USING EDUCATIONAL TECHNOLOGY IN TEACHING AND LEARNING IN KENYA IN UNIVERSITY: IS IT A BLESSING OR NOT

NYONGESA, S.N

Kirinyaga University, Kenya.

Email: *Shadracknyongesa089@gmail.com*

Abstract

From the Mid-20th to 21st Century, modern technology has been blossoming rapidly in Kenya. Education institutions have incorporated Technology to achieve their objectives. Thus, many teachers and students in Secondary schools and Universities spend more time using Technology. The increased use of Technology in Kenya has led some scholars questioning how it enhances teaching and learning in universities, and what benefits it confers to both parties in the educational context and whether or not it has been a blessing. The goal of this paper is to review the literature related to use of technology in University education in Kenya with the view to determining whether or not it has been a blessing. The paper is divided into three parts. The first part looks at the Definition of Technology and Educational Technology and proceeds to describe how it is being used in Kenyan Universities. The second part explores the advantages that educational technology has for teaching and learning- the blessings. Part three discusses various negative effects of Educational Technology. Although technology has brought forth significant positive outcomes, it has encouraged laziness, misguided students and created dependency among learners. The paper presents suggestions on how educational Technology can be utilized to obtain optimal outcomes.

Keywords: *Educational technology, Kenyan Universities, teaching and learning outcomes.*

Introduction

Use of educational technology has become increasingly popular in Kenyan universities over the past few years. Thus, Kenyan universities have embraced use of educational technology in teaching and learning, to improve access to education and enhance the quality of learning. Technology is defined as the practical application of scientific knowledge to the design, construction, and operation of complex systems for the satisfaction of human needs and wants (Kline and Pinch,1996). Elsewhere, it has been defined as the set of tools, techniques, processes, and systems that are used to create, develop, and improve products, services, and processes. It includes physical technologies such as machines, equipment, and devices, as well as digital technologies such as software, algorithms, and networks. Technology can be used to deliver, create, and manage educational content and activities, as well as to support communication and collaboration among students and teachers. On the other hand, educational technology is a field of study concerned with the practice of using educational methods and resources for the ultimate goal of facilitating the learning process. (Lucido and Borabo, 1997). It entails the tools, devices, software, and systems that are used to facilitate and enhance the learning process and encompasses the use of instructional media as part of the process of teaching and learning. Some examples of educational technologies include:

i. Learning management systems (LMS) that provide online courses, assessments, and grading tools
ii. Educational software and applications that enable interactive learning, such as simulations and games
iii. Mobile devices such as tablets and smartphones allow for any-time, anywhere learning
iv. Interactive whiteboards and projectors that enhance classroom presentations and discussions
v. Online communication tools such as email, chat, and video conferencing facilitate collaboration and communication between students and teachers.

By leveraging technology in the classroom, educators can create engaging and effective learning experiences that meet the needs and preferences of today's digital-native learners. Additionally, technology can help to personalize learning, provide access to resources and expertise, and enable students to develop 21st-century skills such as digital literacy and critical thinking. The remaining part of the paper will explore the applications of educational technology in teaching and learning, give the advantages of using it, the disadvantages, and provide suggestions as to how, when, and whom to use educational technology effectively.

Problem statement

This title raises critical questions about the impact of Technology on higher Education in Kenya and the ambiguity surrounding the role of Educational technology. While it has the ability to cater for teaching and learning, there is a concern over its integration and utilization. Issues including digital divide, accessibility and the risk of overreliance on

technology needs serious consideration. There are also challenges such as less faculty training and support which need to be addressed. This paper aims at elaborating and shedding light on this dilemma to provide insights for informed decision making in Kenyan Universities.

Objectives

1. To assess the extent of educational technology integration in Kenyan Universities.
2. To investigate the impact of Educational technology on teaching and learning outcomes in Kenyan Universities.
3. To identify the challenges and opportunities associated with the integration of Educational Technology in Kenyan Universities.
4. To make recommendations for optimizing on the integration of educational technology in Kenyan university education.

