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The Impact of Technology on Teaching and Learning

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بِسْمِ اللهِ الرَّحْمَنِ الرَّحِيمِ

{قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ }

[سورة الزمر: الآية ٩]

صَدَقَ اللهُ العَلِيُّ العَظِيمُ

In the name of Allah, the Entirely Merciful, the Especially Merciful

{Are those who know equal to those who do not know}

God Almighty is true

[Al - Zumar: Verse 9]

~< Dedication >~

My university journey has come to an end after much toil and fatigue...

And here I am, concluding my graduation research with enthusiasm and energy.

I am grateful to everyone who played a role in my journey, and helped me even a little.

My parents, my family, my friends, and my esteemed professors...

I dedicate my graduation research to you...

~< Acknowledgement >~

First of all, we thank Allah for his blessings...

To our distinguished professors in the Department of English ,In particular, our supervisor (Asst. inst. Muna Jabbar Shalash)

To everyone who taught us a letter in this mortal world..

Abstract

The current study examines the impact of technology on teaching and learning. Education is a diverse sector that requires adaptation to its rapid and powerful development, the use of educational applications has a significant impact on learning and teaching techniques, the technological progress witnessed by the world today has imposed significant additions to the foundations of the general educational process, including what is known as the technological foundation in curriculum design. This refers to the use of various applications and their benefits in managing and organising educational trends in various educational institutions.

The aim of the study is to use technology in education to enable students to access scientific content at any time and to be exposed to it repeatedly until they fully understand it, the importance of this topic is highlighted in the evolving puzzle of educational technology. Methodologically, this study relies on a descriptive and analytical approach.

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Introduction

With new information technology, education is fast becoming free of time and space. But every learner still needs to be connected to a scaffold of support for lifelong learning achievement, Students need parents, friends, and supervisors who are also teachers and coaches. The primary function of the school-to-work movement is to mobilise understanding and support so that students will acquire the skills, habits, values, and understandings essential to productivity in all the roles of life (Hakim et al.,2000:263).

Every day, many students are spending countless hours immersed in popular technologies such as Facebook, MySpace, World of Warcraft, or Sim City (Klopfer, et al.,2009: 1).

Technology is becoming a more prominent form of learning, With the ever-changing world of technology, teachers work hard to incorporate technology into their everyday instruction in order to connect student passion with learning. According to Today's educators are under great pressure to provide 21st century students with a quality education based on 21st century standards. Those standards include providing students with the technological and informational skills needed to compete in an ever-changing, technology-driven world (Harris ,2016: 27).

Chapter One

1.1 Concept of Education.

In layperson's language, we understand education is a "capacity that helps an individual to lead him/her from 'darkness to light' or from 'ignorance to knowledge' More specifically, education helps individuals to acquire information and knowledge; makes them conscious and adjust to different situations; and also change their behaviour from undesirable to desirable education as a process of living through a continuous reconstruction of experiences. It means the experiences are not static; rather the experiences are reconstructed, which means education helps us to reconstruct our experiences 'Education is not merely a means of earning a livelihood, not only a nursery of thought, or a school for citizenship, but it is ignition into the life of sprit and training of human souls in the pursuits of truth and the practice of virtue , Education not merely prepares individuals to earn their livelihood but also purifies their soul and mind and enables them to experience the truth and virtues of life"(Dey , 2020 : 10).

Education is the influence exercised by adult generations on those that are not yet ready for social life , In other words, the primary objective of education is to help children develop intellectual skills and improve their physical capabilities. Additionally, they should be motivated at school to acquire the moral values that are demanded by political society, because society may suffer some social problems and pay more to fix

them if we do not help children achieve these objectives (Durkheim,1956 : 71).

Moore (2010) explains education in relation to the commitment by society to have a desirable type of individual and the expected values. Thus, children may have some expected characteristics, attitudes, knowledge and skills that society would like to see. The author states that an educated man should have the desired intellectual abilities and at the same time should be very sensitive about moral matters, mathematical efficiencies and have a scientific vision and a historical and geographical perspective. When we look at society, it seems that the educational system has not been successful in training the expected educated man.

