The Impact of Technology in Expediting Learning: A South African Experience

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ABSTRACT

Technology and its tools have had a major effect on higher education and are set to continue. This simply cannot be ignored, as growth in Information and communication technology (ICT) is soaring. The advent of online learning, as a tool, has generated unlimited learning opportunities to intensify the educational landscape, by accelerating educational output. The digital native is fervent on the transition from traditional teaching methods to the use of digital tools in enhancing learning. This paper provides an account of the impact of technology and its tools on education, contributing to teaching and learning in the 21st century, ultimately leading to innovative education. A census survey of a purposive group of educational personnel were employed in the study and the data collection tool was a questionnaire, comprising of both a qualitative and quantitative component. Assuming learner positions, allowed educational personnel to "experience or get the feel" of being educated using technology and its tools. Analysis of data was concluded using a statistical software package (IBM SPSS). The Technology Acceptance Model (TAM) was the identified model for the study, signifying users' perceived ease of use and perceived usefulness of technology are predictors of user attitude towards using the technology. Results of the study were largely favourable in facilitating the learning process, with constructive feedback on the use of technology-enhanced tools, especially surveys, journals, videos, discussion forums, blogs, concerning and ensuring interactivity as well as an enriched learning experience for all. However, a few respondents were apprehensive on the time management and technical aspects of online learning.

CCS Concepts

•**Applied computing →E-learning**

Keywords

Technology, Education, Information Communication Technology, Online Learning, and Digital Tools

1. INTRODUCTION

Modern technology has given birth to new avenues for learning,

including teleconferencing, web-based distance learning and computer-assisted learning [1]. Growth in ICTs has created a buzz in many areas of our daily lives, but one element specifically has played an integral role in the broader landscape of higher education. Online learning or e-learning, its associated technologies, and tools are modifying the transfer of knowledge in expediting learning. Keeping abreast with evolving technology is key to ensuring that maximum benefits are achieved. It is undeniable what profound effect e-learning has on higher education, making instruction accessible, creating new efficiencies and assisting in driving better student outcomes [2]. Higher education institutions are increasingly using technology to enhance the learning experience by adopting the most appropriate models. Online technologies can help address issues of educational equity and create educational opportunities [3]. Digital technologies have become an accepted part of the contemporary Higher Education (HE) landscape [4]. Other sectors including the health sector have discovered that computer-controlled machines are beneficial, reducing the need for other tools [5]. Having technology contribute to the learning process is fast becoming a central focus area in education. Moreover, advances in technology make assessing individual learner's prior knowledge and competencies easier and provide them with learning that they want and need [6]. Incorporating digital technologies in transformative and innovative ways in education will guarantee acceleration in the field. Technology-enhanced learning uses a wide range of digital technologies to strategically support and enhance learning in what has become commonly known as blended learning [7]. These blended approaches to learning have continued to grow over the years and the pace of development will depend on strategies of individual higher education institutions. This will certainly pave the way forward in the field of technology-supported learning.

The digital native of today is technologically-savvy and as a result, have greater digital demands. So, how will this impact on the labour market? There will unquestionably be repercussions for all stakeholders, as this generation's interactions have been moulded by technology and its tools. Jonsen et al have echoed these thoughts stating personal habits and behaviours that are shaped by growing up in a digital world, will have implications for the future of business and the interactions between employers and employees [8]. Extreme revolution in the field of e-learning may be foreseen, as this concept develops and higher education institutions acquire skills on how to leverage the technology [9]. With tech-savvy students and staff preferring interactive experiences, universities are faced with a challenge of using technology to meet learning and other goals. Pillay states that e-learning needs to mirror the new world, whereby a human touch is merged with a technological digital and cross border system, which develops skills needed for the world of work [10]

