

ENHANCING LEARNING THROUGH TECHNOLOGY: IS THERE SOMETHING NEW?

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Abstract

In higher education, technology enhanced learning (TEL) has become inevitable and it is apparent that the use of technology in higher education has risen in the last decade. Although there has been much academic discourse on the use of technology to enhance learning in the recent past, the relationship between education and technology has a long history dating back to the 'Skinner box' and 'Pavlovian theory'. It is therefore the aim of this paper to argue that there is nothing new in the use of technology in teaching and learning and that indeed its use should become widespread across systems and more fully implemented in teaching and learning. This paper seeks to conceptualise the trajectory in the use of technology in enhancing learning in higher education through the use of a number of theoretical frameworks as lenses through which this study is perceived. The study considers a number of theories with constructivism being the main theory. Different literature sources were reviewed on the topic leading to the conclusion that technology is not really an innovation but has always been available in one form or another. In conclusion, we posit that technology has been used to enhance teaching and learning from time immemorial when technology had not yet been computerised to the 21st century.

Keywords: Technology enhanced learning, higher education, innovation

Introduction

The term technology enhanced learning (TEL) refers to the use of technology to support teaching and learning. Although some scholars underpin the use of technology to e-learning only, which was popularised by the invention of computer technology, this study looks at the use of technology that enhances teaching and learning not only from this angle. This paper follows the argument by Stuparich (2001) and Catherall (2005) who contend that TEL is the delivery of an interactive learning environment to students without the constraints of time or geography. The interactivity to which both Stuparich (2001) and Catherall (2005) refer is not limited to computer technology, including e-learning or online learning only, but also to any other technology that may be used in the learning environment to enhance learning. Most frequently, TEL is considered synonymous with equipment and infrastructure (Kirkwood & Price, 2013). This means that TEL represents the technological support of any pedagogical approach, for instance, a toy that teaches babies to utter their first words or a video game that improves logical skills; learning how to play the piano using an iPad (Porta et al., 2012). Emerging from this notion, as is also noted by Roffe (2004), the use of technology to enhance learning is not a new concept. Roffe (2004) further indicates that long before the provision of learning by the Web, technology enriched the educational experience of learners. According to Tchounikine, Morch and Bannon (2009), TEL is a research arena where different disciplines such as computer science, education, philosophy, pedagogy and communication intersect.

In this paper, we bring together educational research and the sociology of knowledge to provide an analysis of the current state of TEL. The purpose of this paper is to trace through the relevant literature the use of technology to enhance learning and teaching from the times of the forerunners of behavioural theorists, for example the Russian physiologist, Ivan Pavlov (1849-1936), the American psychologists Edward Thorndike (1874-1949) and BF Skinner (1904-1990), to its current use in educational practice. Lastly, there is a summary of the various literature reviewed.

As acknowledged by Specht and Klemke (2013), we are living in a technology-enhanced world. Moreover, learning is affected by recent, upcoming, and foreseen technological changes. One also observes that globally, technology has become increasingly interconnected with our everyday lives; the 21st-century generation, organisations and schools are all becoming more dependent on diverse forms of technology. Access to the Internet in this millennium is simpler, for example it can be made from one's home, an affordable internet café in most places, or even on some smart phones. The use social media has surged globally in recent years (Guy, 2012). Most of the SM used frequently by students include among others, Twitter, Mix-it, Facebook and Google+. Students that identify themselves with these kinds of technologies would be better equipped for the workplace than those without this exposure. A number of researchers (Junco, Elavsky & Heiberger, 2012; Junco, Heiberger & Loken, 2011; Yu, Tian, Vogel & Kwok, 2010) do not overemphasise the importance of technology in higher education institutions (HEIs) by pointing out that present-day university students are fully at ease with technology. Indeed technologies that are used to support learning and teaching are quickly becoming an important way of life in the ever-changing climate of higher education provision.