Etymological Derivation of Education the word 'Education' has been derived from the Latin words 'Educare', 'Educere' and 'Educatum'. The word 'Educare' means to 'nourish' or to 'bring up'. The word 'Educere' means to 'lead forth' or to 'draw out'. The word 'Educatum' is composed of two terms, i.e. 'E' and 'Duco'. Here 'E' means, a movement from 'inward' to 'outward' and 'Duco' means 'developing' or 'progressing, When we analyse the above etymological derivations, we can infer that 'Education' nourishes or brings up the children for complete development of their personality. 'Education' can lead them from ignorance to knowledge. Further, 'Education' helps them develop and express their inward abilities(Dey , 2020 : 11).

1.2 Concept of Technology.

The concept of technology plays an important role in the economic and social change of human societies, Hickman (2001) claims that technology is a central feature of the human-nature, and human-human, suggests that technology is a set of techniques, in particular as inquiry into techniques, tools, and artefact's in which techniques are habitual and traditional ways of dealing with things. According to technology can be understood as the intelligent production of new tools, including conceptual and ideational ones, for dealing with problematic situations(Hickman , 2001 : 40 - 183).

According to Kumar et. al (1999: 81 - 96) technology consists of two primary components: 1) a physical component which comprises of items such as products, tooling, equipments, blueprints, techniques, and processes; and 2) the informational component which consists of know-how in management, marketing, production, quality control, reliability, skilled labor and functional areas.

The earlier definition by Sahal (1981:2-24) views technology as 'configuration', observing that the transfer object (the technology) relies on a subjectively determined but specifiable set of processes and products,The current studies on the technology transfer have connected technology directly with knowledge and more attention is given to the process of research and development (Dunning, 1994:67 - 88).

By scrutinising the technology definition, there are two basic components that can be identified: 1) 'knowledge' or technique; and 2) 'doing things'. Technology is always connected with obtaining certain result, resolving certain problems, completing certain tasks using particular skills, employing knowledge and exploiting assets (Lan and Young, 1996: 227).

The concept of technology does not only relate to the technology that embodies in the product but it is also associated with the knowledge or information of it use, application and the process in developing the product (Bozeman, 2000: 627-655).

Tepstra and David (1985) suggest that technology as a cultural system concerned with the relationships between humans and their environment.The etymology of the term "technology", It comes from the Greek technologia, which refers to the systematic treatment of an art or craft . The root techne "combines the meanings of an art and a technique, involving both a knowledge of the relevant principles and an ability to achieve the appro- priate results" (Wheelwright, 1966 : 328).

In other words, "technique" in- volves the practical skills of knowing and doing. The root logos has wider meaning, including argument, explanation, and principle, but its most relevant use is probably "to reason"Technology, thus, encompasses reasoned applica- tion. Technology, however, has always meant more than abstract study

because of the emphasis on application, or doing, although the French use of the term "implies a high degree of intellectual sophistication applied to the arts and crafts" (Hall, 1978: 91).

The French, in fact, are more precise in their defi- nition and use two terms. "Technologie" is used to refer to the study of technical processes and objects, and the term "technique" refers to the individual technical means themselves, the actual application processes (Willoughby, 1990).

Figure 1.1Technology and Education

1.3 Concept of Educational Technology

Education technology, or "ed tech," refers to the introduction of information and technology tools in teaching and learning. Ed tech has long been heralded as a potentially game-changing "disruption" for school systems (Christensen, Horn, & Johnson, 2011: 18).

This is in part because of its comparative advantages, relative to traditional "chalk-and-talk" classroom instruction. It can, among other things, scale up standardised instruction, facilitate differentiated instruction, expand opportunities for practice, and increase student engagement (Banerjee et al., 2007: 1235).

Recent advances in artificial intelligence and machine learning, and the novel coronavirus, which caused school closings affecting over 1.5 billion students worldwide, have only intensified calls for increased use of technology in education. However, in spite of the relentless optimism that has characterized the movement for education technology, its results have been mostly disappointing (Tauson & Stannard, 2018: 37).