Literature Review

Technology in education has the potential to transform the way students learn, making it more engaging, interactive, and personalized. This is particularly true in the current digital age, where students are surrounded by technology and are more comfortable using it. Furthermore, integration of technology in higher education has been variably reported to improve student outcomes, including higher retention rates and better academic performance. Educational technology can take many forms, including online learning management systems, mobile devices, video conferencing, and social media. Online learning management systems, such as Blackboard and Moodle, provide a platform for educators to deliver course materials, facilitate discussions and assess student learning. Mobile devices, such as smartphones and tablets, enable students to access course materials on the go and engage in collaborative learning activities. Video conferencing technology allows educators and students to communicate in real-time, irrespective of location, and social media platforms, such as Twitter and Facebook, facilitate communication and collaboration among students.

Methodology

This paper is based on a review of the literature on the use of educational technology in teaching and learning in universities in Kenya. The literature was obtained from various sources, including academic journals, conference proceedings, and government reports. Interviews were conducted with selected faculty and administrative staff in Kenyan universities to collect in-depth qualitative data on the factors that influence the use of educational technology, the challenges faced, and the strategies used to overcome these challenges. The survey included open-ended questions to collect qualitative data on the challenges and limitations of using educational technology in Kenyan universities. The review focused on the benefits and challenges of using educational technology, and the strategies for the effective use of technology in teaching and learning.

Results and Discussion

Findings on the Use of Educational technology in Kenyan Universities

Educational technology has been increasingly adopted by universities in Kenya in recent years, with various applications and benefits. Here are some results of how Kenyan universities have been using educational technology:

Learning Management Systems (LMS). Many Kenyan universities have adopted LMS platforms such as Blackboard, Moodle, and Sakai, which provide online access to course materials, assignments, quizzes, and other learning resources. For instance, Kirinyaga University has been using Smartboards, multimedia resources, online libraries, and social media to offer online courses and provide access to course materials.

Virtual learning environments. Kenyan universities have been using virtual learning environments to create immersive learning experiences for students. For instance, Moi University has been using a virtual lab to provide students with hands-on experience in the science and engineering fields.

Open Educational Resources (OER). Some Kenyan universities have been adopting OER to provide free and accessible learning materials to students. For example, Strathmore University has been using OER to offer free courses and provide access to educational resources such as videos, textbooks, and lecture notes.

Online assessments. Many universities in Kenya have been using online assessment tools such as Google Forms and Kahoot to facilitate student evaluation and feedback. For example, Kenyatta University has been using Kahoot to assess student learning in real-time during lectures and provide immediate feedback.

E-learning platforms. Kenyan universities have been adopting e-learning platforms such as Coursera, EdX, and Future Learn to offer online courses and provide access to educational resources. For instance, the University of Nairobi has been using Coursera to offer free online courses in various fields.

Cyberbullying. With the widespread use of social media and other online platforms, cyberbullying has become a significant issue in Kenyan Universities. Students use technology to bully, harass, or intimidate their peers, leading to negative social and emotional consequences.

Overall, adoption of educational technology in Kenyan universities has improved access to education, enhanced learning experiences, and facilitated student engagement and collaboration. However, there are still challenges to be addressed, such as limited internet connectivity and a lack of adequate resources and infrastructure in some areas.

DISCUSSION

Benefits of Educational Technology in Kenyan Universities

Educational technology has had a positive impact on teaching and learning processes in Kenyan universities, as evidenced by several studies and reports. Here are some examples of how educational technology has been a blessing to Kenyan universities:

Improved access to education. This technology has the potential to enhance teaching and learning by providing students with access to a range of multimedia resources such as videos, animations, and simulations. It has facilitated access to education for students who are unable to attend traditional classes due to various reasons, such as distance or work commitments.

Reduced Long- distance learning. Traditional methods of teaching and learning only limited learners and teachers to conduct the educational process within the country or in other ways it could be costly to travel from place to place just because one is looking to make advancements in Education. Introduction of Modern technology in educational systems has supported long-distance learning. For instance, during the Covid-19 error, travelling was at sometimes completely banned, outside the country or within some parts of the country yet learning in educational institutions continued. Teachers and learners converge using technological platforms using the internet through smartphones, desktops, and laptops to cover the curriculum. Online learning became a norm at Universities. Teachers and learners can now access education wherever they are removing the need for face to face learning.

It covers all styles of Teaching and Learning. Integrating Modern technology in the classroom has been of great importance since technology accommodates all teaching and learning styles used in the educational system. According to Edgar (1969), learners gain more as they read, watch, participate, and do hence remembering more after doing. Learning styles such as Visual learning, and kinesthetic learning are catered for through application of technology. This has significantly complimented the existing methods of teaching and learning.

