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Higher Education Curriculum in a Global Village

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Abstract

Technology has become ubiquitous in the twenty-first century learning. Students in higher education are learning collaboratively across the globe as technology has made it possible for university students to blur boundaries of borders. It is imperative in the twenty-first century for a higher education curriculum to have technology embedded throughout. The purpose of this study is to explore technology in a higher education curriculum where academics have different views. The study draws on technology in higher education from three fundamental perspectives: technology critics' perspective, technology enthusiasts' perspective and technology from an intellectual perspective. The study ends with a conclusion that was drawn from the three main perspectives of technology. The author clearly supports the view of technology from an intellectual point of view as it enhances students' learning experiences.

Keywords: higher education, technology, curriculum, twenty-first century, university

1. Technology into the curriculum

Students of the twenty-first century represent generations which grew up with technology. Most of their day to day activities, regardless of being academic or social, they mainly use a technological gadget. For all academic questions or tasks which they have to complete, Google is usually their first point of search. They do not know a world without Google; hence, they have access to a wide range of information.

They want to be afforded opportunities for learning in real time, anytime, and on their own terms using technology. This challenges lecturers in institutions of higher learning to be creative and innovative in curriculum design and pedagogy in order to meet needs and

expectations of students in this digital era. A need for reviewing the curriculum to make it suitable for this digital era has led Williamson [1] to ask: what might be the future of the curriculum in the digital age?

It is imperative in the twenty-first century for a higher education curriculum to have technology embedded throughout. Technological advancements have made it possible for students in institutions of higher learning across the globe to blur boundaries by collaborating as if they are on different campuses of the same university in one district. In other words, university students are living in a global village where they learn and collaborate easily using technology.

In this contemporary digital age, educational technology is playing an increasingly important role. It has become so ubiquitous and fundamental in the teaching and learning of higher education [2]. Higher education sector is forced to use educational technology to keep up with needs of a twenty-first century student [3]. Placing computers in lecture rooms is not adequate enough for students to be competitive in the new millennium [4]. There is a need for curriculum design and pedagogy to be responsive to the use of technology in learning [5].

Curriculum is the main drive that can be used to perpetrate technology use in institutions of higher learning [3]. Gregory and Lodge [6] argue that a good curriculum is one that is not just responsive to the needs of students, but also what is happening in the environment at the time. A use of digital strategies is what is happening in the higher education environment today, hence, the need for curriculum design and pedagogy to enhance this initiative. The use of technology to reinforce the curriculum has proven not to be an obvious fit as there are diverging and sceptical views about effect.

Academics in institutions of higher learning do not unanimously agree that technology has tremendous influence in education. They have different views. This led Selwyn [7] to conclude that the confluence of technology and education is marred by a multiplicity of complications and contradictions, and it can be messy sometimes. The integration of technology into this twenty-first century curriculum has been conceptualised from different perspectives by various academics and authors. Three dominant perspectives about integrating technology into the higher education curriculum are presented in this chapter. These are technology critics' perspective, technology enthusiasts' perspective and technology from an intellectual perspective.

2. Technology critics' perspective

The initiative of designing a curriculum that is responsive to technology which is ubiquitous is being threatened by some of the negative effects of enabling Internet technology to blossom in the education sector. In a way, the Internet has degraded students' desire to acquire knowledge through conventional ways of deeply engaging with text. Students' reading culture has subsequently become low because of the readily available answers on Internet. Figes [8] asserts that students in this twenty-first century hardly read textbooks, either in digital form or hardcopy. They prefer getting quick information by using the index to find relevant points, reading articles and looking for information up on Wikipedia. Instead of consulting various books and other original and credible resources to answer past examination questions,

twenty-first century students do it the easy way by simply getting answers on Wikipedia and google.com without necessarily reading books.

Students can easily get answers to sophisticated questions by simply clicking keys on the computer or smart phone. This can be viewed as an advantage as it provides easy access to information. But, some of the sources (for example Wikipedia and google.com) which novice researchers and undergraduate students use are questionable and not ideal to use in an atmosphere where quality teaching and learning are at stake. Wikipedia and google.com are the first places that millions of people, including students turn to whenever they want to access some educational information [7].