Epistemological Foundation of TEL

Just like any other learning and teaching approach, TEL is also based on a theory. This enquiry is based on the foundational theory of constructivism from which other supporting theories emanate (Jonassen, 1994). Constructivism is the psychological theory emanating from Piaget, Vygotsky and others, which proposes that humans construct their own knowledge, intelligence and morality through a series of stages and often in collaboration with others (French, 2007). This means that constructivism is reinforced by cognitive, behaviourist, social and adult learning theories. These may not be the only theories reinforcing constructivism, but this paper focuses on these four. It is worth noting that technology can be used to augment the curriculum by allowing for the construction of knowledge, problem solving and integration of new experiences with previous learning experiences (Rice & Wilson, 1999). Constructivism in this case is seen as an umbrella theory relevant for the millennial students and on which many other learning theories are based. This network of theories is more like an Eiffel Tower with legs but all meet at the top point, which, in this case, is constructivist theory. Roffe (2004) claims that these theories form the basis of the exploration of TEL. The choice of delivery and learning methods should be driven by a coherent and conscious perception of how people learn, as a result bringing value in considering how people learn using these theories.

Constructivism as the main theory underpinning the study

Constructivism is a pillar of this study due to its emphasis on the students' learning autonomously; it encourages a student to use initiative and construct his/her own meaning and understanding (Steffe & Gale, 1995). This study also advocates the ability of students to construct knowledge themselves and fit information together in such a way that what they already know is allowed to take precedence (Fosnot, 1996) (reference). Although Sjoberg (2007) advises that the term constructivism be used with great caution because of its multifaceted nature which may lead to its wrong use, the authors come to the same understanding of the concept 'constructivism', which is students constructing meaning based on the new knowledge they gain through the manipulation of their environment. The primary aim of this theory is to engage e-students to construct meaning and acquire knowledge based upon their own perceptions of experiences (Bush, 2006). Roffe (2004) emphasises that in constructivism, the engagement of students is perceived as an essential element of learning, which gives space for a shift from what the teacher may do to what the learner does as an active agent in making sense of the learning process. In TEL, students are presented with a learning environment that allows them to reflect on their own experiences and manipulate the environment to come up with their own understanding of the world in which they live hence they can be classified as active agents rather than passive students. Constructivist theory advocates that students learn best when they are given an opportunity to construct meaning on their own, in an environment conducive to learning (Loyens & Gijbels, 2008).

Biggs and Tang (2011) add to the perception that constructivism is a tool used by teachers to engage students in their teaching process for students to build on their existing experience and knowledge. Students with constructive minds interact with objects and events and thereby gain understanding of the features held by such objects and events. TEL students learn independently from the teacher, and engage intellectually with the content (Ridge & Waghid, 2000). It is from this point of view that we harness TEL to constructivism as a learning theory. Constructivism is not merely about constructing meaning and new knowledge; it also has a social dimension because meaning is constructed in a social context and communicated dialogically through socially negotiated understanding (Ridge & Waghid, 2000). What is of paramount importance is that in constructivism learning occurs as an inner process that affects the entire personality (Roffe, 2004).

Social Learning Theory and TEL

Communications technologies that mediate the communication process in higher education create social climates which are very different from those of the traditional classroom. For learning to take place, students should actively interact with each other and with the instructor to arrive at shared meaning and to make sense of what they are learning (Berge, 1999). The social interaction of students started around 1997 when social network sites such as SixDegree, Classmates.com and later, Facebook, were developed (Boyd & Ellison, 2007).

Social learning, according to Tu (2000), requires cognitive and environmental determinants; this implies that in social learning theory, the extrinsic motivation or environmental stimuli drive people as isolated influences. For instance, when we look at e-learning, the e-students rely more on the e-environment, for example internet connectivity and this environment

stimulates them to learn. The social learning theory explains human behaviour in terms of a continuous reciprocal interaction between cognitive, behavioural and environmental determinants; all these operate as interlocking determinants of each other. Tu (2000) further suggests that in social learning theory change of behaviours results from interacting with other people and their environments, hence Checkel (2001) emphasises social learning as a process whereby people's interests and identities are shaped through and during interaction. This interaction is referred to as social interaction.

Social interaction is the key to explain how social presence affects social learning (Akers & Sellers, 2004). Social interaction between learners and online role models is required for social learning to occur. Students regard those whom they deem intelligent and their facilitators as role models and follow in their footsteps. Students collaborate and interact with them online with the result that if there is no interaction there is no learning (Tu, 2000). This author sees social presence as a dynamic variable, which makes online social learning more complicated and it needs to be scrutinised from a social presence aspect. Students must acknowledge and value the other person's online social presence, if not so, there would not be social interaction and collaboration, resulting in the absence of social learning. The student must be presented with an enhanced social presence to create an environment for social learning (Tu, 2000). Students who become familiar with this social learning environment develop better cognitively than a student who depends on the teacher.