2. OVERVIEW OF E-LEARNING

E-learning is the latest form of ICT to improve and expedite teaching and learning in the education era, reaching most parts of the world and becoming an integral part of human life [11]. The term e-learning has been in existence for several years but can be synonymously referred to as online learning, virtual learning, technology-mediated learning, and technology-enhanced learning. These terms are used interchangeably in many sectors to describe one in the same term. Essentially it describes learning that is enriched using digital tools, delivered as part of a blended teaching approach. It must be borne in mind that philosophies of curriculum design still apply regardless of the mode of delivery and the objective remains as the achievement of learning outcomes. Although often assumed that e-learning is only associated with education, several other industries have welcomed the advances in technology. Hallberg states that there are national industries using e-learning to improve staff development and attain higher profitability, namely: healthcare, computer and information technology, retail, e-commerce, and construction [12]. With the adoption of e-learning, many organisations have realised the benefits it has to offer as well as the speed at which technology evolves.

2.1 The Technology Acceptance Model (TAM)

The Technology Acceptance Model was the identified model for the study, signifying users perceived ease of use and perceived usefulness of technology are predictors of user attitude towards using the technology. The model was significant to the study in explaining how educational personnel perceived the impact that technology would have on teaching and learning. The original model was developed by Davies in the late 1980s on users approach towards technology [13]. Perceived ease of use signifies that using technology or related tool will be a simplified task. On the other hand, users believe perceived usefulness indicates enrichment of job performance.

2.2 E-learning in South Africa

E-learning in South Africa is growing steadily. If developed and implemented correctly it could be a game-changer for the educational and broader sectors of the country. This growing phenomenon has taken off a little late in South Africa, compared to other global counterparts, but the proliferation can now be seen. Educational institutions are recognizing the flexibility that virtual education affords and many academics are including modules online to cater to the new market. With online education as an option, learning can now be accommodated into slots that suit learners. Similarly, mobile technology has gained momentum, enhancing the interaction with students and lecturer amongst other benefits [14]. In essence, online instruction is developing, leading to excellent education in SA. Gullan [15] points out that although technology continues to disrupt our lives, the education and training sectors are benefitting from it. It is further stated that three ways in which digital education can nurture employees are learning new skills, collaboration and higher-order thinking. Studying is becoming more accessible to prospective students, as online learning platforms continue to grow. Course designers must take cognizance of the fact that online courses may require additional time to structure, due to elements of interactivity, collaboration and stimulating content being incorporated. Within the South African higher education context, there still exist huge disparities with transitioning from schooling systems to universities. Most universities have a blended teaching and learning approach, which may impact on learners due to pre-university issues beyond their control. Issues such as poverty, inequality or being previously disadvantaged place pressure on universities to offer additional support to affected learners. This poses a challenge to higher education institutions with progression in the fields of technological development. The changing landscape of education is of paramount importance and higher education must remain at the forefront. As echoed by the Stellenbosch Institute of advanced study (STIAS), the context in which learning occurs is rapidly changing and higher education must adapt and respond. If universities cannot adapt to this changing world and acknowledge their failings they could become redundant [16].

2.3 The Fourth Industrial Revolution (4IR)

Technology is rapidly changing our economic, cultural and social realities and the question of how to prepare the youth and current, generation for the fourth industrial revolution has been an issue for contemporary higher education [17]. Penprase [18] emphasizes the 4IR curriculum will have to focus on emerging technologies and substantial changes to the curriculum will be required so that students can develop capacity in rapidly emerging areas. But, we ask ourselves, "what is the fourth industrial revolution?" According to Schwab [19], the fourth industrial revolution is the digital revolution that has been occurring since the middle of the last century and is characterized by a fusion of technologies, blurring the lines between the physical, digital, and biological spheres. Furthermore, it relates to how technology is presented and used by all.

A question to deliberate on is, how does the fourth industrial revolution impact on education and reciprocally? The advent of ICT has transformed methods of teaching, fusing it with traditional approaches. These blended approaches to learning have had significant effects on educating for the future. To educate for the fourth and future industrial revolutions, there is a need to embrace technologies associated with them. Education systems, programmes, and curricula need to be flexible, allowing for students' interests and needs [17]. Educationalists have a mammoth obligation of delivering relevant content that adequately prepares students with vital and necessary skills as technologies continue to transform. Embracing technologies is the first step in accepting that transformation is occurring and that too, at a rapid pace. This denotes that there needs to be flexibility in curriculum development to allow for future industrial revolutions, which may radically be transformed. In a recent article, the SA Deputy Communications Minister indicated that 4IR must be of benefit to all South Africans as South Africa is not where it should be. She further added that technology could help improve the situation and South Africans should harness how the available tools can improve the lives of our citizens [20].

