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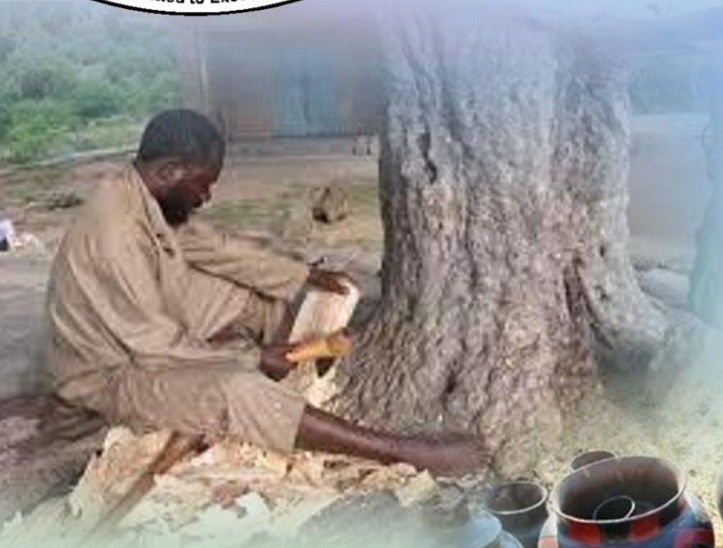
THE ZIMBABWE EZEKIEL GUTI UNIVERSITY
JOURNAL OF DESIGN, INNOVATIVE THINKING AND PRACTICE



ISSN 2957-8426 (Print)

Vol. 2 Issues (1&2), 2023

Published by the Zimbabwe Ezekiel Guti University Press
Stand No. 1901 Barrassie Rd,
Off Shamva Road
Box 350
Bindura, Zimbabwe

Typeset by Divine Graphics
Printed by Divine Graphics

SUBSCRIPTION AND RATES
Zimbabwe Ezekiel Guti University Press Office
Stand No. 1901 Barrassie Rd,
Off Shamva Road
Box 350
Bindura, Zimbabwe
Telephone: ++263 8 677 006 136 | +263 779 279 912
E-mail: zegupress@admin.uz.ac.zw
http://www.zegu.ac.zw/press

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The purpose of the *Kuveza neKuumba - Zimbabwe Ezekiel Guti University Journal of Design, Innovative Thinking and Practice is* to provide a forum for design and innovative solutions to daily challenges in communities.

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Planners, engineers, social scientists, business experts and scholars and practitioners from various fields.

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Kuveza neKuumba - Zimbabwe Ezekiel Guti University Journal of Design, Innovative Thinking and Practice

ISSN 2957-8426 (Print)

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Educational Technology in Vocational Training Programmes in Zimbabwe

EUNICE DHOKURA[1]

Abstract

The study centred on the types of educational technology used in vocational training programmes with a primary focus on Zimbabwean vocational training centres (VTCs). The main objective of the study was to identify the types of educational technology in use in vocational training programmes. The study reveals the following educational technology currently in use at VTCs: Synchronous, Asynchronous, Linear Learning, Blended and Collaborative Learning to enhance the learning experience and produce world-class graduates with transportable skills who are ready for work in the technologically developing world. Quantitative data was gathered from students at VTCs, whilst qualitative data was obtained from lecturers and staff also at VTCs, to complement the quantitative data. The research instruments used were questionnaires, interview guides and observation guides. Both probability and non-probability were used. The target population for this study consisted of 3 500 participants drawn from five VCTs. Research concluded that two beliefs, perceived usefulness and perceived ease of use, have been identified as important user acceptance criteria.

Keywords*:* collaboration, synchronisation, asynchronisation, innovation, linear and blended learning

INTRODUCTION

The use of different educational technologies has become one of the driving forces in the delivery of instruction in present-day vocational education and training (VET). Though educational technology has become an increasingly accessible resource for educators to use in their teaching activities, most teachers are still unable to integrate it into their teaching and learning

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processes. Different types of educational technologies are used to improve teaching quality where quality is expensive to reproduce, or to substitute for the lack of teachers, or schooling opportunities that cannot be made available with conventional teaching methodologies. However, this is not achievable without enough educational technology. VTCs are pivotal to the Zimbabwean economic landscape, especially through the provision of basic services that include policy formulation, quality control, preparation of competency-based curriculum, developing skill standards of various occupations and testing the skills of the people, conducting various research studies and training needs assessment, among others.