Cognitive Development and TEL

Biggs and Tang (2011) see constructivism as having a long history in cognitive psychology, dating back to Piaget's era. Piaget and Bruner, though they lived in the past, could foresee how education would transform itself. Bentham (2002) presents Piaget and Bruner as advocating the view that knowledge should be constructed and that they regarded students as active in their quest for knowledge, which gave birth to a concept of discovery learning which sits well with constructivism. Bentham (2002) further stipulates that cognitive development theorists argue that the manipulation of the environment is related to the individual's level of maturity and experience. If a student is sufficiently mature to take charge of his/her own learning, the student is able to manipulate the environment for learning purposes and develop new meanings, derived from experience gained throughout earlier years of learning.

Piaget (1977) believed that the individual operating at this level should be in the last stage of cognitive development, which is formal operational, whereby an individual is engaged in abstract thinking. If there has been no delay in the cognitive development of a student, an HEI student should be operating as per the age allocation of this stage (11–12+). Although there has been much debate and criticism around Piaget's formal operational stage, scholars such as Keating (1980 cited by Bentham, 2002), believe that Piaget overrated the thinking capacity of children aged 11–12 years. Furthermore, she supports Papalia (1972) and Rubin et al. (1973) when they state that 50 to 60 per cent of people 18 or even 20 years old use the formal operations while some adults are unable to operate at this level. The arguments presented by the scholars mentioned by Bentham (2002) are important, even though the instances occur in exceptional cases. What increases their validity is the technology that forces these students to be inquirers after knowledge rather than passive recipients.

Scholars might have had a point in the past, but this has changed tremendously with the introduction of technology. The younger generation, of the age Piaget mentions in his formal operational stage, can access whatever information they require from the Internet at any time and as they wish. The current generation, who might be referred to as the 'techno-generation' whose lives are more centred on technology and thus can operate almost every technological gadget, can think and create their own meaning using information they have searched for themselves. The techno-generation can be given any technological environment and they will manipulate it to their benefit; such student is not limited by time and space. A TEL environment offers students the opportunity to assess and manipulate their environment; it gives them a good space to construct their own meaning, and thus learning takes place effectively (Vygotsky, 1978). In other words, behaviour is as a result of stimulus and response, whereby students respond to a stimulus by manipulating and working through their environment to achieve the desired goal.

Such behaviour is learnt from the environment. This notion comes from the observation that some theorists believe that there is little difference between the learning that takes place in humans and that in animals. Skinner (1948) and Thorndike (1874-1949) also used animals to discover whether or not behaviour is learnt from the environment. The best way to understand behaviour is to look at the cause of an action and its consequences.

Behaviourism Theory and TEL

Behaviourism theory is one of the legs of the Eiffel Tower as suggested at the beginning of this section. It is based on the ideologies of empiricists who believe that learning occurs as a result of experiences (Bednar, Cunningham, Duffy, Perry, 1995). This position, according to Ertmer and Newby (2008), implies that people are born blank and that whatever they have learnt, was through association and interaction of the environment, where they gain knowledge. They summarise this thought by postulating that knowledge is derived from sensory impressions that produce complex ideas when closely related in time and space.

The behaviourism theory is birthed upon the foundations of the above discussed philosophy by John Watson, formulated in 1913. The theory was popularised by BF Skinner in 1930s. Behaviourism is Skinner's philosophy of the science of behaviour and Bélisle (2008) explains that it is based on the psychological stimulus-response (S-R) paradigm. Ertmer and Newby (2008) equate behaviourism with learning, declaring that learning is accomplished when a proper response is demonstrated following the presentation of specific environmental stimuli.

The e-environment stimulates e-students to manipulate the environment and in the process to learn. The process followed to manipulate the environment is irrelevant; what is significant is the learning process the student goes through. Hence Ertmer and Newby (2008) argue that behaviourism theorists focus mainly on the importance of the consequences of those performances and contend that responses that are followed by reinforcement are more likely to recur in the future. The recurrence of reinforced behaviour brings lasting change to one's behaviour in response to environmental and contextual stimuli (Bélisle, 2008).