Most notably, evidence from randomised experiments, which are designed to estimate the causal effect of programs and policies, suggests that merely equipping a school or a student with hardware (e.g., tablets, laptops, or desktop computers) has had little effect on student learning-

and, in some cases, has distracted students from schoolwork (Beuermann et al., 2015: 53-80).

Educational software that allows students to practice what they learned at school has been slightly more successful, but it has largely had modest effects (zhanng et al., 2015: 562). In short, the potential of education technology has not yet been realized.

Figure 1.3The advantages of increasing the use of technology in education.

Chapter Two

2.1 Online learning platforms and teacher efficacy

2.1.1Fine Motor Skills:

With more integration of technology, the effect it has on fine motor, Teachers "encourage their students to do at least some writing by hand...because they feel students do more active thinking, synthesizing, and editing when writing by hand, and writing by hand discourages any temptation to copy and paste others' work" (Purcell, et al.,2013:6)

Due to social media, students are able to write collaboratively, share their work with more people, and be more creative in their writing, indicate there are indeed specific differences in basic fine motor skills depending on the amount of time spent typing and handwriting texts, Their study does not only focus on handwriting but fine motor skills in general,Computer use also has in impact on major behavioral requirements(Sulzenbruck, et al, 2011: 250).

2.1.2 Motivation:

As teachers, it is our number one priority to motivate students in their learning, The more motivated students are to learn something new, the more likely the student is to retain the material,Research shows that while growing up in the ever-growing technology world, the incorporation of technology helps motivate students to learn.For example, Schaen, et al.

(2016), discuss a project they conducted that allowed third grade leaders and first graders to work together and create an app that will allow kindergarteners to practice math strategies. This weeklong project allowed students to use technology, collaborate, and teach. Shaen, et al. study discussed the process that the students went through and the outcomes of the project. This technology enhanced project motivated students who wanted to continue building and working at home. "The project gave young students a real-world purpose for planning and creating collaboratively(Shaen, et al.,2016:509).

Millar (2013) focuses on motivating students in the classroom and how this can be a difficult task. Using technology is like giving each student their own smart board They can show what they know, and teachers can be comfortable knowing learning is occurring. The use of technology allows all students the opportunity to participate,It's hard to be honest when you have to put your hand up in front of the room(Millar , 2013:3).

Heafner (2004) discusses how technology allows students to search and find information easily and has helped them understand what they were talking about in class This supports the learning happening in class. They feel proud to share their work and knowledge mastered via technology. Students also feel confident in using technology and

completing tasks. The confidence helps them establish motivation in their learning(Heafner ,2004: 22).

2.1.3 Expanding Learning :

Integration of technology can best help students in expanding their learning , Klopfer, et al. (2009) discussed how students are growing up and are completely normalized by digital technologies,The study explained that "many students in this group are using new media and technologies to create new things in new ways, learn new things in new ways, and communicate in new ways. with new people-behaviours that have become hardwired in their ways of thinking and operating in the world(Klopfer, et at.,2009: 2).

While there is much resistance to incorporating technology, there are countless examples of these technologies demonstrating their educational value to other industries, confirming the powerful learning opportunities and advantages they afford undoubtedly, without these recent technologies (i.e. digital games, Web.., etc.) in the classroom, strong lessons can still be achieved, but there's a sharp disconnect between the way students are taught in school and the way the outside world approaches socialization, meaning-making, and accomplishment"(Klopfer, et at.,2009: 3).

Technology is a powerful tool for students, They emphasized collaborating with one another and incorporation of blended. learning, as well as information and communication technologies (ICT), "ICT refers to technologies that provide access to information through telecommunications, In using ICT in education, teachers are able to familiarize themselves with technology and some of the issues that arise(Shivakumar and Manichander , 2013: 21).

2.2 Educational Apps

That educational applications improve instructors' performance. According to a study, teachers who used educational apps could give more personalised and differentiated instruction, increase students' enthusiasm and engagement, and improve student outcomes.(Arslan , 2021: 460 - 479).