Information processing and electrical communication using educational technology have progressed remarkably, as office computers and word processors are introduced at tertiary institutions, including VTCs. Currently, the importance of knowledge and educational technology, VET schools are responsible for the provision of qualified middle-level personnel needed mostly in industrial and service sectors. Thus, the provision of high-quality educational technology and education in present-day vocational education and VTCs is very important. Around the world, all economically advanced democracies place high value on the quality of their vocational education and training (Nkasiobi, 2011; Hall, 2022; Angotti, and Morse, 2023).

VET, also known as Career and Technical Education (CTE), prepares learners for jobs that are based on manual or practical activities, traditionally non-academic and related to a specific trade, occupation or vocation. It is sometimes referred to as technical education, as the learner directly develops expertise in a particular group of techniques or technology. VET have become a key policy issue as their importance to national economic performance has been generally recognised (Porter, 1990; Shaturaev, 2021; Carstensen and Emmenegger, 2023). In the face of rapid technological advances, economic globalisation and the intensification of competition both within developed and developing countries, it is now clear that human resources are the key to continuing prosperity in advanced economies. It is also clear to most governments, although to some perhaps

more than others, that a maximum diffusion of education and training is a necessary prerequisite for a healthy democracy and for maintaining a level of social cohesion and solidarity in fast-changing pluralistic societies (Prasad *et al*, 1998; UNESCO, 2022).

Nkasiobi (2011), supported by Hennessy (2022), says; 'Despite the emergence of a common agenda for vocational education and training using computers across many countries, it is increasingly recognised that policy in practice varies significantly as argued by national contexts." Of course, it is one thing to develop grand visions of VET society within official policy documents, but translating such visions into reality usually turns out to be rather problematic. This applies to specific goals, cultural policies and initiatives that are being pursued and implemented, the wider institutional framework within which they take place, and the roles played by key factors such as state, employers and trade unions etc.

It is against this background that the current study focuses on the types of educational technologies that are currently in use in vocational training programmes with a primary focus on Zimbabwean VTCs.

CONCEPTUAL FRAMEWORK

The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model has been widely used to study new technological systems. It has proven to be a robust conceptual framework for predicting users' intentional use. Although UTAUT2 was intended for commercial use, many later studies have focused on educational technologies like e-learning, learning management systems, mobile learning, e-books and instructional tools. Nikou and Aavakare (2021), cited in Basilotta-Gómez-Pablos *et al*. (2022), develop a conceptual model to examine the impact of information literacy and digital literacy on university staff. To do so, they adapt the integrated model of the UTAUT by including digital and information literacy as additional predictors of intention to use digital technologies. The results indicate that information literacy has a direct and significant impact on the intention to use thesetechnologies. This article reviews previous work done on

the model and proposes a new research model by integrating the Task-technology Fit Theory with UTAUT2 to study educational technology acceptance.

THEORIES UNDERPINNING THE STUDY

TECHNOLOGY ACCEPTANCE MODEL

The Technology Acceptance Model (TAM) was proposed by Davis (Davis *et al.*, 1989). As argued by TAM, a person's belief determines his/her attitude toward usage. Davis *et al.* (*ibid.*) introduced theTAM in his attempt to address reasons for users accepting or rejecting information technology and how users' acceptance is influenced by system characteristics.

Research concludes that two beliefs (perceived usefulness and perceived ease of use) have been identified as important user acceptance criteria. They are instrumental in explaining the variance of customers' attitudes. Perceived usefulness is defined as "the degree to which an individual believes that using a particular system would enhance his or her job performance". Perceived ease of use is defined as "the degree to which an individual believes that using a particular system would be free of physical and mental effort". Perceived ease of use is hypothesised to have a significant direct effect on perceived usefulness (Nikou, 2019; Venkatesh and Davis, 2000; Gupta *et al*, 2022; Nie *et al.*, 2023). Users perceive a system as easy to use as they gain more knowledge and confidence through direct experience in using the system (Hackbart *et al.*, 2003; Albayati and Rho, 2020; Al-Mamary, 2022; Linardatos and Apostolou, 2023).