2.4 The Impact of Technology on Education

Is digital learning the future of education? The White paper by Collins validates the significance of technology as a means of preparation for success in the 21st century whilst developing analytical, critical thinking and data management skills [21]. According to Lynch [22], one aspect of the technological era, online learning is the future of education at all levels but more specifically higher education. Educating using the online platform is thriving today, with no deceleration in sight. This platform is used in ways to transform different areas over and above traditional education. Training employees on a set of newly required skills or offering short courses permits organisations to ensure that employees can expand their skills using a transformative tool. Besides, individuals are granted

access to programs that offered them the ability to earn online degrees and enrich their lives through expanded knowledge [23]. Online education has become an increasingly important part of tertiary education, with colleges and universities using world-famous faculty members and professional support teams to promote online courses [24].

Undoubtedly, with an even wider spread of technology and deepening of the global mandate of education for all, online education's potential to become complementary, or in some cases alternatives to traditional education cannot be overlooked [25]. There has been a lot of debate on whether technology is taking over the world. Henny [26] states that some educators worry that soon there will be no students to teach as technology might take over tasks and abilities that we have been teaching our students for decades. He reassuringly states that education will never disappear. While online learning won't crush traditional classrooms, it surely will change the way it is known today. With improved resources and a reduction in academic workloads, classrooms can be transformed into co-learning spaces, enabling students to learn in a collaborative environment [27] Future trends in online learning that are likely to dominate in the education world are mobile learning, project-based learning, learning analytics, redesigning classrooms, blended learning and adaptive learning technology [22]. Spector et al [28] reverberate that shifts in education towards blended and online learning led to the consideration of technologies that could support assessment and feedback to learners. Arshavisky further states that the following six popular trends will become entrenched in e-learning in the future: microlearning, artificial intelligence, gamification, AR/VR/MR (augmented reality, virtual reality, and mixed reality), video learning and big data [29]. Furthermore, Isiyaku's study found users computer self-efficacy and enjoyment of ICTs to influence the effectiveness of ICTs [31]

3. METHODOLOGY

The study was conducted at a South African University of Technology where e-learning was employed The adopted methodology for the study comprised of a mixed-method approach consisting of both qualitative and quantitative data elements, to increase the range of the study. A mixed-methods strategy may allow the researcher to capitalise on the strengths and offset the weaknesses of each method [32]. Data was collected using a questionnaire, designed to include elements of both open-ended and closed-ended responses. The qualitative element, allowed respondents to state their thoughts, feelings and provided them with an opportunity to express themselves without prejudice. A census survey of a purposive group of educational personnel was employed in the study. Educational personnel embarked on an online training course and were exposed to technology and numerous tools/techniques using the online environment. The data instrument was pre-tested before the commencement of the study ensuring that the instrument was reliable and valid. Furthermore, the purpose of pre-testing was to ensure that it was a true reflection of the study and contained no errors. Questionnaires were personally administered by the researcher to participants, of which a week's duration was allowed for completion. The researcher provided participants with a brief overview of the study and addressed queries. On completion, questionnaires were collected by the researcher and collated in preparation for analysis. Respondents were informed of the confidential nature of the study and non-disclosure of any personal information. They were assured that their identities will remain anonymous.

4. RESULTS AND DISCUSSION

4.1 Reliability and Validity of Data

Statistical analysis was performed using IBM SPSS Statistics software. Cross tabulations were done to analyse the relationship between the variables. A value of 0.700 or greater for the Cronbach's Alpha indicates acceptable reliability for the questions analysed [33]. The overall reliability score of (questions 1.1 and 1.2) .700 indicate an acceptable level of reliability (Table 1.1 and Table 1.2).

