Experiences of the Twenty First Century (21st) Teachers in using digital tools in the classroom: A case of four selected Harare Region high schools in Zimbabwe

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Abstract

High quality teaching is critical for students’ success. The current generation of students demands the use of various emerging technologies such as smartphones, tablets, computers and others. The emerging technologies provide a flexible learning environment that engages students in and outside the classroom reflecting an open learning approach. In addition, mobile technologies provide opportunities for a variety of 21st century learning activities. Exposure to technology and digital tools is critical to the Twenty First Century teacher in order to produce the human capital that can fit globally in all spheres of development. It is against this background that the study aimed at establishing the experiences of the twenty first century teachers in using digital tools in the classroom from selected high schools in Harare Province in Zimbabwe. A qualitative approach and a case study design were adopted. A purposive sample comprising of 20 teaching staff was employed. Semi-structured interviews were used to elicit the needed data. The findings assisted in identifying educational technology gaps in teacher education. The findings would also assist the educational planners to come up with strategies to bridge the cited technological gaps in the teachers. More so teachers would then be assisted to keep abreast of current trends in using digital tools in their teaching.

Key words: Twenty first century teacher, educational technology, digital tools

Background to the study

Technology is already integrated in nearly everything we do and even in jobs our learners will be doing after acquiring the relevant courses. Digital education is fast moving and it’s a diverse field (Jonassen, 2000). Teaching and learning processes and training, no doubt, are heavily affected by some challenges in the digital world. The twenty-first century teacher is confronted with the current generation of students who demand the use of emerging technologies during their learning process (Jonassen, 2000). These emerging technologies provide a flexible learning environment that is suitable for both the teacher and the student in a traditional classroom and in open and distance learning settings. This brings in the aspect of blended learning. In blended learning both traditional teaching and distance learning approaches are applied during the teaching and learning process (Dornyei, 2001). Both the twenty-first century teacher and student have access to digital tools/mobile technologies such as smartphones, ipod, tablets, web-sites, web conferencing, blogs to mention but a few. Todays’ student expects the teacher to guide them to use these tools in their learning process. Hence digital tools/mobile technologies provide opportunities for twenty-first century learning activities as well as allowing channels for social collaboration in teaching and learning (Dornyei, 2001).
Access to some digital tools and internet facilities are vital to promote the use of digital tools as it cultivates an open learning approach which is the current trend in education. Digital tools enable both the teacher and the student to have a degree of independence during the teaching and learning process. Both sides experience real time situations during the teaching and learning process (Col, 2005). The digital platform requires individuals to have the digital tools, have time to use the tools and be able to navigate these tools. Inability to use these digital tools has great connotations to both the teacher and the student. The use of technologies in schools varies and is highly dependent on accessibility of the platform (Swan, 2001). Some teachers are reluctant to use the technology due to lack of time, resources or confidence in their ability to use available technology.

Statement of the problem

With the advent of the use of various digital tools in schools, both teachers and students are confronted with many challenges in the use of digital tools during the learning processes. Provision of appropriate infrastructure and digital tools promotes the use of digital tools to enhance the learning processes (Swan, 2001). Needless to say, both the teacher and student need to have adequate knowledge and skills to operate on the digital platform when tackling educational activities. It was against this background that the researcher wanted to understand the teachers’ experiences in using the digital tools during the teaching and learning process.

Purpose of the study

Twenty-first century students appear to be way ahead of their teachers in terms of the use of digital tools during the learning process (Swan, 2001). Some teachers seem to be lagging behind in their utilisation of the digital technologies in their teaching. The purpose of the study was to reveal the teachers’ experiences in using digital technologies.

Research questions

The study had three research questions:
1. What digital technologies are being used in high schools settings?
2. How are these technologies being used in these high schools?
3. What challenges are the high school teachers facing on the digital platform?

Review of related literature

Digital Tools

Digital learning tools are used in both campus-based and distance education institutions (Bates, 2005). Many learning tools are designed for asynchronous delivery and they can be incorporated into different delivery modes. Emerging digital practice includes terms such as flexible learning, blended learning, mixed-mode delivery, e-learning and integrated e-learning.

Digital Learning objectives make technology an important tool in ODL. The tools allow wide access to education. For example, the use of the web has the ability to provide two way communication and the ability to share and manipulate information using the same medium. In addition, the web provides opportunities for real communication (both synchronous and asynchronous) using the same medium that carries the learning content. Users of the web are able to access content with limited restrictions or no restrictions. The use of digital media in distance education promoted mediated learning. Therefore for the learning to be considered an autonomous, self-contained distance learning object, it would need to
provide for all functions of teaching (Fresen and Boyd, 2005). Technology has made it easy to transfer and upload standard teaching materials on the Web.

Digital tools/technologies are tools used to transfer immense information through various digital technologies (Johassen, 2000). Digital technologies are used to find, analyse, formulate, communicate and use information in a digital context using digital tools, programming tools and software applications. Thus digital technologies generate, store and process data using satellite and fibre optic transmission. In the education arena examples of some of the digital tools include computers, smart phones, tablets, emails, google drive, web sites, web conferencing as well as collaborative writing tools like blogs, social media tools and others (Kessler & Birkowski, 2010). Availability of the internet connectivity plays a critical role in using some of these tools. The internet has enabled both teachers and students to gather any information required for any topic. Internet browsers such as Firefox, Google Chrome and Internet Explorer are the most popularly used browsers (Swan, 2001).