SELF-EFFICACY

A determinant of perceived task difficulty is a person's belief in his/her ability to successfully perform behaviour, or the level of task difficulty an individual believes is attainable with their perceived skill level. Bandura (1986) and Shah and Bhattarai (2023) have argued that personal beliefs about self-efficacy are crucial determinants of action. Self-efficacy is defined as one's belief in one's ability to exercise control over events. Many empirical studies have validated self-efficacy in a wide variety of settings, such as employee attendance management (Frayne

and Latham, 1987), complex decision-making (Wood and Bandura, 1989), computer skill acquisition (Mitchell *et al.*, 1994) and user acceptance of technology (Agawal *et al.*, 2009). Computer efficacy is affected by someone's practical intelligence, the ability to solve new problems, and the ability to learn from experience, by tacit knowledge. As argued by Marakas *et al.* (1998) and Satjawathee *et al.* (2023), computer self-efficacy is the perception of one's capability to use a computer in a multilevel construct, operating at two levels: the general computer level and the specific application level. The former is defined as "an individual judgment of efficacy across multiple computer domains". Application-specific self-efficacy is defined as an individual's perception of efficacy in using a specific application within the general domain (Qadasi, *et al.,* 2023); Yi and Hwang, 2003; Al-

Technology Acceptance Model Research is relevant to the current study because it concludes that personal educational technology efficacy relates directly to someone's perceptions concerning these technologies. The model is instrumental in explaining the variance of students' attitudes. Both perceived usefulness, along with students' attitudes, determine students' behavioural intentions. Matching this theory to the adoption of educational technology in VTCs confirms the basic relationships between the three variables of TAM, that perceived ease of use is positively associated with perceived usefulness and behavioural intention; and perceived usefulness is also positively associated with behavioural intention. Students' attitudes to educational technology are influenced by both the perception of the usefulness of mobile learning and the ease of use of mobile technology. Positive attitudes about the benefits of mobile learning were found to influence the adoption of mobile learning

LITERATURE REVIEW

Educational Technology (Ed-Tech) refers to the use of technology in academic settings, be it in the classroom, at home or elsewhere. Ed-Tech encompasses anything from simple educational tools like flashcards and applications to more complex technologies like online learning platforms and virtual reality simulations (Ramiel, 2021). It is used in formal and

informal education settings and by learners of all ages (Huang and Yang, 2019). Ed-tTch supports various learning goals, including enhancing student engagement and motivation, improving assessment results, facilitating online learning, increasing access to qualifying education resources, and supporting blended or online/offline learning programmess. It is the process of integrating technology into education to promote various learning environments and opportunities for students to learn using technology for their common tasks.

Identifying instructional challenges inherent in incorporating virtual laboratories in instruction helps contextualise educational needs. First, there is a shortage of professional teachers and instructors qualified to teach Educational Technology (ET) and VET curricula (Baladoh, Elgamal, and Abas, 2017; Lou, 2018). Next, many ET and VET teachers and instructors do not have formal pedagogical training to prepare them for teaching in traditional educational settings. This issue is only exacerbated by the introduction of technology and online pedagogies. One article notes, "college teaching is the rare profession that doesn't train its practitioners, forcing instructors to rely on trial and error … most are not taught to teach, and none is taught to teach online" (Grose, 2020:24). Further, as instructors are transitioning from face-to-face to virtual and online learning environments, they need additional support in making the transition and managing the integration of high-technology tools into learning environments (Jin and Nakayama, 2013; Grose,2020;). Finally, a significant instructional challenge to overcome in integrating virtual labs in ET and VET programmes is the cost (Jou and Wu, 2012; Abidi *et al.*, 2019). It is, however, noted in several writings that the integration of virtual labs in these technical fields could also reduce the amount of expensive equipment needed and reduce breakage and material costs, thereby reducing overall costs (Alvarez, Parra and Montes-Tubío,2017; Baladoh, Elgamal and Abas, 2017; Ethiragan, Kandasamy and Kumaraguru, 2020).

King (2002) observes that substantial research has been conducted in relation to the concept of "Educational Technology Professional Development" (ETPD), which focuses on teachers' professional development as "an essential component to ensure pedagogically sound technology use in the classroom" (*ibid.,*

284). The purpose of this literature review was to present a comprehensive understanding of this emerging field of research in higher education.