It is unfortunate to note that some sources like Wikipedia and google.com which students over rely on sometimes consist of misleading information. Wikipedia and google.com are not credible sources to cite when compiling an academic piece of work. This is simply because some of the information which they consist of would not have been peer reviewed by experts in the field. Orlando Figes, a professor of history at Birkbeck, University of London, checked Wikipedia for information about the Russian Revolution—his area of expertise—and found 'an alarming number of mistakes, misapprehensions and misleading statements that would never have appeared in a textbook written by an expert in the field' [8]. When students rely on such sources to write their assignments and all educational tasks, information would be so limited and result in the compromise of quality education. Wikipedia and google.com are essential websites to use especially when one wants to get quick readily available answers to questions. But, complete and credible educational information needs to be obtained from peer reviewed published sources.

This makes the use of textbooks, journals and other peer reviewed materials indispensable in any educational setting. The way in which students nowadays hardly engage with published peer reviewed resources such as books can be conceptualised as an educational consumption of slow poison. Such poison does not have imminent effects, but long-term detrimental consequences. Students will eventually bury a culture of reading textbooks in preference of quick short answers which may not be accurate because it was written by a student like them. **Figure 1** is a graphical illustration of how technology is burying traditional books.

The notable downside of technology is that students who are supposed to make rigorous search of information and deeply engage with text from authentic sources tend to bury books in favour of readily available quick and short answers on Internet. As shown in **Figure 1**, cell phones, iphone and a remote control are carrying a book to a grave which was dug by headphones using a shovel. The graphic illustrates that students are disregarding traditional books, not because they prefer reading digital books which are very ubiquitous in this century, but they dislike reading at all. The illustration corresponds with a prediction made by Thomas Edison a century ago about books being superseded by technology: 'Books will soon be obsolete in schools. Scholars will soon be instructed through the eye. It is possible to teach every branch of human knowledge with the motion picture. Our school system will be completely changed in ten years' (Thomas Edison, 1913, as quoted in [9], p. 100).

Marjorie Sykes emphasised that 'books have played only a minor part in the nurture of the young' [10] (xxv). This argument should not be taken in a wrong context. Sykes' point is not to mean

Figure 1. Graphic illustration of how technology is burying traditional books [12].

that books are worthless, but to say there are also significant factors that play important roles in students' learning. Thapan [11] concurred by echoing that textbooks are not always sacrosanct to students, but they are the only one aspect (among others) where students gain knowledge. Other aspects where students can gain knowledge other than from a text book include the instructor and conversation that they have among students themselves. The argument of reading a book (either hard copy or softcopy) still stands even though scholars differ on ranking its importance as a source of knowledge. Students are expected to read books not to have a situation where they reach graduation without having read detailed information from a textbook.

Figes [8] argues that some students these days finish their university education without reading a book to its entirety. This is resulting in a majority of students graduating without a deeper understanding or appreciation of specific books or any author who have contributed extensively to the body of knowledge in their areas of specialisation [12]. This is all because of the situation of not inculcating a reading culture because of the presence of Internet, which allows students to obtain readily available short and quick answers.

Obtaining quick short answers from sources like Wikipedia and google.com is gradually becoming a norm in institutions of higher learning. Such unintended consequence of technology in this digital era make critics conclude that technology is making education go wild, not wide. This has resulted in some university lecturers becoming sceptical about the value that technology adds to learning [13].

Some lecturers still float in the nineteenth century teaching where the use of technology was minimal. Others understand that teaching using technology means using data projectors only. Ng [13] postulates that many academics have not moved beyond 'basic' pedagogical uses of technology such as PowerPoint presentations, YouTube videos, word processing and Internet search. Although using such basic technological devices adds value to the technology driven teaching, there are many more ways that can be used to promote deep learning that is interactive. A great question that arises is how can educators enhance the initiative of optimising technology use in their teaching?