Table 1.1 Reliability and validity of the data

Cronbach's Alpha	Cronbach's Alpha Based on standardized items	Number of Items
.620	.700	2
.311	.331	2

Table 1.2 Reliability and validity of the data

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Qu 1.2	2.0000	.200	.538	.289	
Qu 1.3	1.9091	.691	.538	.289	
Qu 1.4	1.2727	.218	.198	.039	
Qu 1.5	1.4545	.473	.198	.039	

Table 2. Results of the Chi-square test (P-value)

	Prior to the online training course, were you actively involved with e-learning within your Department?	As a facilitator, do you use all the tools available on Blackboard?	Do you find using Blackboard a challenge?	Did you find specific sections of the online training course difficult?	Did you have to spend many hours in the week to complete tasks in the online course?
Gender	.338	.377	.632	.150	.072
Age	.565	.254	.457	.249	.079
Gender	.639	.922	.453	.404	.179
Prior to the online training course, were you actively involved with e-learning within your Department?		.478	.004	.497	.338
As a facilitator, do you use all the tools available			.321	.204	.337

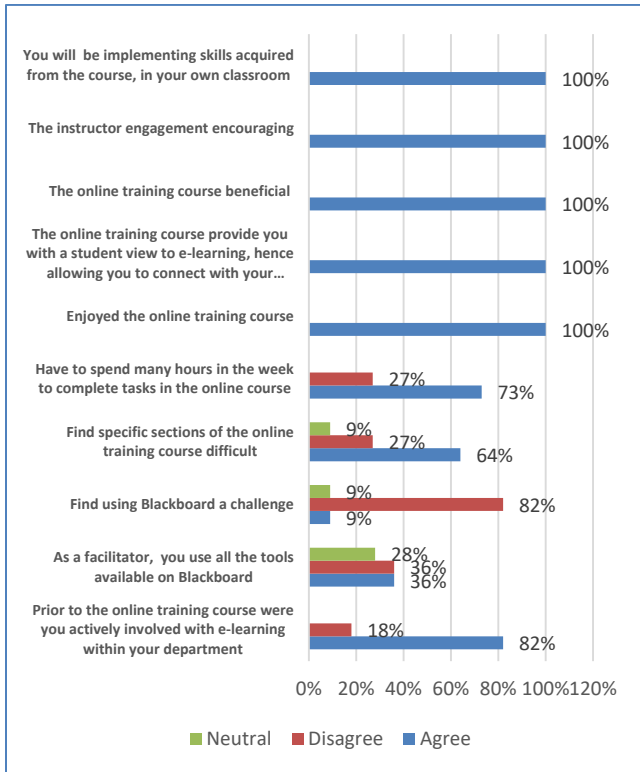|					.845	.632
on Blackboard?						
Do you find using Blackboard a challenge?					.845	.632

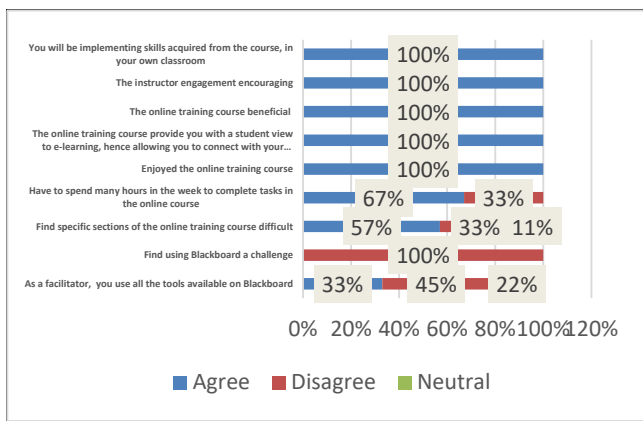**Figure 1. General overall experiences of respondents.**

Figure 2. Crosstabulation: Prior to the online training course participants were actively involved with e-learning within their department.

The reliability and validity of the data were checked by performing inferential statistics in the form of the Chi-square test for association between two variables of interest (pvalue <0.05) (Table 2).

