSION

Clear strategies and plans must be put in place with regards to the role of the leaders and management of e-teaching and learning in higher education. Leadership and management transformation must be geared towards the principles of e-learning in higher education. It entails improvement and continuous renewal of leaders competences guided by a sense that is aimed at high performance, effectiveness and excellence. This requires regular and frequent introspection and self-critiques to examine how assumptions and practices are expressive of and resonant with e-learning goals.

Academic epistemological change requires the disruption and rupture of entrenched ways of acting, relating and performing within the institution. This change must entail institutional reconfiguration of systems, processes, structures, procedures and capabilities to be expressed in leadership transformation. Transformational leaders are distinguished from being mere actors by their insight into how things are in comparison to where they need to be, with the resolve and capability to act catalytically in pursuit of institutional and societal change imperatives. Transformation entails finding and developing new meaningful knowledge canons, and advancing knowledge systems that are grounded in institutional objectives.

During times of change, delivering refresher leadership training to ensure managers are leading their people positively and productively can also be advantageous. It is important for the leaders to go through structured training courses and programs that provide knowledge for their working environments. Leaders and managers must be provided with meaningful e-learning and sound induction training during the change management process while providing appropriate support. Today's-learning managers need smart, personalized leadership training they can be accessed anywhere and on any device (Penfold, 2016). Knowledge about connectivism can also be accessed in communities of learning (e.g. communities for leaders, or communities for managers). Growing influence of learning communities within e-learning which support learning, promote collective creativity and shared leadership can unite learning groups with shared values, vision and practices in a global perspective.

Leaders and managers must be aware of the forces that will rock the waters of e-learning in the future (The Futurist, 2015). The forces will drive change and create demand for advanced IT infrastructure that subsequently will profoundly affect the sector's path, trends, initiatives, plans and programs.

## Conclusion

Leaders and managers of online learning environments have a mandate to carry out the fitness of purpose in terms of the institution's values, vision and mission.Therefore the leaders in e-learning environments should be able to create and provide spaces that have an ability to guide learners to relevant resources and to learning opportunities that align with online learning. The connectivist theory is therefore identified as a guide for leaders to manage the e-learning environment. Connectivism provides insight into learning skills and tasks needed for learners to flourish in a digital era and this is important to the leadership of curriculum and e-learning development. A leader who is not equipped with this knowledge can be disastrous to the e-learning initiative in higher education institutions.

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