Technology critics simply conclude that technology is doing more harm than good in education. Its abundance is hindering students to engage with theory, think for themselves and learn different ways of doing things. Herald [12] postulates that although the advent of Internet and technology have transformed the way students undertake research, the downside of technology has been its effect in creating intellectual zombies who rarely go out of their way to understand complex theories. Technology has made students have a surface approach to learning where they can easily get answers without necessarily having to apply their minds and deeply engage with abstract educational matters. They hardly read books because of technology. If they have to construct an argument or engage with a scholarly controversy, they riffle through the index of a book, read introductions and conclusion and skim reading [8].

Knight [14] concurs that technology has led students to be impulsive as they want immediate access to information and an unconcerned approach to appraising, synthesising and critiquing information. Similarly, Pinar summarised key elements of a great Canadian public intellectual, George Grant, who critique technology and modernity. Pinar [15] states that 'Technology for Grant is a form of idolatry, substituting materiality for spirituality, distracting us from dialogical encounter—subjective presence through face- to- face communication—and diverting us into screens where we are forced to comply with programmes created by commercial entities with profit, not freedom, in mind.' Such programmes and the general provision of robust Internet connectivity are not cheap. This makes it a barrier to teaching using technology as gadgets such as smart phones and computers may be expensive for students and some learning institutions [16].

3. Technology enthusiasts' perspective

According to Williamson [1], twenty-first century students of today have intelligible understanding of technology, and they are sophisticated cultural producers of digital media, actively creating, remixing and circulating content online in complex ways that far outstrip anything demanded of them by the traditional subject curriculum. Thus, a curriculum that is supposed to be filled with future aspirations about what is happening in the environment should heavily draw on technology. From a perspective of technology enthusiasts, leaving out technology in this era would be a great setback in education as the local has become subsumed in the global, and the global has become technological [15].

This is because digital technology is now a prominent instrument of education provision and practice in many countries and contexts [17]. It is at the heart of various ways in which education is being provided today [7]. This is regardless of the subject or course as each has its unique ways of integrating technology. Teaching and learning can be enhanced by making use of technology as it makes the whole process easy, accessible and more effective. Technology enthusiasts are so obsessed to maximising technology usage despite limitations echoed by technological critics.

Enthusiasts acknowledge technology critics' plea for students not to abandon the reading culture. They (technology enthusiasts) fully concur with the view that a reading culture should

be revitalised and perpetually sustained. However, they argue that technology should be used as an instrument of attaining that transformation. It is a fundamental instrument that makes it easy for students to access learning materials anywhere, anytime and cost effectively [18, 19]. To a twenty-first century student, learning does not need to be restricted to a classroom—with their mobile devices and the advent of cloud computing, they are able to learn anywhere, everywhere and from anyone [20].

The increased access to technology by students, starting at a very young (pre-school) age, suggests two points: (1) it is no longer a novelty to use technology in educational institutions and (2) students come into the classroom with some degree of digital literacy and a set of skills that are largely associated with Internet search, social networking and possibly non-educational gaming [13]. Majority of students in universities today are digital natives. According to Prensky [21], digital natives are people born on or after the advent of the digital revolution, while those born before the era of computers, who had to adopt and adapt to the new information communication technology are called digital immigrants.

Digital natives are very enthusiastic about learning using technology. The fact that they (digital natives) are exposed to technology at a younger age, their learning needs and expectations differ from their lecturers who are mostly digital immigrants [22]. It will be a wasted opportunity if academics do not review the curriculum and pedagogy to incorporate technology in order to get students in their comfort zones of using technology. Teaching using technology is simply inevitable and uncontainable in this present day. Academics ought to find ways of ensuring that every student gets an opportunity to maximise his/her technological skills and development in order to achieve the learning outcomes.