Kathy (2015) defines the potential educational benefits of present and future apps and research into how students learn best. He abstracts a set of principles to achieve two ultimate goals. First, to guide researchers, educators, and designers in developing evidence-based apps. Second, by creating an evidence-based guide and establishing a new standard for evaluating and selecting the most effective existing students apps and designing and using educational apps that align with known processes of students learning and development, we provide a framework that both parents and designers can use. Educational apps promote active, engaged, meaningful, and socially interactive learning-the four "pillars" of learning-within the framework of a supported learning goal(Kathy , 2015: 34).

2.2.1 The Displacement Hypothesis:

In the early phases of technological development, the displacement hypothesis was developed (Hassinger-Das et al., 2020), The hypothesis

claims that television displaces other, much more enriching activities, such as reading books and socializing. While studies at the time did not find any evidence for such displacement, the displacement hypothesis has once again gained prominence due to the increased use of media the last 15 years: "We now have screens that we carry everywhere, and they may be more likely to displace parent-child interaction or simply students time being bored and finding ways to entertain themselves" (Hassinger-Das et al., 2020: 3).

Findings, however, are mixed regarding the negative effects of screen time. Interestingly, (Hassinger-Das et al., 2020) suggest that the problem is not digital media per se but the way it is being used, There is a mismatch between the findings of child development researchers and new digital medias of app developers, While developers prioritize marketing, researchers prioritize quality development (Hassinger-Das et al., 2020: 4).

2.2.2 The Four Pillars of Learning:

A new field of study, the Science of Learning, has knitted together subfields of psychology, computer science, linguistics, animal behavior, neurobiology, machine learning, brain imaging, and other areas. They ask not only what students should be learning, but also how they should be learning to better learn necessary strategies to cope in a 21st century world (Hirsh-Pasek et al., 2015:3).

The Science of Learning further examines how this knowledge can be used in classroom practices as well as at home, and how to incorporate digital media (Hassinger-Das et al., 2020:6).

Importantly, the Science of Learning has introduced four pillars of learning which will be further explained in the following sections. This is not to say that learning cannot happen if we exclude on or more of these pillars, however, literature suggest that these pillars are important conditions for more effective learning (Hirsh-Pasek et al., 2015: 10).

2.2.2.1 Active Learning:

students learn best when they are actively involved in their own learning, that students must be 'minds- on' to qualify as active learners in accordance with the active learning pillar. Minds-on apps require thinking and intellectual manipulation from the user. It is not enough to simply swipe or tap. Tapping to make something disappear simply for the fun of it is 'minds-off', while tapping to make a word or a picture disappears because it does not belong, is minds-on (Hirsh-Pasek et al., 2015: 11).

The level of 'control' is also an important factor for active learning. There must be an appropriate level of control depending on factors such as age and experience, students must be allowed to proceed at their own pace to sustain interest. This is one of the many advantages with tablets contra computers: touch-screen apps are more controllable by students of

almost any age depending on design compared to a computer mouse or a keyboard (Hirsh-Pasek et al., 2015:12).

2.2.1.2 Engaged Learning:

Students learn best when they are engaged in the learning material. Engagement is crucial for learning as it predicates an individual's ability to stay 'on task' , found that students were distracted when reading a pop-up book, "Even when extra features were designed to call attention to a specific learning goal (e.g., letters in an alphabet book), students learned best when they were able to stay on task using a simpler version of the book" (Hirsh-Pasek et al., 2015:16)

It is necessary to design an app where the environment can be seen as a helping hand rather than a distracting obstacle. It is all about hitting the 'sweet spot' between being accessible and challenging, to promote engagement and help the learner stay on task and reduce distractions. The content cannot be too familiar or too challenging. This is known as the traveling lens model of viewing (Hirsh-Pasek et al., 2015:17).

2.2.2.3 Meaningful Learning:

Students learn best when the content is presented in a way that connects to existing knowledge the students might have and relates to their lived experiences. According to Hirsh-Pasek et al. (2015),

meaningful learning takes many forms, including learning with a purpose, learning new material that is personally relevant, and linking new learning to preexisting knowledge, It is very important to distinguish meaningful learning from rote learning, where new information does not link to existing knowledge, and thus often fades from memory (Hirsh-Pasek et al., 2015: 20).

