

**The Effect Of Education Teaching Technology On The Performance Of Public Secondary Schools In Mwala Sub-County, Machakos County, Kenya**

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**Abstract**

Rapid advancements in technology have revolutionized various aspects of society, including the field of education. Education technology has increasingly become a significant component of modern educational systems, with the potential to revolutionize teaching and learning practices. This research study investigated the effect of education technology on the performance of public secondary schools in Mwala sub-county, Machakos County, Kenya. The purpose of this study was to examine the impact of teaching technology, examination technology, student administration technology, and student security technology on the performance of public secondary schools in the specified region. The theoretical frameworks guiding this research included the Technology Acceptance Model, Social Cognitive Theory, and Activity Theory. A descriptive research design was employed for this study, and the sample size consisted of 384 participants selected through a combination of purposive sampling and random sampling techniques. The data was collected using questionnaires and analyzed using SPSS Version 27 software. The study found that teaching technology, examination technology, student administration technology, and student security technology have a positive effect on the performance of public secondary schools in the Mwala sub-county, Machakos County, Kenya. Based on the findings of the study, the study recommends; there is a need for all teachers in schools to receive adequate training and support in educational technology to effectively embrace technology in their teaching as it positively impacts the quality of teaching and learning; Schools ought to integrate education technology by enhancing students' access to a wider range of educational resources and materials as it not only increases students' motivation and interest in learning but also improves students' critical thinking and problem-solving skills; the school administration ought to use technology as there is long-term positive impact of student administration technology on student outcomes such as graduation rates and employability, and also on non-academic outcomes, such as student satisfaction and engagement; and that there is need for the administration in collaboration with the parents to ensure all schools have student security technology measures, such as surveillance cameras and access control systems, as it enhances the overall safety and well-being of students in the school, leading to improved focus and concentration on academic activities.

**Key Words:** Kenya, Machakos County, Technology; Education; Information technology; Examination technology; Student administration technology; Student security technology; School Performance

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**Background of the Study**

In recent years, education technology has become an essential tool for enhancing learning experiences and improving educational outcomes. Education technology encompasses a wide range of tools, including hardware, software, and digital resources, that can be used to enhance teaching and learning. Additionally, technology in education is widely applied in examination, teaching, security management, administration activities among others. Or begins with, teaching technology refers to the use of technology to support and enhance teaching and learning processes in the classroom (Kim & Lee, 2020). Examples of teaching technology include interactive whiteboards, educational apps, and multimedia resources.

Education technology is a vital tool for enhancing learning experiences and improving educational outcomes in public secondary schools. The proposed study aims to examine the impact of different areas of education technology on the quality of education and learning outcomes in public secondary schools in Mwala sub-county, Machakos County, Kenya. The findings of this study will contribute to the existing literature on education technology and inform policies and practices aimed at improving the quality of education in public secondary schools.

Education is a critical aspect of the development of individuals and societies. Education provides individuals with the knowledge, skills, and attitudes that are essential for their personal and social development, as well as for economic growth and development (Gibson & Foster, 2021). In Kenya, education is a fundamental human right, and the government has invested significantly in the sector to ensure that all citizens have access to quality education.

**Statement of the Problem**

Technology integration has transformed the way we live, work, and interact with each other, enabling us to connect with people from around the world, access vast amounts of information, and accomplish tasks more quickly and easily than ever before. In the education sector, education technology has improved the academic performance of students both in public and private secondary schools in Kenya. The use of technology has also enhanced the learning experience, resulting in improved teaching practices, higher student engagement, and retention rates. Additionally, technology-based solutions provide teachers with new tools and resources to support their work, resulting in higher job satisfaction and better outcomes for the wider community.

However, the effectiveness of education technology in public secondary schools in Mwala sub-county, Machakos County, Kenya remains unclear. Despite the potential benefits, there is a lack of empirical evidence to demonstrate the effectiveness of education technology in improving academic performance in this context. Furthermore, several challenges associated

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with education technology integration hinder the successful implementation of technology-based solutions in the classroom. These challenges include limited access to technology tools and resources, inadequate infrastructure, and insufficient teacher training.

The problem of poor performance in public secondary schools in Mwala sub-county is significant and requires urgent attention because it has a direct impact on the future of the students, their families, the schools, and the community at large. To address this research gap, this study investigated the effect of education technology on the performance of public secondary schools in Mwala sub-county, Machakos County, Kenya, specifically examining the impact of teaching technology, examination technology, student administration technology, and student security technology on academic performance. By identifying the factors that promote or hinder the successful integration of education technology in this context, this study aims to provide empirical evidence that can inform decision-making regarding investments in education technology, ultimately leading to positive outcomes for students, teachers, and the wider community.

### **Specific Objective**

To establish the effect of teaching technology on the performance of public secondary schools in Mwala sub-county, Machakos County, Kenya.