On the one hand, digital natives expect technology including their mobile phones to be used to facilitate their learning. On the other hand, academics may not be having comprehensive knowledge of using technological devices needed by students. According to Koh [20], academics in charge of educating students in this digital era have had a challenging time playing catch up with the slew of new technologies and 'apps' (applications) such as those in Web 2.0. Thus, there is a paradoxical situation where students are technologically inclined and they need technology to be the cornerstone of their learning, whereas lecturers grapple with application of technological devices in their teaching.

It is important for people not to presume that all digital natives are good with technology, while all digital immigrants are digitally challenged. There are some digital natives who went to poor rural schools where there was no electricity and no technological exposure. On the other hand, some academics are very passionate about technology and they can use it way better than students [20]. In order to bridge a gap that exists on the lack of technological knowledge, Koh [20] suggests promoting technology enhanced learning by upgrading the digital immigrants and stretching the natives. Upgrading of digital immigrants can be done through in-service trainings and capacity development workshops aimed at continuously educating academics on how to employ technology in their teaching. Academics and students who are not so adept in the use of technology should be given opportunities to upgrade their computer skills so that they do not end up feeling further alienated in a techno-enriched environment [23].

Technology enthusiasts would hope that the sweeping technological changes experienced in the worlds of business and entertainment must also take place in the education sector [24].

In a sector like banking, technology has made it amazingly convenient for people to bank. They can do banking anywhere, anytime and they do not have to go physically to the bank. Such convenience has been through the innovations advanced by technology. Similarly, in the entertainment sector, musicians may record quality music which entertains people without having to master how to play any musical instrument. Every sound of a musical instrument can be computer-generated and replicated. Such advanced and fast moving strides of technology in other sectors are what technology enthusiasts would advocate to happen in education. In other words, from a technology enthusiasts' perspective, anything goes as long as it is done using technology. This is a remarkable point that differentiates enthusiasts from those who view technology from an intellectual perspective.

4. Technology from an intellectual perspective

Intellectuals do not resist technology in as much as critics do, neither do they appraise it unreservedly like enthusiasts. Intellectuals are more meticulous and inquisitive. They operate from the view point that digital technology has become an integral part of education today [7], hence academics in their spaces are challenged to find ways in which they can use it to enhance the quality of teaching and learning.

Undoubtedly, in this digital era, students are often seen chatting using different emerging technologies, sharing ideas using digital platforms and showing enthusiasm of learning using technological gadgets [25]. That surely cannot be ignored simply because technology usage possesses some risks. Intellectuals want the use of technology to be implemented but with due caution and should not be done simply because there is new technology in the market. They want technology to be adopted and utilised as it adds value to teaching by promoting engagement on students' learning. Research into the world of digitally oriented learning environments has shown that simply moving to a more digitised platform has not necessarily shown strong educational or motivational outcomes [26].

Imagining education enabling technology to take over all its roots and fundamental principles as fast as it has done in the banking sector would be a huge paradigm shift which could bring the sector (education) into disrepute if it is not done meticulously. Technology enthusiasts simply want the latest technology to be used and immediately replace the old one. From an intellectual perspective, rationalisation of wanting to use every new technology would take precedence. If the new technology enhances teaching and learning better than the old technology, then replacement needs to be supported. For example, clickers are a new technology, which a university has to buy for students to use. Clickers are now being replaced by a new application which can be loaded into smart phones so that students can use their cell phones as clickers. The point is that education can allow new technology to replace the old one as long as it adds more value compared to what existed.

Replacement of old technology with new technology in education for the sake of wanting to move with time results in confusion and misuse of gadgets in teaching and learning. New technology needs to be used, but it is not ideal to quickly dismiss it and adopt another new type which hits the market without verifying it as that can give rise to previously unknown

risks and dangers such as hacking, cyberbullying and identity theft [27]. This makes intellectuals' position very clear that there is an opportunity for new technology to come every now and then; hence, one has to be mindful of the challenges and risks presented by digital technologies to education in general and young people in particular [28].