Some apps are considered more meaningful than others, For instance, apps that require students to engage and solve problems as part of a larger game narrative may be more successful than other game apps where the challenges are not integrated into the game's narrative or larger context (Hirsh-Pasek et al., 2015:21).

2.2.2.4 Socially Interactive Learning:

Students learn best when they interact with other people, such as educators, peers, and caregivers. However, having a social partner alone is not enough. The interaction must be of high enough quality and cannot detract from the learning situation, Social interaction allows young students to observe and imitate others, which may promote learning in how events typically unfold. Furthermore, social interaction impacts students understanding in school, collaborative learning seems to be beneficial for critical thinking skills (Hirsh-Pasek et al., 2015:26).

Hirsh-Pasek et al. (2015) has proposed three ways in which app design can incorporate the potential educational benefits of social interactions: First, there should be more real life, face-to-face interactions with multiple students around and further away from the screen, The second proposal is to socially engage students in mediated interactions. through technologies such as screen-sharing apps or video-apps like FaceTime. And third, the design should develop a par asocial relation between the child and the on- screen characters. This would imply a one-sided relationship where the child becomes attached and invested in the on-screen character, much like the relationship many would have with celebrities. This can be done by designing the characters to be more realistic for a two-way interaction. For instance, Dora the Explorer from the TV series could potentially be a great character and would have a larger potential with apps than TV where the students can respond to her questions(Hirsh-Pasek et al., 2015:31).

Chapter Three

3.1 online learning platform

One of the main aids of modern education is given by online learning platforms, which are developing rapidly ., such platforms include tools for edutainment creation, development, organisation, and delivery; and interaction functionality through forums, chat rooms, or video-conferencing. As developments continue to advance in ICT, online learning platforms offered via them are becoming more flexible, and inclusive, but diversified at the same time a variety of multimedia, including different interactive components, are readily available to those who may need them and this might entail something beneficial for learners who have different preferences and internal or external needs (Chen et al., 2012: 1165).

The effectiveness of academic achievement in online learning is measured both quantitatively through grades, test scores, and completion rates and qualitatively through student satisfaction and engagement(Juty,2024: 7).

Proper use of modern technology and appropriate design of instructions could achieve recommended outcomes, and learning online could amount to learning in face-to-face arrangements (Irwin, 2007:453).

Across almost all implementations, the outcome of online learning is very varied. While online e-learning platforms are being used in

developing countries, the implementation of online distance-learning platforms in developing countries has generated excitement as well as skepticism. Wagner argued that access to higher education would be increased and the quality of education improved, whereas Selwynes counter that the major challenges range from infrastructural limitations and cultural norms to the digital divide. According to Kozma, online resources could enhance the quality of student learning outcomes, particularly in low-resource areas but the poor infrastructures of the developing nations did not support constant use (Juty,2024: 8).

The success of online learning models would rely on whether the local community has considered the online option, This includes having the instructors exposed to the utilisation of the tools and model and having the teachers included in the curriculum to boost the online learning mode knowledge rather than complete implementation (Juty,2024: 8).

3.2 E-Learning

Today's expeditiously environment and continuous changes in technology, the emergence of sophisticated teaching and learning tools and systems have the most remarkable positive developmental impact on the way students learn, communication of the information to the students, and the design and format of the syllabus (Al-Khalifa 2010:15).

The modern trends in education technology have led many universities to utilise online learning (e-learning), which largely depends on the utilisation of the Internet and computers for teaching and learning processes, e-learning depending "modern technologies to deliver students' learning content effectively with positive characteristics"(Al-zabun ,2015: 70).

These positive characteristics include saving more effort, time and economical cost; and promoting and improving student learning Furthermore, Al-Rifaee (2018) states that e-learning also "provides an exciting and inspiring learning environment which is stimulating for teachers and students, as the determinants of time and space are eliminated in addition to allowing students to learn in light of their capabilities and scientific abilities and levels of knowledge" (Al-Rifaee ,2018: 30).