Digital tools in the classroom increase students’ engagement and provide individualised educational plans for every student (Holmberge, 2007). In addition these tools promote communication and collaboration through social networks. The digital tools enhance visualisation and facilitate knowledge mapping. Visual learning and digital tools improve analytical skills and information gathering techniques. Thus the digital tools enable both the teacher and student to manage, gather, evaluate and synthesise information. Both the teacher and student need skills to carry out these activities and are motivated to learn. In Science subjects, students’ attitudes and confidence are boosted when they use technology. The students’ attention is caught by the practical exposure they experience when creating diagrams or graphics digitally compared to the traditional paper and pencil route (Wegner, Holloway & Garton, 1999). The use of technology in education has proven to be effective.

The availability of the digital tools varies from both developing and developed countries. Some developing countries seem to lag behind due to their socio-economic status that affect the availability of the digital tool services as well as capacity building of the users. On the whole the platform uses various forms of educational technology or e-learning platform to deliver information through text, audio, images, animation, video tapes, television, CD-ROM, computer-based learning and web-based learning using the digital tools listed above (Bates, 2005). Traditional learning seem to be dwindling due to the emerging technologies that are using short spurts of learning that engage the learner at any place and any time. There is equitable access of information to students with diverse abilities and in diverse locations. Moreover, the e-learning platform may either be synchronous or asynchronous. In synchronous learning, learners exchange ideas and information during the same time whereas asynchronous learning students may use the digital tools mentioned above allowing students to proceed at their own pace (self-paced learning). E-learning can occur in or out of the classroom.

Digital tools are tools that support social networks. The digital tools enhance visualisation and facilitate knowledge mapping. Visual learning and digital tools improve analytical skills and information gathering techniques. Thus, the digital tools enable both the teacher and student to manage, gather, evaluate and synthesise information. Both the teacher and student
need skills to carry out these activities. The use of appropriate digital tools promotes the development of problem solving behaviours which is what education seeks to address. Furthermore, digital tools promote the development of higher order skills since students are engaged in real time activities and are motivated to learn. Holberge (2007) cites that in science subjects, students’ attitudes and confidence are boosted when they use technology. The students’ attention is caught by the practical exposure they experience when creating diagrams or graphics digitally compared to the traditional paper and pencil route. The use of technology in education has proven to be effective. The internet has enabled both teachers and students to gather any information required for any topic.

Benefits of using Digital tools/technologies in the classroom

The ideal classroom should be filled with the latest and best technologies. The teacher needs to embrace technology as a regular component embedded within instruction. Today’s students embrace and crave for technology. Computerised, interactive teaching tools are motivating for learners (Dorneyi, 2001; Kessler and Bikowski, 2010). The use of Digital tools or technologies in the classroom has the following benefits:

1. Digital technologies deliver instruction - instruction is delivered to students via the various modes of delivery and the instruction to promote personalised learning. Therefore teachers need to select digital tools that that will enable them to deliver content in ways that align with individual needs and optimal learning methods.

2. Digital technologies can diagnose students learning needs - students’ responses to given educational activities can indicate students strengths or weaknesses in that particular exercise. Students are trained to use educational apps in and outside the classroom.

3. Digital technologies allow the teacher to use a variety of delivery modes - Students individual needs can be catered for. It offers a flexible and dynamic working environment with computer-based and face to face learning reflecting the blended learning approach.

4. The teacher can tailor students’ needs according to their experiences on the digital platform. For example, some subjects such science and mathematics can be understood and retained better if the teacher utilises digital teaching tools that enable students to be engaged in practical activities.

5. The platform allows collaboration and interactivity between teachers and students.

6. Digital tools foster independent practice - individuals are exposed to flexible learning and they can control their learning processes (ibid).

Challenges of the use of digital tools

According to Swan (2001); Fresen and Boyd (2005) the digital platform is affected by three categories of challenges noted as:

• Student and teacher characteristics
• Demographic variables
• Instructional design factors

Student and teachers characteristics

The twenty-first student is quite enthusiastic in using digital technologies as compared to the teacher who might be lagging behind due to the generation gap except for those teachers who are keeping abreast with new technologies.
Demographic data
The current generation of students seem to be way ahead of their teachers in educational technologies. The students tend to master these digital tools much faster than their teachers. Teachers tend to want to stick to their traditional ways of teaching and they hamper students’ progress since digital tools allow students to learn faster and at their own pace (Dorneyi, 2001).