Education that involves students' learning cannot be fast tracked in order to keep up with the fast moving technological developments. This is because students are expected to accommodate and assimilate information which they will be expected to demonstrate after graduation. In some cases, students will be expected to impart their acquired knowledge to school children as in the case of teacher trainees.

If a teacher trainee graduates at a university without building a reading culture, he/she will not be able to inspire learners in schools to read books in preparation for school leaving examinations. The whole education sector ends up degenerating into a system where surface learning takes place because learners are not motivated to read. Surface learning occurs 'when students concentrate on memorising facts, focus on the discrete elements of the reading, fail to differentiate between evidence and information, are unreflective and see the task as an external imposition' ([29], p. 1). Surface learning is condemned in education.

Intellectuals' stand point about a reading culture in the digital era is that the latter has to complement the former. In other words, a broad spectrum of emerging technology that we are having in this twenty-first century should be used to enhance a robust reading culture anywhere and anytime. In the previous century, students were mainly required to use books in hard copy formats. These books were mainly accessible from the university's library. Thus, students would only have limited reading times as they depend on library's operational times. In this digital era, universities are subscribing to multiple data bases, which provide students to access books in digital formats. Thus, they can read the books anywhere and at their time without necessarily worrying about library closing times. All they need is a technological gadget.

Teachers are expected to inspire a reading culture in their primary and secondary education pupils, so that they will be able to pass examinations. They are expected to provide comprehensive notes and information related to a particular topic. They are expected to provide references such as textbooks, dictionaries, encyclopaedias and credible peer reviewed articles. The only way teacher trainees would be able to give full details of correct reading material to learners is when they engage with such resources during their university education. If they do not do that, the situation in schools is likely to deteriorate in the sense that learners who are taught by teachers who rely exclusively on Google may not be able to do well in examinations that require all candidates to demonstrate comprehensive understanding of issues in text books.

From an intellectual point of view, there is no doubt that technology has massive potential of facilitating student learning. People cannot do away with reading, neither can they not benefit from the innovative and creative ways of using technology in this digital era. A study conducted by Li [30] found that technology had four fundamental purposes to students: (1) increased efficiency, (2) improved pedagogical approaches, (3) preparing them for the future and (4) increased motivation and confidence. The task of academics in promoting students in today's learning remains one of reaching students through their desired means—technology [26]. There is a need of rethinking education in this era of technology. This is because a

technology revolution combined with globalisation and the crossing of cultural frontiers that are being experienced today is forcing higher education to rethink curricula [31].

Today's students exist in a digital age with access to a wide choice of technologies that provide a diversity of interactive resources for information and communication [14]. They think and learn in different ways from their forefathers [21]. Thus, academics cannot be seen teaching today the same way they used to teach long back when all the information resided on a teacher. This corresponds with John Dewey's saying: 'If we teach today's students as we taught yesterday's, we rob them of tomorrow'. Long back, students' access to information was very limited as they had to wait for a teacher to disseminate the information and handout textbooks. As a result of technology, things have radically changed from the way they used to be in previous generations. Gosper and Ifenthaler [32] contend that technology has become more sophisticated and the teaching and learning context more diverse. This is resulting in a more nuanced approach to integrate technologies into the curriculum.

In educational settings, the prevalence of technology is also expected to bring about a revolution in learning and teaching [33]. Education has been modified and made easy by technology in which the Internet generation cannot learn without it. Academics have to come on board on this contemporary digital learning strategy. If they do not use technology and create an enabling environment for students, there is a risk of disengaging students and derailing the learning process [34].

Technology needs to be used to complement effective teaching and learning, not to make it look like it is all that students have to learn. We cannot assume that the mere existence of a textbook, support materials and technology tools will improve the quality of the teaching and learning experience [14]. Digital platforms do offer much of the freedom for students to learn anywhere and anytime, but not necessarily the structure and direction, necessary for learning [26]. There has to be a way of making technology and reading of books complement each other, so that students graduate with solid disciplinary knowledge and skills.