### **Significance of the study**

The study's findings will provide educators with an understanding of the impact of technology on teaching, examination, student administration, and student security, and how it can improve learning outcomes. It will help schools to determine the most appropriate technology to invest in and how to integrate it effectively into the curriculum. Learners will also benefit from technology-based learning that will enhance their engagement, motivation, and academic performance.

### **Literature Review**

#### **Teaching Technology and Performance**

Chen, Chen and Huang (2021) investigated the impact of using a flipped classroom approach on student engagement and academic performance in a high school science class in Taiwan. The study employed a quasi-experimental design with a control group and an experimental group. The study found that students in the experimental group showed significantly higher levels of engagement and achieved significantly better academic performance than the control group. The study recommends that teachers consider using a flipped classroom approach to enhance student engagement and academic performance. The study did not investigate the long-term effects of using a flipped classroom approach.

Lai and Gikas (2020) investigated the impact of integrating technology into instruction on student achievement in middle school mathematics classrooms in the United States. The study employed randomized controlled trial with two treatment groups and a control group. The two treatment groups received instruction using technology-enhanced materials while the control group received traditional instruction. The study found that students in both treatment groups achieved significantly higher levels of achievement than the control group. It was therefore

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recommended that teachers consider integrating technology into instruction to enhance student achievement. The study did not investigate the impact of technology integration on other factors that may influence student achievement, such as student motivation and engagement.

Regionally, Tadise and Abiye (2021) study investigated the effectiveness of technology-enhanced learning on students' academic performance in higher education. The study employed a quasi-experimental design, with 198 students randomly assigned to either a treatment group or a control group. According to the findings, the technology-enhanced learning approach had a significant positive effect on students' academic performance. The researchers recommended that higher education institutions should adopt technology-enhanced learning approaches to improve students' academic performance. However, more studies should be conducted to examine the effectiveness of technology-enhanced learning on students' academic performance across different academic fields.

In Algeria, Hariz and Bouchentouf (2020) study was to examine the impact of e-learning on students' academic performance in Algerian higher education. The study employed a survey design, with a sample of 300 students from two universities in Algeria. The study found that e-learning had a significant positive effect on students' academic performance. The researchers recommended that Algerian higher education institutions should adopt e-learning approaches to improve students' academic performance. However, the research did not focus on high school institutions, which might be different results when high schools are considered. A research gap was also noted, as more studies were needed to investigate the factors that influence the adoption of e-learning in Algerian higher education institutions.

In Kenya, Kihoro, et al. (2021) investigated the impact of e-learning on academic performance among university students in Kenya. The study employed a survey design with a sample size of 372 university students. Data was collected using an online questionnaire and analyzed using descriptive and inferential statistics. The findings of the study revealed that e-learning has a positive impact on academic performance among university students in Kenya. The study recommends that universities in Kenya should adopt e-learning as a mode of teaching to enhance academic performance among students. The study did not explore the challenges that students face when using e-learning platforms.

Similarly, Mutinda, et al. (2021) determined the effectiveness of using technology in teaching English language among secondary school students in Kenya. The study used a quasi-experimental design with a sample size of 120 secondary school students. According to the findings, the use of technology in teaching English language significantly improved students' performance in the language. The study recommends that the government of Kenya should provide more resources to schools to facilitate the integration of technology in teaching and learning. Research gap: The study did not explore the effect of technology on students' motivation to learn English language.

## **Research Methodology**

### **Research Design**

The procedures to follow in order to reply to the research questions are laid out in a study design. According to Mugenda & Mugenda (2009), a good study design has a clear objective and coherence between the research questions and the advised research method. According to

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Orodho (2002), the study's design is an organizing framework for gathering and analyzing data that is pertinent to the study's topic. Orodho (1999) defined the design of a study as a strategy, plan, or plan of action used to generate solutions to the study challenge. This project used a descriptive research design. To acquire data and make judgments on a population at a specific period, a descriptive assessment method is used. Through descriptive study designs, answers to questions like "who, the what, the where, and the how of the issue of interest" are given. Descriptive research designs ensure that there is less bias and maximum dependability while gathering data by identifying and explaining how things are (Kothari, 2018; Mugenda & Mugenda, 2003).

### **Target Population**

According to Berg (2001), the phrase "target population" refers to the larger population to which the researcher intends to apply the study's findings in the future. This comprised all entities that exhibit a specific quantitative characteristic. The research targeted all 38650 students, principals and teachers from Mwala constituency, Machakos county (SHULE ZETU WEBSITE).

**Table 1: Target Population**

<b>Type of school</b>	<b>Population</b>
Day mixed secondary school	31374
Boarding boy's secondary school	938
Day and boarding mixed secondary school	2018
Girls boarding secondary school	2808
Boarding mixed secondary school	1512
<b>Total</b>	<b>38650</b>

**Source: Field Data 2024**

### **Sample and Sampling Technique**

The 38 public secondary schools in Mwala constituency, Machakos County in Kenya were used to choose the participants representatives using a random stratified approach. The sample size for the participant representatives taking part in the study was decided using Fishers' formula.