King *(ibid.)* noted that ETPD training programmes generated several categories of designed products. First, when positioned as designers, faculty members were given the opportunity, through ETPD programmes to create and develop their own resources within their teaching context, such as the redesign of a single lesson or course unit, in order to include social networking (Archambault *et al.*, 2010) or learner-centred principles (Derting *et al.*, 2016). Another example is the increased number of web-based learning environments, courses on Moodle, and ICT pedagogical initiatives produced by faculty members by the end of their ETPD programme (Baya'a and Daher, 2015). Physical space and pedagogy have also been redesigned, together with efforts in technology training (Friel *et al.*, 2009). Second, the design process also affected the tools used by faculty members. For instance, Chen *et al.* (2018) focused on the continuously designed and reviewed tools of a novice Mathematics teacher educator-researcher. Similarly, Hoekstra and Crocker (2015) paid attention to the design of feedback tools for their collaboratively designed e-portfolio approach. Third, some ETPD training programmes have been co-designed collaboratively with faculty members, focusing on incorporating principles of good practice in undergraduate education (Friel *et al.*, 2009) or on technology integration (Teclehaimanot and Lamb, 2005). Involving faculty members in the design of their own training, Teclehaimanot and Lamb's (*ibid*) study goal was to reach the "ripple effect" of faculty redesigning their syllabi, revealing interconnections between the designed intervention and generated production. This leads to the final category of designed products, research itself, which, in recent times, has increasingly been co-designed. Shattuck and Anderson (2013) perceive the increased interest among educational researchers over the last decade in design-based research, defined as:

> a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories (Wang and Hannafin, 2005: 6-7).

Whatever is being designed, most researchers have pointed out the importance of the collaborative dimension of the design process: design has been used mostly within ETPD as a team-based activity (e.g., Dolk *et al.*, 2002; Shattuck and Anderson, 2013; Baya'a and Daher, 2015; Hoekstra and Crocker, 2015; Derting *et al.*, 2016; Becuwe *et al.*, 2017). According to Foley and Masingila (2014:800), this is because "without such collaboration, interventions are unlikely to affect changes in the real-world context". Even when projects were individually designed to better meet participants' needs and interests, researchers demonstrated how the creation of collaborative communities of learners was concomitant (Seels *et al.*, 2003), or how the design process of a teacher educator was embedded and influenced by different collectives (Psycharis and Kalogeria, 2017). Becuwe *et al.* (2017:159) argue that "collaborative design [in teacher design teams] of technology-enhanced lessons has been shown to contribute to the development of competencies necessary to integrate technology in education" This is why the engagement of faculty members in design-based activities simultaneously enabled investigation of practice and fostered the creation of communities above the traditional gap between practitioners and researchers (Triggs and John, 2004; Foley and Masingila, 2014).

Finally, Mourlam (2017) recognise that design-based research usually ended prior to the implementation of instruction, while Archambault *et al.* (2010) proposes engaging faculty in the full instructional design process, including the implementation phase. Jaipal-Jamani *et al.* (2018) extend the process of learning, designing, and implementing until the mentoring phase in which teacher educators adopt a technology leader's role in ETPD workshops

RESEARCH METHODOLOGY

Quantitative data was gathered from students whilst qualitative data was obtained from lecturers and staff at VTCs, to

complement the quantitative data. The research instruments used were questionnaires, interview guides and observation guides. Both probability and non-probability were used. Thhe target population for this study consisted of 3 500 participants drawn from five VTCs. Secondary data, on the other hand, was collected for other purposes, however, was also useful for the current study (Schiffman and Kanuk, 2000; Linneberg and Korsgaard, 2019; Antoniadis *et al.,* 2022; Lutfi *et al.,* 2023). Qualitative data obtained in the study were analysed using narrative analysis. The quantitative data collected were coded, entered and analysed descriptively using the Statistical Package for Social Sciences (SPSS) version 16.0. Descriptive statistics in the form of percentages, frequencies, mean scores and standard deviations were calculated for different variables and presented. Correlation analysis was done to determine the relationship between the variables identified in the conceptual framework. One-way Analysis of Variance (ANOVA) and independent t-test was used to analyse the relationship between educational technologies-related factors and VTCs. A multiple-linear regression analysis was conducted to determine the statistical relationship between the independent variables (educational technology) and the dependent variable (VCTs).

RESULTS

Effects are grouped into three factors (perceived ease of use, perceived usefulness and self-efficacy) since eigenvalues exceeded 1. The selected factors accounted for 65% of the total variance. The Kaiser-Meyer-Olkin (KMO) value was 0.65, indicating the appropriateness of using the technique for factor analysis. This appropriateness was further supported by the significant result from Bartlett's test of sphericity (x^2 = 3764.751; $p<0.0001$). Cronbach's α coefficients were: Perceived Self-efficacy: α = 0.787; Perceived ease of use: α = 0.929; Perceived Usefulness: α = 0.685. The rotated component matrix, including the factor loadings, is shown in Table 1.