In all aspects of people's lives, the uprising of the information superhighway and telecommunication technologies has had influences (Eljinini et al, 2012: 76).

Alruwais, Wills and Wald (2018, 34) also emphasised that "information and communication technology has been an assistance tool in education for a long time".

Therefore, the rapidly changing trends and developments in the field of technologies have forced the universities to change the visions of their educational programs offered to the students, in order to stay relevant, as "e-learning is becoming one of the teachings and learning standards in many universities" (Eljinini et al., 2012: 76).

Within the current digital age, the higher education institutions experiencing numerous impediments in the provision of effective teaching and learning practices, Some of the obstacles affecting teaching and learning include socio-economic factors, infrastructure shortage, technology instability, technological cost, lecturer efforts, lack of online learning culture, students' vexation with online learning, inadequate ITC skills and students' under-preparedness for higher education learning institutions (Venter et al. , 2012: 183).

While such obstacles exist, the facilitators within the education institutions are being "challenged to utilise digital technologies in the

education setting to effectively facilitate deliberative events in whichstudents can critically engage with one another" (Wankle 2011, 3).

According to Kilfoil (2015:4) "learning with technologies has a pedagogical focus, whereas learning technologies focuses more on the technology itself".

To ensure that there is meaningful teaching and learning taking place through e-learning, alignment of learning tasks with learning outcomes and teaching strategies must take into account the students' previous understanding and capabilities, and the technologies accessible to the students (Ng'ambi, Bozalek, and Gachago 2013).

3.3 Online assessment

Assessment is crucial as it has a substantial influence on learning, and it is at the core of formal education (Gikandi et al. 2011: 2333).

On the other hand, Crews and Curtis (2010, 868) indicate that "assessment and feedback form a significant part of practitioners' workloads which, with increased numbers, reduced budgets and learner expectations remains to be a matter of concern for several teaching. To afford students with opportunities to validate their emerging abilities and get the necessary assistance to enhance learning, therefore, the processes of teaching and learning are bound to be assessment-centered" , For the past decade, studies on the online assessment and blended learning have grown rapidly (Zuckweiler 2012:6 - 8).

Pachler et al. (2010, 716) utilised the term "formative e-assessment, which they defined as the use of ICT to support the iterative process of gathering and analysing information about student learning by teachers as well as learners and of evaluating it concerning prior achievement and attainment of intended, as well as unintended learning outcomes".

Effective amalgamation of formative assessment in online learning environments has the prospective to offer a suitable organisation for continuous significant collaborations among students and the lecturer and

nurture the development of effective learning communities to enable evocative learning and its assessment" (Baleni ,2015: 229).

Online assessment and learning can have distinct forms, such as digitising paper-based systems, automatic administrative procedures, and setting online assessments. Online assessments provide numerous advantages to both students and academics. Amongst others, this includes providing instant feedback, assisting the academics to enhance the standard of critique or criticism for the students, and allowing education institutions to overcome save resources such as time, paper, photocopying and ink(Alruwais et al., 2018: 34- 37).

Nevertheless, online assessment in higher education also has various challenges have highlighted the following challenges in the implementation of online assessment such as : students' lack of experience with the educational technologies; accessibility of computer and internet; poor technical infrastructure development, especially in developing countries; strenuous in recording and modifying questions with open student response such as explaining things; certain facilitators being unacquainted with technology, or the majority of them using online assessment for the first time; and lack of institutional support for educational technologies (Way,2012: 140).

The students' perceptions, experiences and fulfilment with assessments conducted online are connected to several learner achievement factors such as self-regulation, time management, self-evaluation and prompt feedback on performance, amongst others (Kauffman ,2015: 2650).

Conclusion

Technology has a significant impact on educational development, Educational technology is an innovative integration of digital tools and technological resources within the teaching and learning process.

If technologists are encouraged in classrooms through free in-service training and seminars, learning will become fun, authentic, sustainable, and motivating, This will reduce teachers' classroom efforts and stimulate learning.

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