Grant [35] critiques technology because it deprives students of the ability to be creative as they will be confined to the stipulations of a programme designed by somebody for commercial purposes. He (Grant) also reiterates that problem solving is no longer informed by knowledge and wisdom—but, rather, devising a technological fix [35]. From an intellectual point of view, it is a fallacy of composition to conclude that technology does not enable students to become innovative and creative because they are restricted to using a programme that was creatively developed by somebody. In education, the purpose of students' learning using technology is not for them to be masters of the programme or a learning platform like blackboard. Students are expected to engage with educational content, which lecturers require them to do using a learning platform. Thus, student creativity is not going to be measured on the basis of the platform, but ability to engage with meaningful ideas related to the subject under study.

The integration of digital technologies into the curriculum is intended to support innovative pedagogy as well as prepare students for future work and citizenship [13]. Technology can be embedded into the curriculum as a means to an end. Rambe and Nel [19] and Khoza [36] argue that technology is a means to develop students who graduate with skills needed in the job market. Similarly, Heafner [37] states that the use of technology can be a means to

motivate students by engaging them in the learning process with the use of a familiar instructional tool that improves their self-efficacy and self-worth. A study conducted by Shifflet and Weilbacher [16] found that academics believe that technology can be used as a means to help engage students in thinking critically to promote self-regulated learning and improve literacy skills. It should be used as a means of letting students optimally learn, and the end product is to develop competent graduates who have comprehensive understanding of subject knowledge and generic graduate attributes.

Technology needs to be used optimally because it has massive potential of enhancing the standards of teaching and learning. A survey conducted by Li [30] found that 87.3% of the students liked to use technology and believed it could be effective in learning. A current situation that many universities sit on is that of large numbers of students. A way of reaching out to all students and promoting effective and interactive learning is by using technology. Technology is capable of promoting interactive learning which is typical of constructivism. According to Wade et al. [38], integrating educational technology into the curriculum has vast potential of creating a paradigm shift of learning from teacher-centred to student-centred learning. It enables more student-driven learning, since it is underpinned within the principles of constructivism [39].

Social networking technologies available can influence the cultural practices of learning through online communities and promote a robust platform where students can share and interact extensively among themselves and with lecturers [14].

Ricoy and Feliz [40] argue that Twitter that is mainly used for social interaction can also be used in the learning process by university students to provide motivating experiences. According to Vygotsky [41], learning is a socio-cultural process which takes place when there is interaction. There is a lot of interaction on Twitter because students will be sharing information, collaborating and participating [42]. This qualifies Twitter as a way in which knowledge can be constructed because it involves a lot of interaction and exchange of valuable information among students themselves and students and lecturers [43].

Twitter and other emerging technologies bring in Vygotsky's [44] social constructivism where knowledge is constructed through interactions by various stakeholders. Undoubtedly, through the Twitter social network, whose use is freely promoted by users themselves, communication and interconnection are generated, and content is created and disseminated at tremendous speed and on a great scale, as one would expect of a mass medium [40]. This allows students to assume active roles in the construction of knowledge in a collaborative and interactive learning environment [45]. The use of social media such as Twitter and Facebook in the learning process is not welcomed with praise by all scholars. Madge et al. [46] contend that Twitter and Facebook are unsuitable for students to deeply engage with text as they are ideal for social networking only. They conducted a survey with first year undergraduates and found that Facebook was used most importantly for social reasons, not for formal teaching purposes, although it was sometimes used informally for learning purposes [46].

The assertion that Facebook is not ideal for proper engagement with text in students' learning may have been relevant in 2009 because it was still on its beginning stages where people including academics confined it to exclusively social interactions. Social media that include Facebook and Twitter have now gained momentum, and they are used extensively to promote student

learning by interaction. Gachago et al. [47] argue that Facebook has the ability to expand the entire teaching and learning space and to allow all students to engage meaningfully with each other throughout the process. It (Facebook) has massive potential of providing a highly informal, democratic learning space, which can serve as an essential source of peer support, supporting collaboration and interaction with fellow students beyond the classroom [47].