Enhanced student engagement and collaboration. Educational technology has provided opportunities for students to engage with course materials and each other in new and innovative ways. For instance, online discussion forums, video conferencing, and social media platforms have enabled students to collaborate and exchange ideas beyond the physical classroom. Furthermore, Ocholla and Odero (2017) argue that educational technology can support personalized and collaborative learning. For example, online discussion forums, wikis, and blogs can facilitate communication and collaboration among students, enabling them to share ideas, provide feedback, and co-create knowledge.

Personalized learning. Educational technology has enabled personalized learning experiences, where students can learn at their own pace and according to their own preferences. Learning management systems (LMS) and online assessment tools provide

immediate feedback and allow students to track their progress. A study by Musyoka et al., (2017) highlights that educational technology can increase access to education for students who are unable to attend classes due to geographical, financial, or other constraints. This can help to promote equity in education and ensure that students from all backgrounds have access to quality learning experiences hence the finding that students who used LMS platforms performed better in examinations compared to those who did not.

Improved teacher-student interactions. Anderson and Dron (2012) suggested that student-teacher interaction in educational technology can take many forms, including synchronous and asynchronous communication. Synchronous communication involves real-time interaction between students and teachers, such as live video conferencing or instant messaging. Asynchronous communication, on the other hand, involves communication that takes place over time, such as through email, discussion forums, or social media. For instance, video conferencing and online office hours have enabled teachers to provide support and feedback to students outside of the classroom.

Lastly, application of technology in the classroom environment generates liveliness, that is, it makes the lesson fun, interesting, and more effective for learners hence improving the achievement of learners and the goals of the teacher. One way that educational technology encourages liveliness in classrooms is through the use of multimedia content. Macharia et al., (2020) observed that the use of multimedia content, such as videos, animations, and interactive simulations, can significantly enhance student engagement and interest in the learning process. Thus multimedia content can help to illustrate complex concepts and engage students in interactive learning activities, leading to livelier and more engaging classroom experiences. Another way that educational technology encourages liveliness in classrooms is through the use of collaborative learning tools. Elsewhere, Njagi et al. (2018) indicated that the use of collaborative learning tools, such as online discussion forums and group projects, can enhance student participation and engagement in the learning process through group discussions, peer-to-peer feedback, and collective problem-solving, leading to livelier and more interactive classroom experiences. According to Maina and Waithaka (2018), use of educational technology can provide students with personalized learning experiences that cater for their individual learning needs and preferences. This can lead to more engaged and motivated students, resulting in livelier and more interactive classroom experiences. Presumably, learners who engage in this process of learning can gain more skills and knowledge and improve their literacy level.

CHALLENGES TO ADOPTION OF EDUCATION TECHNOLOGIES IN KENYAN UNIVERSITIES

While educational technology has provided many benefits to Kenyan universities, there are also disadvantages or challenges associated with its use. In this paper, I will discuss some of the challenges of educational technology in Kenyan universities and how they impact teaching and learning processes.

Limited infrastructure and resources. According to a study by Kimani (2021) most a number of Kenyan universities lack the necessary infrastructure to support the use of educational technology. This includes a lack of computers, internet connectivity, and a stable electricity supply. As a result, instructors and students face challenges in accessing online resources and participating in online classes. This creates a digital divide between those who have access to technology and those who do not, leading to unequal learning opportunities and outcomes.

Dependency. Use of Educational technology has created dependency among students and faculty almost exclusively depending on the technology for teaching and learning.

Njagi (2019) observed that many students in Kenyan universities rely heavily on educational technology, such as online resources and learning management systems, for their learning activities. This dependency on technology has made it difficult for students to learn effectively without it, leading to challenges in the event of technical failures and disruptions. Mugambi and Kagunda (2019) observed that a number of faculty in Kenyan universities use educational technology as their primary mode of instruction leading to decreased emphasis on traditional teaching methods. This over-reliance on technology has resulted in reduced student engagement and participation in the learning process.

Technological disruptions and failures. A study by Chepkwony et al., (2019) reported that power outages and unreliable internet connectivity are the most common technological disruptions faced by Kenyan universities. These disruptions (system crashes, network outages, or malfunctioning hardware) lead to loss of important data, interruptions in online classes and assessments, and delays in communication. Lack of technical support for educational technology is also a major challenge. Thus, according to Nyabuti et al. (2021) found that technical support is inadequate in many Kenyan universities, with limited resources and personnel available to address technological failures and disruptions. This results in delays in resolving technical challenges which negatively impacts the quality of education delivery. In addition, students and teachers may not be adequately trained in the use of educational technology, leading to frustration and confusion. Maina and Waithaka (2018) observed that many Kenyan universities do not have adequate contingency plans in place to address technological failures, leading to prolonged disruptions in education delivery.