Table 1: *Factor Loadings of perceived ease of use, perceived usefulness and self-efficacy (*Grozeva, G. and Dimitrov. Y, 2012)

	Loadings
Perceived ease of use	
I find a new adoption easy to use	0.821
My interaction with new technologies is clear and understandable	0.795
I find it easy with new technologies to do what I want to do	0.860
Perceived usefulness	
Using a new technology increases my productivity	0.641
I find new technology useful in my studies	0.619
Using a new technology improves my training performance	0.565
Using a new technology improves my effectiveness	0.731
Perceived Self-efficacy	
I believe I can easily use new technologies	0.919
I believe I can easily become skilful in new technologies	0.901
I believe I can easily learn about new technologies	0.993

The impact of personal characteristics upon the three factors influencing the adoption of a new technology is examined by using inferential statistics (t-tests and ANOVA tests). As argued by these tests, females are considering adopting a new technology since they perceived it as easier to use than males ($t=2.756$ $df= 695$ and $p=0.006<0.05$). The hypothesis “Males are more self-efficient in using a new technology than females” was not supported, since $t=1.560$ $df= 516.783$ and $p=0.119>0.05$.

The level of an employee’s education has a positive impact on perceived self-efficacy in adopting new technologies. As the level of education rises, the perceived self-efficacy of the students adopting a new technology increases. Different variances are assumed and $F(2.693)=36.291$ $p< 0.005$ indicates differences among the means of the groups of students with different educational levels. Student-graduates from secondary school indicated a lower perception of self-efficacy (mean=-0.5324840) than graduates with bachelor's degrees (mean=-0.0258622),

who also indicated a lower perception of self-efficacy than the students with post-graduate studies (mean=0.4639108).

The level of students' education has a positive impact on the perceived ease of use of new technologies. Equal variances are assumed and F(2.693)=4.125 p< 0.005, indicates differences among the means of groups of students with different educational levels. Specifically, posthoc analysis revealed differences in the perception of students towards considering a new technology as easy to use, between graduates of secondary school and graduates with bachelor's degrees (mean: 0.0256410 > -0.2366863), and also between graduates of secondary school and students with post-graduate studies (mean: 0.0972040 > -0.2366863).

The level of students' education has a positive impact on the perceived usefulness of new technologies. Equal variances are not assumed, F(2.693)=6.964 p<0.005, indicating differences among the means of groups with different educational levels. Post-hoc analysis reveals differences in adoption between students with different educational backgrounds. There is a different perception of usefulness among students with bachelor's degrees and graduates of secondary school. Students with bachelor's degrees perceived the adoption of new technologies as less useful compared to secondary school graduates (mean: 0.2897110> -0.0931591).

Age is negatively correlated to students' perception of self-efficacy. Older students perceive themselves as less efficient in using new technologies than younger students. Equal variances are assumed and F(2.693)=10.253 p< 0.001 indicates differences among the means of groups of students belonging to different age groups. As the age of the students increases, their perception decreases their self-efficacy. Students in the age group 51-65 have a different perception (mean=-0.38104) of self-efficacy from students in the age group 41-50 (mean=-

0.2913233), compared to the age group 31-40 (mean=0.1058948). Young students (age 18-30) have the highest perception of self-efficacy among all age groups.

Age is negatively correlated to students' perception on ease of use. Older students perceive new technologies as less easy to use than younger students. Equal variances assumed and F(2.693)=6.151 p< 0.001 indicates differences among the means of groups of students belonging to different age groups, concerning their perception of ease of use of new technologies. Differences exist among the age group 18-30 compared to the group 41-50 and the 51-65 group . Younger students consider a new technology easier to use than their older colleagues.

Exploratory Factor Analysis (EFA), with the questionnaire responses of the students on mood, to identifies if mood is one of the factors affecting the adoption of information and communication technologies. The extraction method was the Principal Component Analysis (Hair *et al.*, 2006) and the Varimax method was applied to increase the explanatory ability of the model. Effects are grouped in two factors (positive affectivity, negative affectivity) since eigenvalues exceeded 1. The selected factors accounted for 48.9% of the total variance. The KMO value was 0.725, indicating the appropriateness of using the technique for factor analysis. This appropriateness was further supported by the significant result from Bartlett's test of sphericity (x^2 = 1773.675; p<0.0001).