As shown in Figure 1, all the participants (100 %) indicated that the online training course was beneficial to them, the instructor's engagement was encouraging and it provides them with a student point of view to e-learning, hence allowing them to connect with their students. All were in agreement of implementing the skills acquired from the course, in their classrooms. Eighty-two percent of the participants mentioned that they were actively involved in the online training course, but sixty-four percent of the participants find specific sections of the online course difficult. Thirty-six percent of the participants use all the tools available on the blackboard but nine percent of the participants find using the blackboard a challenge (Figure 1). Results indicate that participants who were actively involved in e-learning, do not face challenges in using Blackboard (Figure 2). The results of Chi-squared implies that there is an association between being involved with e-learning prior to the course and finding Blackboard a challenge. Over half of the participants do not use Blackboard tools and reasons cited were: "there are too many tools on Blackboard and it is difficult to use some". A large percentage (73 %) discovered that several hours a week had to be set aside to complete tasks.

Others who did not have time-related issues were essentially exposed to previous digital use. Results show that skills from former exposure to digital use or online learning had simplified the current learning and subsequently reduced the time to complete activities for these participants. Online learning is unquestionably providing opportunities for new learning skills, making it a highly effective tool in knowledge transfer. It is expected that the majority of individuals being introduced to a new form of learning, would require additional time in completing tasks initially. For an online tool to be effective, basic training should be provided to ensure that elementary skills are imparted, thereby reducing the time to complete tasks and hence leading to efficient processes. Embracing technology is likely to make the transitioning phase simpler and open doors to innovative education in a student-centred environment.

Surveys, assessments, journals, discussion forums, blogs, videos, and other tools were stated as beneficial in expediting the learning experience. Furthermore, new and innovative assessment methods are available with technology, thereby reducing times and creating endless possibilities. These fundamental tools in education may contribute to innovative education whereby the focus is learner-centred, encouraging critical thinking, student engagement, and collaborative learning. A degree of authentic learning is noted and the future of education looks encouraging. Participants were positive that technology and tools will create blended learning opportunities and contribute to the acceleration of specific areas in education. Elements of curiosity, accompanied by enthusiasm has proven that by simply allowing oneself to be exposed to new teaching methods, opens up several doors, irrespective of age, gender, and other biases. The study has proven that not only a digital native can adapt to evolving times, but also newly exposed users, as some participants were first time users and others were in the mature age category. Several benefits of using technology-enhanced tools were identified, of which the following were cited: deeper learning occurs; increase in interaction and engagement between learners and instructors; accessibility and flexibility whereby content is available continually; numerous stimulating techniques of imparting knowledge and encouraging online environment. Although a few aspects of online learning were met with apprehension, respondents were of the view that technology is here to stay and is bound to take education to new heights. In any environment

involving technology, there will be technical concerns of which must be addressed. Technology-enhanced learning is proving to be the future of learning, continuing to develop and advance at a rapid pace.

5. CONCLUSION

A question the father of modern management, Peter Drucker asked many years ago was, "Is e-learning one of the fastest-growing technologies in the world"? This couldn't be more accurate as e-learning has become one of the fastest-growing sectors to completely revolutionise the educational world [34]. Rethinking our education system, techniques of imparting knowledge and being open-minded to incorporating technology-driven education is a step closer to effective pedagogical transformation. To begin with, academic staff must be accepting of the new form of knowledge augmentation as the rate of technology evolves rapidly. This study was necessary for providing imperative information demonstrating the importance and contributory nature of technology in education. Both Pathak and McKnight's study's [11] [30] supports how technology and e-learning improve and expedites teaching and learning benefitting teachers and learners. Findings of the study indicate that participants responded constructively and positively towards the use of technology-enhanced tools in contributing to teaching and learning. They believe that the introduction of technology-enhanced education tools may contribute to an enriched learning experience. The new blended pedagogical experience will provide boundless opportunities as technology-driven changes are occurring daily. Specific tools that participants believe will most definitely contribute to an encouraging outcome were primarily dealing with interactivity, support, and continuous feedback. Indications were made, that the new and transformative method of teaching is leaning more towards a student-centered approach as opposed to the traditional lecturer-centered approach. It allows for more blended learning opportunities and interaction between various parties creating a further content environment, whilst simultaneously including deep learning sessions. Technology-enhanced tools allow students an opportunity to process their thoughts better, with additional aids to support them, aiming to achieve superior results. The ultimate notion is to create opportunities and learning experiences, using technology-enhanced tools that provide quality educational experiences for all. The Fourth Industrial Revolution (4IR) is here and a question to ponder on is, are we prepared to harness the changes towards an autonomous workforce?