In an asynchronous environment a student may repeat a certain action stimulated by the environment and the pleasure derived from playing with the technology. The more the student plays with technology, repeating what he/she is doing, the more she/he learns. Learning happens when student behaviour is shaped by reacting to situations that encourage actions that gradually conform to a fixed goal. TEL allows drilling and practising, and also gives leeway for a greater individuation of the whole process (Bélisle, 2008). The change on a TEL student is strongly visible and students would not only gain knowledge of a specific discipline but also acquire technological skills.

Knitting the theories together, it appears that learning in a TEL environment is an active process in which meaning is developed on the basis of experience and manipulation of the learning environment. Conceptual growth comes from the negotiation of meaning, the sharing of multiple perspectives and the changing of our internal representations through collaborative learning. Learning should be situated in realistic settings; likewise, testing should be integrated with the task and not a separate activity. Consequently, learning is seen as a personal interpretation of the world. In the case of TEL, students are given a learning environment that is resourced and they are required to search, understand and construct their own meaning of concepts. They do not rely on given meaning, but through hands-on experiences and manipulation of their environment, students will derive their own meaning and understanding.

Trajectory of the Use of Technology in Learning and Teaching

Klopfer et al. (2009) recognise that technology can have a reciprocal relationship with learning and teaching from previous years. From the earliest times learning and teaching have always been delivered by a variety of methods and students have always employed a variety of modes of learning, including informal modes such as discussing subject material with other students. Technology has played a pivotal role in education, especially in enhancing the understanding of a course of study. The importance of this technology in education has given rise to dialogue amongst scholars in the specific field, especially in this millennium (Hall & Winn, 2010). This does not mean that the relationship between technology and education started recently; by contrast, it has a history dating back to the Skinner box and Pavlovian theory.

The above discussion affirms Lepi (2012) who indicates that “education and technology have come a long way over the past generation”. Technology has been used throughout the years, and what makes it unique over the ages is that it has markedly evolved. Nowadays students of their own volition discuss aspects of the curriculum using social networks (SN) such as Facebook and Twitter (Olivier, 2011). TEL has become increasingly used amongst the techno-generation and students learn through fun. In 2004, Donald et al. (2004) predicted that Information Technology would spearhead improvements in higher education. The process of learning and teaching is an art and a creative experience, and we need to enjoy and behold it. It is important to appreciate that our teaching is related to those whom we reach and also depends on who we are. The medium we use to reach our audience or students should be able to attract them and get them absorbed in what we teach for learning to take place (Williams & Merten, 2009). It is patently obvious that our youth and children (students) are

fascinated by technology and spend a considerable amount of time on the Internet using either a laptop/PC or a smart phone for access.

Where it started

During the 20th century, technologies such as instructional films, radio and television, Sidney Pressey's teaching machine in the 1920s, programmed instruction, audio and video cassettes, and the microcomputer were used to enhance learning (Westera, 2010). Although behaviourists, for example Ivan Pavlov (1874-1947), Thorndike (1874-1949), and BF Skinner (1954), used animals for their experiments, they unanimously believed that the same activities would be applicable to the human race. What these psychologists emphasised is that learning occurs through developing associations between the events and consequences of our behaviour informed by our interaction with the environment.

If the same computerised equipment available today were present in their day, they could have used it to illustrate the fact that learning takes place when people manipulate their environment. In the TEL environment, students are afforded the opportunity to manipulate and acquaint themselves with their own environment. As students explore their environment, learning takes place. Pavlov (1849-1936), Thorndike (1874-1949) and Skinner (1938, 1953) used different technologies to convey the message, yet their philosophies were the same.

Pavlov (1849-1936) discovered classical conditioning, which is a learning process that occurs through associations between an environmental stimulus and a naturally occurring stimulus. Pavlov (1849-1936) used a bell as his tool to stimulate learning. He rang the bell every time he presented food to his dogs. This author repeated this exercise over and over, then at a time he just rang the bell without presentation of food but the dog still salivated. This response indicates that the dog had learnt to associate the bell and the food; a new behaviour had been learnt (McLeod, 2007). The Pavlovian study was followed by operant conditioning started by Thorndike (1874-1949) after which Skinner (1904-1990) took it forward. Thorndike (1874-1949) used a technology called Thorndike's puzzle box that Skinner (1954) named his Skinner box. These two psychologists believe that students do not passively absorb knowledge from the world around them but that they play an active role in learning. Students learn by doing, experiencing, and engaging in trial and error, which is one of the characteristics of the self-directed TEL students (McLeod, 2007).