This completely rules out Madge et al. [46] opinion that Facebook is distractive, and it brings uncertainties about the academic rigour of discussions generated via text messages. Facebook was in fact initially developed for university students [48], and its possibilities of position students in the centre by enhancing interactive learning are indispensable in this digital era. Oradini and Saunders [49] maintain that in this 21st digital atmosphere, social networking systems such as Facebook have the capability to deliver a learning platform where the students are at the centre of all selected learning activities. It can be used in Higher Education teaching and learning to leverage student participation and transform pedagogy.

Intellectuals conceptualise technology from a holistic point of view. They do not just look at it from a social point of view, but also from inclusive perspective. Inclusivity is a broad area that is at the heart of education regardless of level of study. All students need to be included in the education system at school, college or university levels. Many students have barriers to learning, which include different types of disabilities. More often than not, students who require additional support in order to achieve their educational goals are neglected. But, the use of technology has been recommended because of its abilities to encompass all students regardless of the nature of their disabilities.

Intellectuals advocate for the curriculum to be digitised. This is because technology enhanced learning environments have the ability to make way for equality and equity in the teaching and learning process, which include sharing resources, social involvement and participation of students with disabilities [50]. Technology makes it possible for learners with disabilities to learn without experiencing any form of exclusion as they would be in a better position to navigate through their studies by using digital strategies. A research about assessment related experiences of partially sighted students at a university in South Africa found that the use of technology provides a milestone of achievement towards students' abilities to write assignments and examinations effectively [51]. Partially sighted students use assistive technology, which undoubtedly improves their learning and preparation for examinations [52].

Assistive technology should be put in place in order to make students access assessment related information in the same way as their normal sighted counterparts. It (assistive technology) allows visually impaired students to use Internet, talking maps, digital cameras like flipper and screen reading software [52, 53]. All these technological devises and software enable visually impaired students to adjust the font size of text to suit their conditions. In that way, they would have access and ability to use information to prepare for their tests and examinations just like any other student without a visual impairment.

Assistive technology can be used to empower students with different types of learning disabilities [54]. Some of the learning disabilities that can easily benefit from assistive technology include supporting students with dyslexia [55], mobility and hearing problems [56, 57]), severe physical disabilities [58] and intellectual disabilities [59]. Saad et al. [59] postulate that

integrating technology into this twenty-first century curriculum helps students with intellectual disabilities by increasing their confidence and motivation through creative activities and web browsing. Computer technology generally benefits students with different types of disabilities as it allows them to obtain immediate feedback on their learning, self-paced learning and independence of learning [59].

It can therefore be summed that using educational technology is one of the best ways to provide equitable and equal education to all students. It is commendable in this digital era as it enables disabled students to reach out learning facilities with easy and more importantly to enrich their learning experiences by permitting them to learn anywhere and anytime [50]. Intellectuals do not just advocate for technology to be in a twenty-first century curriculum because technological enthusiasts say so. Intellectuals take an academic stance of taking into consideration what scholarship in different contexts say about the matter. Research done by different scholars in many countries around the globe comes to a conclusion that technology in the curriculum results in improved learning.

A research conducted by Avsec and Kocijancic [60] in Slovenia found that technological knowledge helped students develop skills such as problem solving, critical thinking and decision-making. It made students browse through the web in search of various approaches to solve educational problems and make recommendations which can be used by other students in different contexts.

In the South African context, Stott and Hattingh [61] state that deep learning among university students was effectively promoted by using conceptual tutoring software. The main advantage of using conceptual tutoring software is its ability to provide immediate and individualised formative feedback to students' activities [62]. Various software and applications can be used to facilitate deep learning among students by engaging with activities and share responses that they get from the computer with other students in class. All that can be done while students are on campus or at home as long as they have Internet connection to facilitate their communication online. Electronic tutoring can also be used as a tool for promoting conceptual change [63] on the way in which students study in order to improve their engagement and academic performance in institutions of higher learning.