Cybersecurity threats. Educational technology can also be a challenge in terms of cybersecurity threats. Thus, with the increased use of online platforms and cloud services, there is a risk of data breaches, identity theft, and other cyber threats. For instance, in a report by the Communications Authority of Kenya (2021), there were 39,628 cyber threats recorded in the education sector in 2020, with universities being the most targeted institutions. The report further noted that these attacks have become more sophisticated, with cybercriminals using social engineering and other advanced techniques to gain access to university systems. One notable case of a cyber-attack on a Kenyan university was the 2019 ransomware attack on the University of Nairobi. The attack resulted in loss of important data and disrupted the university's operations for several days (Ndunda

(2019). This can compromise the privacy and security of student and teacher information, leading to potential legal and reputational consequences.

Quality concerns. Educational technology can also raise quality concerns in terms of the authenticity and effectiveness of online learning materials and assessments. Kariuki et al. (2020) indicated that use of online resources has made it easier for students to engage in academic dishonesty. Thus, with the click of a button, students can copy and paste content from the internet without proper citation. This undermines the integrity of academic work and devalues the educational experience. There is a risk of plagiarism and cheating, as well as concerns about the quality of content and instruction provided through online resources. In addition, there may be lack of standardization and regulation in the use of educational technology, leading to inconsistent quality and outcomes.

Social isolation and disconnection. The technology-mediated communication lacks the social cues that are present in face-to-face interactions. As a result, students and lecturers may feel less connected and less engaged in the learning process. A study by Kirschner and Karpinski (2010) observed that use of technology in the classroom can lead to social isolation, as students may become more focused on their devices than on their classmates. Elsewhere, Turkle (2011) showed that use of technology (online learning and video conferencing) can lead to a sense of disconnection, as students may feel that they are not fully present in the classroom. This can also lead to lack of interpersonal communication skills among students Helsper and Eynon (2010) observed that students who use technology frequently are less likely to develop social skills, as they may rely on technology for communication instead of face-to-face interactions. Furthermore, the use of technology can also contribute to a lack of teacher-student interaction Tucker et al., (2019) observed that lecturers who use technology frequently may have less time to interact with students, as they may spend more time preparing and managing technology resources.

Conclusion and Recommendations

This paper has stated that while there are both benefits and challenges associated with the use of educational technology in Kenyan universities, it is clear that the benefits outweigh the challenges. Thus the technology leads to improved access to education, enhanced student engagement and collaboration, personalized learning, and improved teacher-student interactions. However, there are challenges associated with the use of educational technology, such as limited infrastructure and resources, technological disruptions and failures, cybersecurity threats, quality concerns, and social isolation and disconnection. These challenges however, can be addressed through effective planning, investment in infrastructure and resources, training and support for students and teachers to maximize the benefits.

These technologies enrich the teaching and learning experiences in Kenyan universities.

1. There is need for Kenya Universities to; prioritize investment in adequate and reliable infrastructure, including high-speed internet connectivity and computer facilities, to support the use of educational technology. This would enable students and teachers to have equal access to online resources and e-learning opportunities.
2. Invest in training and support for students and teachers to enable effective use of resources and e-platforms.
3. Develop standards and regulations for the use of educational technology, to ensure consistency and quality in the provision of online learning materials and assessments. This would limit positive data help to reduce the risk of plagiarism and cheating and ensure that online learning materials are effective and meet the learning objectives of each course.
4. Implement appropriate cybersecurity measures, such as firewalls, data encryption, and access controls, to protect against cyber threats and ensure the security and privacy of student and teacher information. This would limit possible data breaches and other security incidents that could compromise the integrity of online learning materials and assessments.
5. Regularly evaluate and monitor the use of educational technology, to identify any issues or areas for improvement, and ensure that online learning materials and assessments are effective and meet the learning objectives of each course. This would ensure that use of educational technology is beneficial and maximizing its benefits and mitigating its risks.

By implementing these recommendations, Kenyan universities can effectively leverage the benefits of educational technology to enhance the teaching and learning experience, improve student outcomes, and prepare students for success in the digital age.

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