The difference between the two learning media of learning, namely classical and operant conditioning is that classical conditioning depends on developing associations between events while operant conditioning involves learning from the consequences of one's behaviour. One thing that the experimenters of the media have in common is that they all use technology to demonstrate how learning takes place and the change in behaviour that learning brings (Kanwar, 2008; McLeod, 2007).

TEL in the millennium

Since the beginning of the 21st century, a number of studies have been published on technology and education. Scholars in the field have focused their attention more on the impact of technology in education than on other areas, recognising that if technology is used

inappropriately it will not yield the desired outcomes with regard to teaching and learning. For example, Klopfer et al. (2009) state that the rise of new technologies compels educators to understand and leverage these technologies for classroom use but at the same time, the on-the-ground implementation of these technologies in the classroom can directly impact how these technologies continue to take shape. However, the rise of technology, especially with the move from analogue to digital, requires the users in educational sectors to be retooled and re-skilled (Bitter & Legacy, 2008).

There are several technologies that can be used to enhance learning, which include the learning management system (LMS), audio visual systems, instructor-led group, social mobile learning and social media. When e-learning or the TEL concept is mentioned, most people think first of LMS, which is not the only component of TEL, especially in the 21st century. These technologies will be discussed in this section. The origin of LMS dates back to the 20th century when the use of the Internet gained popularity in distance education and created a massive revolution in learning. Some of the advantages of internet use in distance learning are that it made collaboration in learning possible because teachers or lecturers could send material to students promptly. The development of LMS can be attributed to the successful use of the Internet in distance education (Cheng et al. 2010). Since the move towards TEL, the various HEIs have adopted different LMSs to enhance teaching and learning. Cheng et al. (2010) define LMS as web-based software purely designed and developed to support the teaching and learning process in all educational environments and used to plan, deliver and manage learning events within institutions of learning and teaching. LMS can be used both synchronously and asynchronously, depending on the requirements of the teacher or instructor and the demands of the learning programme.

According to Cheng et al. (2010), Shelly, Cashman, Gunter & Gunter (2008), mobile learning (m-learning) is a learning and teaching strategy that has become popular and uses mobile devices that can be carried around, such as mobile smart phones, tablets, laptops, personal digital assistant (PDA), iPods and any other wireless mobile technologies. Such devices can connect to social networks such as Dropbox, Google, Facebook, Twitter, MySpace, and other internet-based technologies (Shelly et al., 2008). This has become possible because these devices have become more powerful, networking standards have improved and the ability to provide internet content to mobiles has increased. Mobile devices are relatively cheap and the invention of such is growing at a phenomenal rate. In this era, the Internet is also easily accessible to most smart phones at a cheaper rate than its alternatives (Shirky, 2010). In some areas where Wi-Fi is available, a device with Wi-Fi connectivity has internet access free of charge. As a result, learning is ubiquitous and can be accessed at any time on such devices (e-Compete Wales, 2004). This is echoed by Cheng et al. (2010) who suggest that although mobile learning is still a research challenge, in future m-learning will allow students from anywhere around the globe to collaborate with anyone at any time. As of July 2011, Facebook passed 750 million users, LinkedIn had over 100 million members, Twitter had over 177 million tweets per day, and YouTube reached three billion views per day (Chen & Bryer, 2012). Mobile phones can be used to provide administrative support by sending SMS texts to remind students of important dates, such as contact classes and examination registration. In addition, they can also send messages of academic support, which would motivate students on a continual basis (Kanwar, 2008).

Wilson, Gosling and Graham (2012) noted that during the last few years some SM sites have received massive scholarly attention. SM, according to Schejter and Torish (2012), is a communication technology that enables the maintenance of the links between individuals and the personal and cultural networks to which they wish to belong. In SM, users share common space and common interests to share or promote ideas, experiences, and insights as well as simply to talk and connect with others, if for no other reason than to make a new friend or just have someone with whom to converse (Solis, 2008). SM can be a powerful learning environment for HEI students. The SM natives would encounter no difficulties in using the environment and derive enjoyment from it because they are used to it. They like to live, work and play in digital settings and interact with each other through common websites and specialised areas within those websites, such as chat rooms, discussion groups, news groups, etc. for the purpose of sharing, gaining, propagating and discussing all manner of topics (Gonzales, 2009; Lenhart et al., 2010; Shelly et al., 2008).