ANOVA analysis was further applied between groups of students and their perception of self-efficacy. Equal variances not assumed, F (1.695) =0.470 p>0.05, indicating that the hypothesis was not supported. Also, ANOVA between groups and their perception of their ease of use in adopting a new technology demonstrated, assuming equal variances, F(1.695) =0.367 p>0.05, indicating that the hypothesis was not supported.

Table 2: Factor GLoadings of mood measures

Factors	Loadings
Negative affectivity	
I feel afraid	0.702
I feel nervous	0.663
I feel upset	0.615
Positive affectivity	
I feel excited	0.714
I feel interested	0.802

The hypothesis that students' psychographic situation, represented by mood, affects the acuity of their self-efficacy and their perception of a new technology's easiness and usefulness, was not supported by the results.

KEY PARTNERS AND INITIATIVES IN ED-TECH

GOVERNMENT AGENCIES

The responsibility for designing and implementing Ed-Tech initiatives is shared across different agencies in Zimbabwe. Table 3 describes the role that different agencies are currently playing in supporting Ed-Tech.

Table 3: *Agencies with Ed-Tech roles*

Ministry/Agency	Roles and Responsibilities in Ed-Tech
Curriculum Development Unit in the Education Ministry's Curriculum Development and Technical Services Department	• Designs a new instructional system and strategies for the production of multimedia learning materials • Develops and disseminates learning resources like video programmes and computer-assisted instructional multimedia packages to schools
Centre for Educational Research, Innovation and Development	• Guides research and innovation in the deployment and use of ICTs effectively and efficiently in education

	● Facilitates the provision of up-to-date research-based data, information and practical knowledge on the use of ICTs to improve instruction
National Library and Documentation Services	● Facilitates sharing and supply of resources through access to international electronic bibliographic and information networks, databases and resources
Zimbabwe Schools Examinations Council, an autonomous examination board;	● Sets standards for levels of academic expertise including ICT
Ministry of ICT, Postal and Courier Services	● Develops, manages and maintains central government ICT infrastructure ● Facilitates the implementation of the Presidential e-Learning programmes in schools
Ministry of Information, Publicity and Broadcasting Services	● Promotes the use of ICTs

NON-GOVERNMENTAL AGENCIES

United Nations agencies, such as UNESCO, have managed Ed-Tech initiatives such as the ICT Transforming Education in Africa project from 2016 to 2019 withhe aim of increasing access through innovative solutions (e-Schools Model), facilitating the development of national ICT in education policies and master plans and strengthening teacher training and higher education systems. Additionally, organisations, such as the FBC Bank have partnered with MoPSE to provide Ed-Tech equipment that include tablets, laptops, projectors and interactive whiteboards to 20 primary and secondary schools. Established in 2000, e-learning Solutions are a private for-profit corporation that provides instructional design and interactive digital multimedia tools to schools.

ED-TECH INITIATIVES

The Government of Zimbabwe has introduced several initiatives aimed at promoting the use of technology in education over the last 10 years. These activities include: The Presidential Schools Computerisation Programme launched in 2000 from where more than 25% of schools received computers and printers: The Presidential e-Learning Programme of 2011 that aimed at

strengthening the use of ICTs for teaching and learning; The Connect a School-Connect a Community Project of 2013 that provided disadvantaged schools with modern technology; The Curriculum Framework (2015- 2022) that prepares learners for a 21st-century environment dominated by ICTs E-learning content development in schools; Teacher professional development activities carried out in partnership with various universities; Implementation of e-registration and e-marking by the Schools Examinations Council (ZIMSEC); Introduction of an Electronic Ministry Application Platform (e-MAP) used for school applications; Introduction of an electronic Institution Inspection Report used by schools to generate school reports; Introduction of an e-Recruitment platform for teacher recruitment. Some of the main challenges that inhibit the effective use of Ed-Tech in education include limited power supply; low broadband coverage in rural and remote areas; lack of equipment; limited financial resources for Ed-Tech-related programmes/ and lack of awareness and skill in effectively integrating Ed-Tech in teaching and learning content, to improve student learning outcomes.

TYPES OF EDUCATIONAL TECHNOLOGY

There are five types of educational technology: Synchronous, Asynchronous, Linear learning, Blended and Collaborative Learning (Neelakantha, 2022). Synchronous and Asynchronous are the first of the educational technology types. Learning can be self-based with the help of various resources available on the internet. Now students can learn online through distance learning programmes and Virtual Classrooms (Maddie, 2022).

