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USING SEARCH ENGINES IN THE TEACHING AND LEARNING PROCESS

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Abstract

It is a well-known fact that technology and electronic devices play a huge role in the globe today. Due to these advances in technology, the world is gradually becoming frontier-less and thus becoming a small village through digital media. The Internet and use of smart devices are now a trend in modernizing human culture and thus being part of the totality of ways of human life. As education is part of a society and plays a great role in shaping an individual, this research study aimed at exploring the role of Information and Communication Technology (ICT) in an education setting in Tanzania. The study explored how the inclusion of ICT played a role in facilitating the teaching and learning process in the education system. This research was taken in the form of a qualitative Action research, looking at a simple-everyday used application 'a search engine' as a tool to facilitate learning as a case. It recorded students' and teachers' perspectives on the effect of the use of technology in class as a pedagogy. In its findings, the study unveiled that a tool like Search Engines as well as the general use of technology supported and built on various education theories such as constructivism, critical thinking, active learning and differentiation when consciously applied.

Keywords

Education Theories, ICT, Constructivism, Technology, Search Engines, Action Research, Pedagogy

1. Introduction

The increase in interaction between people around the world brought by Information and Communication Technology (ICT) has resulted in the world being a village. A village symbolising the connection in terms of information transfer. Today technology is a common field that is talked about the most in media and is also a very common trend amongst various age groups.

Bringing the use of technology in the education setting is one of the ways to move alongside with time (Bruce and Levin, 1997). This means that by deploying current technology or ICT in the teaching and learning environment shows the learning environment is modern and also catering to the recent developments of the world. Using technology especially digital technology in class as a strategy to facilitate the teaching and learning process may be one of the ways to make education exciting and build student engagement (Siefert, Kelly, Lindsay, and Oliviera, 2019). To explore on this aspect and to see how technology can act as a bridge in the education setting, this study was done.

For this research study and paper, we shall define technology in the boundaries of electronic devices and gadgets in use in the current era. However, technology can generally be defined as the practical application of scientific knowledge or a branch of sciences and engineering.

This study was conducted at a religious education centre in Dar-es-salaam, Tanzania with a sample space of twenty students, thirteen years of age. Attendance to these classes is voluntary and held on a once a week basis. Most students did have access to an electronic gadget and to Internet either in class or at home but to standardize the approach and to keep in mind the minority of the students who did not have access to an electronic gadget, the teacher provided the required devices for conducting the study. These devices included laptops, smartphones and Internet connection.

As this study aims at looking more closely at the use of ICT in the teaching and learning environment, it will be vital to note that this field is vast and has multiple facets to explore. To

narrow down the topic focus, I concentrated on Search Engines as a prime focus to the study as per its wide use.

For this study, we shall define Search Engines and how was it perceived by the research sample during the study. According to Ngwuchukwu (2012) a search engine is an internet-based program that fetches and lists results of a search query. That means, a search engine (as most us are familiar with this application) is an internet-based tool or application that populates responses to a search query. The results populated may take different forms but all linked to a web-page, which was my hypothesis as well for the study.

The other mostly used key term is 'pedagogy' in this paper. Celli & Young (2017), pedagogy is a teaching approach focused on a child. In this teaching and learning process, the teacher is the one who takes responsibility for the learning process.

2. Methodology

This section briefly describes the research enquiry for this study and also the methodology used in data collection. The research enquiry mainly focused on the idea of how can a teacher consciously use 'Search Engines' as an ICT application or tool as pedagogy in class. This research aimed at elucidating information and perceptions from students and teachers on field on their conscious use of technology in the teaching and learning environment. The exact research question was 'Can Search Engines as a tool assist in the teaching and learning process?'

There are two common paradigms of conducting research as stated by Willis (2007) namely the qualitative and the quantitative approach to research. These two terms are mostly considered as the worldviews of research. The major difference between the quantitative and the qualitative approach is the type of data collected.

Briefly defining the above mentioned research paradigms, On one hand, Anderson & Arsenault (1998) define a qualitative research as an exploratory research that is used to investigate and understand underlying reasons, causes and trends on a phenomenon. The types of data gathered through this approach most often are explanatory or narrative in nature (Creswell, 1994). Data can be collected through observations, interviews and researcher notes as per experiences and participation on field. In most instances according to Hatch (2002) there is no quantification or use of frequency-based numbering involved in the reporting of data elucidated

from this research, however Silverman (2005) argues that quantification of qualitative data may be possible and can be reported as a summary in textual forms. On the other hand, quantitative research is the one that involves data that includes numbers and frequency of occurrences that mostly lead to a statistical approach of data analysis and results (Creswell, 1994).