6. ACKNOWLEDGMENTS

7. REFERENCES

[1] Masood S and Yousaf N. 2017. *"Blended learning: a pedagogical alternative to traditional learning in dermatology"*. Journal of Pakistan Association of Dermatologists, vol. 27(2), pp. 99-101. April 2017.

[2] The WizIQ Blog. 2017. *How successful has eLearning been in higher education?* https://blog.wiziq.com/higher-education-software-success/

[3] Gulati S. 2008. *"Technology-Enhanced Learning in Developing Nations: A review"*. 2008. The International Review of Research in Open and Distributed Learning, Shalni Gulati University of Oxford, vol 9(1), https://doi.org/10.19173/irrodl.v9i1.477

[4] Morag M. 2018.*The complicity of digital technologies in the marketisation of UK higher education: exploring the implications of a critical discourse analysis of thirteen national digital teaching and learning strategies.* International Journal of Educational Technology in Higher Education (2018) 15:11 DOI 10.1186/s41239-018-0093-2

[5] Roger O. Smith, Marcia J. Scherer, Rory Cooper, Diane Bell, David A. Hobbs,Cecilia Pettersson, Nicky Seymour, Johan Borg, Michelle J. Johnson, Joseph P. Lane, S. Sujatha, PVM Rao, Qussai M. Obiedat, Malcolm MacLachlan & Stephen Bauer (2018) Assistive technology products: a position paper from the first global research, innovation, and education on assistive technology (GREAT) summit, Disability and Rehabilitation: Assistive Technology, 13:5, 473-485, DOI: 0.1080/17483107.2018.1473895

[6] Hart D. 2019. *Instructional Design Trends And Learning Trends: The Ecosystem Evolves*. 18 February 2019, https://elearningindustry.com/2019-instructional-design-trends-learning-trends-ecosystem-evolves

[7] Barrero C, Duggan D, Hannum W, Maresca C, Petrola F, Platin E and Rivera E . 2014. *Utilization of blended learning to teach preclinical endodontics*. Journal of Dental Education vol 78, pp. 1194–204, 2014.

[8] Jonsen K, Martin R and Weg S. 2011. *Managing Digital Natives – Opportunity or Challenge? Tell me when you were born and I'll tell you who you are*. 9 July 2011, https://www.europeanbusinessreview.com/managing-digital-natives-opportunity-challenge-born-ill/

[9] Siebrits A and Van de Heyde V. 2019. *The ecosystem of e-learning model for higher education.* S Afr J Sci. 2019, vol. 115(5/6), Art. #5808, 6 pages. https://doi.org/10.17159/sajs.2019/5808

[10] Pillay N. 2018. *eLearning must reflect the knowledge economy*. August 2018, https://city-press.news24.com/Voices/elearning-must-reflect-the-knowledge-economy-20180821

[11] Pathak S and Vyas P. 2019. *E-learning in modern digital environment*. International Journal of Advance and Innovative Research, Volume 6, Issue 1, (VIII), January – March 2019.

[12] Hallberg A. 2018. *Top 5 growing industries using elearning*. https://elearningindustry.com/growing-industries-using-elearning-top-5, 6 January 2018

[13] Davies F.D. 1986. *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Massachusetts, United States: Sloan School of Management, Massachusetts Institute of Technology.