In the United States of America, technology was used to facilitate effective online collaborative learning environments [64]. Students successfully did group work using online systems. This was not only a cost effective strategy but also a way of promoting technological skills and engagement of students in different geographical locations. Such learning facilitation is contemporary and very encouraged in this global milieu where universities are pairing their students with other universities internationally as part of education in the global world [65]. There is a lot of collaboration that is happening in universities today. Current collaborations that are happening in universities today see students learning a lot from other students in various countries without necessarily travelling. Technology is a tool that is being used to facilitate this international education which is characterised by high student engagement and less travelling.

In Korea, a research done to investigate the user's perception and attitude of Computer-Based Assessment (CBA) found that both students and instructors agreed to use it (CBA) as a supplementary tool in evaluating students [66]. CBA is dependent on computer technology.

It (CBA) is very effective on the learning of students in higher education [67] as it enhances student participation and academic performance [68]. Zakrezewski and Bull [69] concur that there is evidence which shows that CBA improves students' test and examination results.

Thus, one can safely argue from the intellectuals' point of view that technology into the curriculum presents vast opportunities for improving teaching and learning. It can however be a threat to quality education if it spirals out of human control. Gandawa [70] postulates that technology is a blessing, but it can also be a curse if humanity loses control of its usage. Technology can present opportunities associated with student centred learning, which is heavily condoned by social constructivism and social learning theories. It can be a threat or curse when it erodes a reading culture or when students abuse it by posting hurtful information to others, for example, on social media.

OECD [27] postulates that the future of education will be bleak if technology is not devised correctly. Technology has to be controlled by humans in order to achieve good educational goals not the other way round (technology controlling humans). Its usage as an educational resource needs to be monitored and channelled towards effective teaching and learning. There is need for a balance to be strike in order to ensure that both digital immigrants and digital natives maximise the usage of technology to enhance learning opportunities.

5. Summary and conclusion

Technology has transformed education in this twenty-first century. It has brought a lot of amazing teaching and learning experiences to both lecturers and students. It will be inadequate to only shower blessings about how technology has moved education on the positive side without also reflecting on threats which have come along. Technology has come as a double-edged sword, which has positive impacts as well as potential risks and threats to the education system [27]. There are some serious educational threats which came about as a result of technology in the curriculum. The threats include a total loss of a reading culture among students and bringing the whole education system into disrepute as a result of overdependence on some online dubious sources. This makes it a bit difficult for one to give a clear cut response to whether or not technology is the way to quality education. This resonates with Selwyn [7] who concluded that there is no clear answer to the question: 'Is technology good for education'. Complications around answering that question are what filled this section. The section collected and collated views about technology from three fundamental perspectives: technology from the critics' perspective, technology from enthusiasts' viewpoint and technology from an intellectual point of view.

Considering the fact that we are currently living in a digital environment where everything is done using technology in one way or the other, this study concludes that it is imperative for academics to embrace emerging technologies in their teaching. A very good example is that of primary and secondary schools in Cape Town, South Africa. A good number of schools in Cape Town have computer labs where students are expected to use computers in their learning. In some schools, learners have tablet computers and there is Wi-Fi connected by the Western Cape Education Department for teachers and learners to use. In such a context, it is

imperative for trainee teacher institutions to teach students using technology so that when they graduate, they will integrate easily in their workplaces (schools). Most of the universities around the globe have a common graduate attribute of inculcating graduates who can use technology. This is because employers today want graduates who have a combination of disciplinary expertise and graduate attributes such as technologically adept. In that case, various technologies need to be used to facilitate teaching and learning in order to adequately prepare graduate for the world of work. Views of technology critics do not hold water in this twenty-first century as students can be afforded opportunities to study various content embedded in digital books.

Students of today enjoy spending time using their technology gadgets such as smart phones. They like to use social media such as Facebook, WhatsApp and Twitter. Why cannot curriculum be revised to accommodate various technologies and use them to teach students effectively? Learning management systems like blackboard and Moodle allows blended learning to take place and that is what students like the most. A flexible curriculum needs to make provision for all that.

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