Future of TEL

Bitter and Legacy (2008) emphasise that technology will continue to play a major role in our future and these advances constantly offer challenges to learning and teaching developments. On the basis that what was science fiction 10 years back is reality today and will be obsolete in 10 years' time, these authors find it difficult to distinguish between present and future.

Technology is not static, since the inception of computers in the late 1930s it has changed with time to this era (Tomei, 2008). In a more general sense, technology has evolved with time but in the main it has been used to enhance teaching and learning (Lee, Yoon & Lee, 2009). Looking at the speed the technology changes and how it changes, it makes it difficult to predict the future of its use in education. All that is evident and can be foretold is that TEL is gradually moving towards ubiquitous learning, which means that learning is happening at anytime and anywhere (Britland, 2013). This view is as a result of the introduction of mobile technologies that can be used for learning purposes such as palm-size computers.

Britland (2013) believes that iPads and other mobile technologies are the now, but there might be newer technologies for future learning. This author does not rule out the possibility of tablets being part of the technologies used for learning and teaching in future. Britland (2013) portrays the future being about access, anywhere learning and collaboration, both locally and globally, of which we see the signs today. He further states that teaching as indicated in the theoretical framework will be social. TEL technologies are perceived as the only way to efficiently address the huge increase in learning needs and numbers because of their distributed and flexible potential.

Changing the Higher Education Landscape

It is evident from the literature referred to in the above section that the landscape in HEIs has seen dramatic changes. TEL has evolved from its origin of manual operation to its present computerised complex state (Prokopenko & Baksheeva, 2008; Britland, 2013). The use of TEL helps students to take charge of their own learning; they may not as easily forget what they have learnt, thereby ruling out the possibility of learning being surface deep. Taking note

of the increased use of technology, Biggs and Tang (2011:3) predicted that HEIs would continue to experience drastic change, not only attributed to high participation rates and diversity in student population, but also to other factors, which have altered the main mission of higher education and modes of delivery; the use of TEL is one of these factors.

Biggs & Tang (2011) describe the rate at which the higher education landscape would change as "hectic". The growth in the use of technology and the invention of computerised devices, clearly suggest that the techno-generation is more than familiar with visual environments and that they prize social networks. This is the reason why HEIs should move practices from the traditional to those that are passionately attached to online learning and teaching (Tomei, 2008). Although most educational institutions are still organized to produce citizens who will fit into an industrial era, the mode of delivery of programmes should become even more dynamic, flexible and responsive to the demands of particular enterprises and sectors.

Ellis and Goodyear (2010) recognise that students now have a wider range of places where they can study and learn because of the increasing availability and accessibility of Information and Communication Technology (ICT), which has created greater flexibility in educational provisioning. Boughey (2000) takes this further and argues that changes in HEIs mean that the lecturing and teaching methods that have been used there for many decades are no longer relevant. This development calls for a change in the way the curriculum is presented across higher education. Teaching has moved from revolving around the lecturer and the syllabus and now centres on the student and outcomes.

Conclusion

TEL in higher education has become inevitable and the use of such technologies has risen in this area. The aim of this article was to argue whether the use of technology in teaching and learning is indeed an innovative stride or one of the systems that has been in existence for some time but that needs to be implemented in teaching and learning. In this article, we argued that although there has been extensive academic discourse on the use of technology to enhance learning recently, the relationship between education and technology has a history dating back to the Skinner box (1954, 1968) and Pavlovian theory. The trajectory in the use of technology in enhancing learning in higher education was conceptualised. The article has considered a number of theoretical frameworks as lenses through which this study is perceived, with constructivism being the main theory. Different literature sources were reviewed concerning the study, leading to the argument as to whether TEL is an innovation or has been part of the educational scenario for decades.

In conclusion, this paper contends that learning and teaching have been delivered to students through technology from time immemorial when technology was not yet computerised to the demands of the 21st century (Prokopenko & Baksheeva, 2008; Britland, 2013). The various technologies of different ages have enabled learners to construct their own understanding of concepts as they also work in social communities of learning; yet the principles of these technologies are the same. Hence there is nothing new about enhancing learning with technology; only the technologies themselves have changed, and will continue to change, over time. Undoubtedly TEL technology is the future and the only way to address the learning needs in different societies.

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