[14] Mayisela T. 2013. *The potential use of mobile technology: enhancing accessibility and communication in a blended learning course*. South African Journal of Education; 2013; 33(1) 1 Art. #629, 18 pages, http://www.sajournalofeducation.co.za

[15] Gullan D. 2019. *3 ways digital learning can empower star employees.* 30 Jul 2019, https://www.bizcommunity.com/Article/196/500/193811.htm

[16] Stellebosch Institute for advanced study (STIAS). 2016. *STIAS consultation on South African higher education in a global context.* 11 October 2016,

https://stias.ac.za/news/2016/10/stias-consultation-on-south-african-higher-education-in-a-global-context/

[17] Chao R Jr. 2017. *Educating for the fourth industrial revolution*, 10 November 2017. https://www.universityworldnews.com/post.php?story=2017 1107123728676R.

[18] Penprase B.E. 2018. *The fourth industrial revolution and higher education*. In: Gleason N (eds) Higher education in the era of the fourth industrial revolution. Palgrave Macmillian, Singapore

[19] Schwab K. 2016. *The Fourth Industrial Revolution: what it means, how to respond.* 14 Jan 2016, https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/.

[20] Mamaili M. 2019. *South Africa urged to consider the benefits of 4IR,* 21May 2019. https://www.engineeringnews.co.za/article/south-a

[21] Collins S, Principal,Collins Consults. *How digital tools prepare students for the 21st century white paper* A CollinsConsults White Paper Prepared for Inspiration Software, Inc

[22] Lynch M. 2018. *What is the Future of Online Learning in Higher Education?*, 2 April 2018, https://www.thetechedvocate.org/future-online-learning-higher-education/

[23] The History of elearning, https://www.talentlms.com/elearning/history-of-elearning

[24] Yuma J. 2016. *Is online learning the future of education?*, 2 Sep 2016, Harvard University, Columbia University, https://online.hbs.edu/

[25] Hu Z, Yu Y. 2016. *Is online learning the future of education?*, 2 September 2016, https://www.weforum.org/agenda/2016/09/is-online-learning-the-future-of-education/

[26] Henny C.H. 2016. *eLearning Trends 9 Things That Will Shape The Future Of Education: What Learning Will Look Like In 20 Years?* 1 June 2016, https://elearningindustry.com/9-things-shape-future-of-education-learning-20-years

[27] Fliplearn Category: Generic. 2019. *Is Online Learning the Future of Education?* May 14, 2019 Https://stgui.fliplearn.com/2019/05/14/is-online-learning-the-future-of-education/

[28] Bridges S, Deneem C.C, Dona K, Eichhorn K, Gibson D.C, Gui X, Fluck A, Huang R, Ifenthaler D, Lu J, Mukama E, Ren Y, Sampson D, San Diego J, Spector JM, Warusaitarana A, Yang L. 2016. *Technology enhanced formative assessment for 21st century learning.* Journal of education technology and society. Vol 19, no. 3 (July 2016), pp 58-71

[29] Arshavskiy M 2019. *6 eLearning Trends: What Can We Expect Going Into 2019 And Beyond?*, 11 February 2019, https://elearningindustry.com/6-elearning-trends-for-2019-beyond-what-expect

[30] Basset K, Franey, J Horsley K, McKnight K, O'Malley R and Ruzic R. 2016. *Teaching in a digital age: how educators use technology to improve student learning.* Journal of research on technology in education. Volume 48. Issue 3 Pages 194-211

[31] AbdulKadir S, Ayubl M.A.F and Isiyaku1 D.D. 2018. *Antecedents to teachers' perceptions of the usefulness of ICTs for business education classroom instructions in Nigerian tertiary institutions.* Asia Pacific Education Review 19:337–352 https://doi.org/10.1007/s12564-018-9525-x

[32] Creswell J. W. 2014. "*Research Design – Qualitative, Quantitative and Mixed Method appraoches*", 4th Edition, United States of America, Sage Publications

[33] Bougie and Sekaran 2016. *Research methods for business: a skill building approach* 7th ed. Chichester: Wiley

[34] Digit.in.*The future of e-learning and career opportunities*, https://www.digit.in/technology-guides/fasttrack-to-e-learning/the-future-of-e-learning-and-career-opportunities.html