SYNCHRONOUS LEARNING

Synchronous means 'existing or occurring simultaneously', which refers to discussing thoughts and information regarding certain topics with others. Some examples include online and working jointly, like face-to-face discussions, chat rooms or virtual classrooms, live teaching and feedback sessions, Skype conversations, etc. Since the students are working in groups, they widen the range of their thinking by listening to others' thoughts about the same topics. This may boost students' knowledge.

ASYNCHRONOUS

Asynchronous means 'not in real-time'. It is done mainly through blogs, emails, online textbooks, audio/video courses, hypertext documents, wikis, etc. Students can learn at their own pace. If they do not understand the lesson at once, they can read it again without falling behind in class. Through online courses, students complete their programmes while doing internships, work, or sports, or if failed, they can repeat their courses without any embarrassment of being in the same class with younger students (Neelakantha, 2022).

LINEAR LEARNING

Liner Learning is the second number in educational technology types. It is all about computer-based training (CBT), where the information about the programme is sent to students' computers, tablets or smart phones. CBT looks much like reading an online manual or book. It is frequently used in teaching static processes, like using software or completing mathematical equations. The training is similar to web-based training (sent over the Internet using a web browser). CBT is different from traditional learning as there is no classroom, textbooks or manuals. Instead, videos and animation can be included and this helps students understand the topics more precisely. Furthermore, with the help of CBT, assessments such as multiple-choice questions, drag-and-drop and others can be stored easily and recorded using online software and providing feedback/results simultaneously to users. Lastly, users get the result online in the form of a certificate. However, there are some challenges, as creating the required CBTs enyails significant resources. Sometimes, CBT may be complex to use. Also, there is no interaction between students or teachers, resulting in no exchange of thoughts and knowledge. Some examples of CBT are: training people in how to operate heavy equipment (e.g. cranes) and vehicles (e.g. aircrafts) or how to work safely in hazardous environments (e.g. oil rigs) (Edmonger, 2021).

BLENDED LEARNING

Blended Learning is a type of educational technology where students receive part of their instruction in a traditional classroom setting and part of their instruction online. This type

of learning is often used for classes that require both hands-on and online learning, such as science labs or history projects. Blended Learning can be done in person or online, and it often includes tools like video conferencing, discussion boards and wikis. Benefits include the best of both worlds, i.e. hands-on and online learning that can be used for classes that require both hands-on and online learning. However, some drawbacks include: more expensive than traditional learning, requires a reliable internet connection and teachers may need to be trained in how to use Ed-Tech tools (TV Dev Tech, 2022).

COLLABORATIVE LEARNING

Maxfield (2018) defines collaborative as 'to work with another person or group to achieve or do something". So, it is how learning is done in groups by working together. Problem-solving, learning new concepts or completing tasks are provided in groups of two or more to work together. In this way, individuals can learn through collecting data, listening to others' thoughts, rather than simply learning from the provided resources. This way, they are dependent on teachers. These different types of educational technologies are the new era for learning, where individuals need not attend classes, learning from anywhere regardless of age. Moreover, they are not only dependent on teachers to provide knowledge, but they can learn through different sources (also learning through the process of finding sources). Educational technology has come a long way in the past few years, and there are now many different types of technologies that can be used in the classroom. Each type of technology has its benefits and drawbacks, so it is important to choose the right type of technology for each class.

USING A BLOG

Paquet (2003), concurring with Jin and Lin (2022), describes the term 'blog' a log of the web or a weblog. A blog may take on many variations, but in its simplest form, it is a website with dated entries. It can be described as an online journal with one or many contributors. A blog provides a platform for individual expression. Just as important, it provides support to the individual student through reader commentary, critique and interlinking as subsequent steps. A blog may become an essential tool for the individual student in cases where there is

no strong sense of group belonging or loyalty, or there is lack of group turn-taking and communication skills (Akdim and Casaló 2023; Paquet, 2003).

BENEFITS OF USING SOCIAL MEDIA IN VOCATIONAL EDUCATION AND TRAINING

The potential benefits of using social media in education are far and wide. Research and investigation have produced both documented and undocumented evidence of benefits in education and training. These include providing a constructivist-friendly toolkit - generally acknowledged and used in online education as an effective roadmap towards successful, deep learning outcomes for students. One of the key assumptions before Web 2.0 technology was that online classrooms would serve as platforms for creating a constructivist learning environment, however, they simply served to only as transmission models of education and this was due largely to high levels of expertise required by earlier technologies (Allen and Long, 2013; Kaur and Kaur, 2023).