This study took an approach of a qualitative Action research. As defined by Blaxter et al. (2010), Action research whether being qualitative or quantitative is based on a participatory research where the researcher plays a dual role in the research process. A dual role meaning, the researcher is a practitioner in the research field and makes changes to the research environment as per data collected through various interventions through a reflection cycle. In other words, Action research is also commonly known as practitioner-based research, which combines action (practice) and research as a tool for initiating change in the research setting. An example of an Action research is when a teacher-practitioner conducts a study in their classroom setting by initiating a change to the environment through interventions, such being the context in the case of my study. In my case, my intervention as a teacher-researcher was to introduce the use of ICT or Search Engines in the classroom as a pedagogy to address the research question: ‘can Search Engines as a tool assist the teaching and learning process?’

In this study, data was collected through open-ended questionnaires, semi-structured interviews and field observations (through reflection and observation notes). Data was then compiled and analysed thematically to derive the findings. In the results section, these findings will be discussed in detail.

3. Results

In this section, I shall present the various findings that emerged from the research enquiry. From the definition of Search Engines in the introduction section, there were various finding and perceptions that were uncovered during the study. These findings are discussed below.

This study revealed different perceptions of a search engine. As data was collected through questionnaires and then followed up with interviews, a few of the responses are summarized here to show various insights to take note of and that may lead one to perceive and define Search Engines better.

On the one hand, the host teacher who took part in providing her responses to this study defined Search Engines in a form of a mind-map that outlined ideas such as ‘google, an application that is time consuming, lot of information, images, click away for definitions, laptop and something linked to the internet’. On the other hand, most of the students defined and linked Search Engines in their questionnaires and interviews to the electronic devices such as laptops, mobile phone and tablets. Therefore, these findings show that Search Engines have a link to the internet and to the idea of information-hunting through the use of an electronic device. Thus, there is a slightly different understanding of the perceptions of the sample space to the commonly used definition of search-engines.

Equally important is another insight that was yielded from the data gathered was to relate and define Search Engines to teachers, books, encyclopaedia and other sources of information. That means, the research sample made an analogy of a search engine to any media that can provide information on a search query.

Thus, combining the above results, Search Engines can be defined as an information-providing tool that is available through the Internet. However, this sort of data led to a notification that some common technological words we think are familiar to the public are conversely jargons to them.

Exploring more on the results of this study, firstly this study showed a link of various educational theories to the use of search-engines. Data analysis showed that Search Engines create and build knowledge. This study revealed that research participants constructed new knowledge as well as built on previous knowledge through the use of search-engines in class. Search engines acted as a tool to scaffold students’ learning and also supported them to construct new knowledge through the results populated through their search query. There seems to be an indirect link to Vygotsky’s theory of social learning where learning takes place in social construct, where many individuals create a zone of learning for each other (Cicconi, 2014; Vygotsky, 1986). The search-engine here populated websites and results that are constructed by various individuals throughout the globe and thus through the internet each individual who has contributed to the internet has played a part in the learning process.

Secondly, the study revealed that the conscious use of search-engines as a pedagogy provides a platform for active learning and critical thinking. Active learning is deploying various strategies in involving students physically participating and their metacognitive participation in

the teaching and learning process (Bonwell, 2000; Kyriacou & Marshall, 1989; Zayapragassarazan & Kumar, 2012). Thus, by using Search Engines as a classroom activity physically involves the learners by typing-in the search query and then involves them metacognitively in making meaning and connecting to the information generated by the search query to their learning and daily life as also outlined by Kramarski & Feldman (2000) in their study.

Thirdly, the study also revealed that the use of Search Engines as a pedagogy involved students to think critically during the teaching and learning process. As per data gathered in the study, students were forced to think and use their intellectual power in creating relevant search queries, read and decide which search result is relevant towards responding to their research task and finally judging and comparing the information gathered to their prior knowledge as well as their peers' responses.

Finally, as an unexpected finding to my study, Search Engines support the educational theory of differentiation. The theory of differentiation as outlined by Heacox (2002) is the changing of the teaching and learning style to suit and to cater the different or multiple intelligences in the class as per their need in the classroom. That is to cater to audio-visual learners, artistic students (graphics or image) and those students who are better at writing. Therefore, Search Engines populate results to a search query in various forms that is text, audio-video and images.

4. Conclusion

In conclusion, this study revealed that Search Engines as one of the applications of ICT can be used in the teaching and learning environment as a pedagogy. In line with Nassim's (2018) definition of active learning tool, I may confirm that using Search Engines in the classroom is an active learning tool and fosters reflection and metacognition. The teacher's conscious use of a search engine as a classroom pedagogy does foster active learning to take place in the class. Search engines both directly and indirectly support the facilitation and serve as a practical application of the various theories in education through technology. According to Dhanani (2015), Search Engines is just one of the applications of the internet that can be used to deploy the use of ICT in class and also serve as a move to the application of the 21st century teaching and learning standards. Other tools or applications that are available through the use of

ICT include the e-learning platforms, online journals, video-conferencing applications and other such media. Finally, this research study is an on-going process and will give rise to more data and findings as technology develops and more research is done in this field.

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