Instructional design factors
The challenges of this nature hinge around the element of training. The teacher needs to be guided to select the appropriate tools that are relevant to specific subject areas by the instructional designers. More so, the teacher needs training in the use of the digital tools. The instructional designer, no doubt is at the centre of developing educational technologies that would be appropriate for a particular subject area. Instructional materials should be presented using appropriate technologies that ensure academic achievements of the learner. High quality teaching is critical for students’ success. The current generation of students demand the use of various emerging technologies such as smart phones, tablets, computers and others. The emerging technologies provide a flexible learning environment that engage students in and outside the classroom reflecting an open learning approach. In addition, mobile technologies provide opportunities for a variety of 21st century learning activities. Exposure to technology and digital tools is critical to the Twenty First Century teacher in order to produce the human capital that can fit globally in all spheres of development.

Holberge (2007) stated that distance learning and its relationship to emerging computer technologies has together offered many promises to the field of education. The use both electronic and print media to cater for the learner who is in the back of beyond has been highly applauded. The learners in these remote areas have to be accommodated in ODL with its multimedia facilities. ODL institutions have promised to bring education to the door step of those who are suitably qualified, willing and able to improve themselves academically, locally and globally. The convenience of time and space is a promise made by ODL. Students do not have to physically be with the instructor in space and time depending on the method used. This is an advantage for non-traditional students who cannot attend lessons at regular times due to other commitments like family or work.

Methodology
A case study design under the qualitative research paradigm was employed. This design was the appropriate design as it allowed participants to air personal views about their experiences on the digital platform. Creswell (2007; 2009) asserts that a qualitative approach enables the researcher to focus on in-depth sample selected purposefully. Hence, purposive sampling of 20 teaching staff from four selected high schools in Harare region in Zimbabwe was drawn. These schools had class time tables indicating computer lessons implying that students were receiving computer lessons. The goal of purposive sampling is to select cases which are information-rich in relation to the topic under study (Creswell, 2009). According to Creswell (2009), intensity sampling allows the researcher to focus on the required information-rich cases and this compelled the researcher to adopt the sampling criteria since it was deemed appropriate for the study. Moreso, the sample provided a better understanding of the phenomena. Semi structured interviews were administered to elicit the required data. Semi-structured interviews allowed flexibility and they also allowed the researcher to explore comments made by the participants. The participants comprised of teachers from the
selected schools and these teachers responded to either face to face interviews or emails. Their age range was 25 to 60+.

**Findings and discussion**

The study revealed that social media tools and computers were the most popular tools used. However social media tools were primarily used for social and not educational activities. On the other hand, the computer appeared to be the main platform used by both teachers and students for educational activities. The participants revealed that both the students and the teachers used computers to search for educational data, send emails to mention but a few. The following narrations from some of the participants bear witness to this point:

“I often ask my students to search for information about a particular topic.”

“My students communicate with me via email or whatsapp.”

“My students are smart. They sometimes present information that compels me to search on the Internet.”

The above narrations are a clear indication that both the teacher and student are using computer tools in one way or the other. Perhaps teachers as well as students need to have adequate skills to enable them to fully utilise both social media tools and computer tools on the educational arena.

The students proved to be more advanced in their knowledge about digital tools as revealed by some participants. Hence some participants said:

“My students sometimes help me out if I am stuck on some operations.”

“I often rely heavily on my students once I am stuck when using the social media.”

“My knowledge about social media is scanty.”

Thus, teachers seemed to be having limited knowledge on the use of social media let alone computer skills. If classrooms are to have computers, teachers should be well equipped to assist students in using computers and social media tools for educational purposes.

Some teachers were prone to sticking to their traditional ways of teaching and appeared not to be keen on embarking on the digital platform as they appeared to be lacking the necessary knowledge and skills. This is some indication of resistance to change. The digital world is here to stay and the teachers should be equipped to operate on the digital platform. Thus, the teacher appeared to be hampering students’ progress on the digital platform perhaps due their limited knowledge and skills. The above scenario indicated a knowledge and skills gap among some 21st century teachers. The teachers were experiencing varied challenges depending on their ages, and knowledge and skills. The following statements indicate the implications of varied teachers’ ages and the use of computers in schools:

“The computer age is for the young.”

“We cannot keep up with the pace of our students’ knowledge of computers.”

“My students and I love doing our educational activities using computers.”

“I use the social media to communicate with some of my students.”

The above responses reflect the knowledge gap among the teachers depending on their ages. The first two responses were from old teachers (45+) while the last two were from young teachers (25-45).

Poor infrastructure also contributed to the challenges experienced by both students and
teachers. In addition, non-availability of the digital tools was also a challenge. On the whole teachers were struggling to keep abreast of the current brand of students technologically. They yearned for intensive training on the use of digital tools for the teaching and learning processes.

Conclusions

The study was instrumental in pointing out the challenges faced by the 21st Century teachers in using the digital platform. The main challenges related to lack of adequate knowledge and skills in technological function, lack of suitable infrastructure, failure to afford purchasing the technological devices. However, despite the above challenges, the teachers were persistent in continuing to operate on the digital platform provided they received the necessary training as well as suitable infrastructure that allowed digital operations in schools.

Recommendations

The following recommendations were drawn:
1. Administrators should assist schools to have infrastructure that supports the use of digital tools
2. Teachers need to keep abreast of the technological tools
3. Internet accessibility is a must if using digital technologies
4. Schools should have websites which can be utilised by teachers, students and parents or guardians
5. Both teachers and students need to be trained in using the digital platform

References