Another benefit is the promotion of collaborative learning that is capable of helping to create "an entire constructivist learning environment" with an online class (Seitzinger, 2006). Social media and other Web 2.0 technologies have also proven valuable in various corporate, government and institutional settings, and their adoption has been quite rapid compared to other IT technologies (Atkinson and Burghin, 2008; Shamout *et al* 2022). Implementing these tools in the vocational educational and training arena can help prepare students to use them in real-world venues.

DISCUSSION

Women are characterised as “nurturing” and influenced by social factors and environmental constraints (Gefen and Straub, 1997; Peng, Ng and Ha, 2023). They seek intimacy, support and consensus. They prefer interpersonal aspects and are good at providing service. When exploring the level of education, the findings highlighted that respondents with a bachelor's degree or above had a much higher adoption impact than those less qualified and that the higher the level of qualification, the more the impact on adoption. The education level has an impact on the three well-known factors that affect the adoption of new

technologies: perceived self-efficacy, perceived ease of use and perceived usefulness. The improved usage of new technologies comes through education. Agarwal and Prasad (1999) agreed with Shamout *et al.* (2022) in concluding that education level was mediated by perceived usefulness and perceived ease of use. Given that the world over, most of the developed countries are operating in an information-intensive age, relying heavily on information technology to acquire processes and deliver the appropriate information to students, customers and users, the level of education is important in adopting new information and communication technologies.

Students' maturity, a factor that is supposed to add wisdom to human experience, does not increase the favourable attitude toward information technology (Babcock *et al.*, 1995). Agarwal and Prasad (1999) concurred with Geet *et al* (2023) in concluding that perceived usefulness and perceived ease of use mediate the relationship between age and attitude. In 2017, the Zimbabwe's National Statistical Agency (ZIMSTAT) conducted an ICT census to document access to and use of ICT in education institutions (Zimbabwe National Statistics Agency, 2017). It also aimed to identify geographical areas with limited use of ICTs and key barriers to ICT use in education. Five out of 11 objectives in the national ICT Policy (2016) relate to ICT in education and human resources (Ministry of ICT, Postal and Courier Services, 2016). The policy articulates the aim of providing connectivity in all schools to bridge the urban-rural digital divide, and to enhance teaching and learning through the use of technology and VTCs are not exceptional.

The objectives and strategies include working with relevant institutions and government departments to develop programmes that increase ICT human resource capacity and skills; facilitating the deployment and exploitation of ICTs in the education system from primary school upwards; working with relevant ministries to include ICT training and education in schools, colleges and universities; providing equitable access to ICT-enabled education and training in all parts of the country, including disadvantaged communities; promoting e-learning and use of e-learning materials throughout Zimbabwe; making use of the Universal Service Fund (USF) to boost connectivity for

remotely located schools; facilitating the National e-Learning Programme; and encouraging, promoting and applying research and development in ICTs in society. The ICT Policy for Primary and Secondary Education (2019-2023) aligns with the Constitution, the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET), Education Act, National Policy for ICT, Education Sector Strategic Plan, and other key documents that relate to access to education and training. The vision for the ICT Policy for Primary and Secondary Education is: "ICTs being used effectively and efficiently throughout the education sector, enabling all learners to achieve their full potential and become productive responsible citizens" (Ministry of Primary and Secondary Education, 2019). Additionally, the policy states: "The Government of Zimbabwe, through the Ministry of Primary and Secondary Education, commits to the use of ICT as an enabler for education to create, promote and sustain the development of a knowledgeable, innovative and creative society that ultimately supports the national agenda of attaining a knowledge-based society" (*ibid.*, 2019).

CONCLUSION AND RECOMMENDATIONS

The provision of high-quality educational technology and education in vocational training centres is very important. Around the world, all economically advanced democracies place high value on the quality of their vocational education and training. It is increasingly recognised that policy in practice varies significantly as argued by national contexts. VTCs are important to the economic growth of the country, hence; require appropriate educational technology to redirect their path. This may be done through various legislative developments in Zimbabwe, which are: government agencies, non-government agencies and Ed Tech initiatives. It is recommended that future researchers look at the competency of teachers in the use of different types of educational technology in vocational training programmes. In Zimbabwe, there is need to carry out further studies on the competency of teachers in the use of different types of educational technology in vocational training programmes as a developing country compared with developed countries. Such studies would be most desirable as a way of addressing the pertinent problems currently bedevilling VTCs in Zimbabwe.

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