The Fisher equation is given as  $n = \frac{z^2 p(1-p)}{d^2}$

Where n is the sample size, z is the level of confidence's standard normal deviation, for instance, 95% level of confidence = 1.96, d is the degree of accuracy and a 95% confidence interval, and p is an estimate of the percentage. According to Israel (2009), if you are unsure of the value of p, assume  $p=0.5$ .

As a result, sample size is calculated as follows:

$$n = \frac{((1.96)^2 (0.5) (1-0.5))}{(0.05)^2} n=384$$

Therefore, 384 employees made up the sample size.

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**Table 2: Sample Size**

Strata	Sample size
Principal	19
Teachers	96
Students	269
TOTAL	384

**Source: Field Data 2024**

Principals and teachers were selected using purposive sampling, while students were selected using stratified random sampling method

### **Data Collection Instruments**

Gathering data, as defined by Burns & Grove in 2023, is the deliberate, exact collection of information relevant to the research sub-problems using approaches including participant observation, FGD, narratives, and case studies. To collect information for this study, structured questionnaires containing both closed-ended and open-ended questions were employed. Structured surveys, according to Mugenda & Mugenda (2017), consist of a series of questions and a list of all possible replies from which the respondents select the one that most accurately characterizes their situation. Structured questions are easier to analyze since they are immediately available (Orodho, 2019).

### **Discussion of the Findings**

#### **Questionnaire Return Rate**

In Table 4.1, you can find the response rates of the respondents sampled for the study. The study aimed to reach 19 principals, 96 teachers, and 269 students, and received responses from 16 principals, 80 teachers, and 160 students. This indicates a return rate of 84.21% for principals, 83.33% for teachers, and 59.48% for students. The researcher considered a response rate of 75.67% sufficient to proceed with data analysis.

**Table 3: Response Rate of the Sampled Respondents**

Category	Targeted sample	Response rate
Principals	19	16 (84.21%)
Teachers	96	80 (83.33%)
Students	269	160 (59.48%)
<b>Total</b>	<b>384</b>	<b>256 (75.67%)</b>

### **Effect of Teaching Technology on the Performance of Public Secondary Schools**

The findings in Table 4 indicate that 68.75 percent of teachers agreed that using technology in teaching enhances student engagement and participation, while 6.25 percent disagreed. Additionally, 91.25 percent of teachers agreed that integrating educational technology in the classroom improves students' academic performance, with 2.50 percent in disagreement. The

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percentage of teachers who agreed that effectively using technology in teaching contributes to better student learning outcomes was 86.25 percent, with 3.75 percent in disagreement.

Furthermore, 97.50 percent of teachers agreed that teachers who receive adequate training and support in educational technology implementation are more effective in their teaching practices, while 1.25 percent disagreed. Moreover, 97.50 percent of teachers agreed that access to technology tools and resources positively impacts the quality of teaching and learning, and no one disagreed with this statement. Finally, 96.25 percent of teachers agreed that technology-enabled learning experiences foster critical thinking and problem-solving skills among students, with 1.25 percent in disagreement.

Similar findings were deduced from the students and also the Principals (Principal 3), one of who observed that:

...when teachers receive adequate training and support in educational technology and embrace it they are effectively able to use technology in their teaching which positively impacts the quality of teaching and learning (Principal 3).

The Pearson correlation matrix in Table 4.6 illustrates that academic performance was positively and significantly correlated to teaching technology ( $r= 0.2067$ ,  $p\text{-value}= 0.0658$ ) at a 10 per cent level of significance.

This shows that teaching technology has a positive effect on the performance of public secondary schools in the Mwala sub-county, Machakos County, Kenya. The study findings corroborate those established in a USA study by Lai and Gikas (2020) who deduced a significantly higher levels of student achievement for the students using technology-enhanced materials. Likewise in Algeria, Hariz and Bouchentouf (2020) found that e-learning had a significant positive effect on students' academic performance. Similarly, in Kenya, Kihoro, et al. (2021) revealed that e-learning has a positive impact on academic performance among university students. Mutinda, et al. (2021) also found that the use of technology in teaching English language significantly improved students' performance in the language.

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**Table 4: Level of Teaching Technology on the Performance of Public Secondary Schools**

		<i>f</i>	%
Using technology in teaching enhances student engagement and participation	Strongly disagree		
	Disagree	5	6.25
	Neutral	20	25.00
	Agree	17	21.25
	Strongly agree	38	47.50
Integrating educational technology in the classroom improves students' academic performance	Strongly disagree	2	2.50
	Disagree		
	Neutral	5	6.25
	Agree	17	21.25
	Strongly agree	56	70.00
Teachers who effectively use technology in their teaching contribute to better student learning outcomes	Strongly disagree	2	2.50
	Disagree	1	1.25
	Neutral	8	10.00
	Agree	24	30.00
	Strongly agree	45	56.25
Teachers who receive adequate training and support in educational technology implementation are more effective in their teaching practices	Strongly disagree		
	Disagree	1	1.25
	Neutral	1	1.25
	Agree	17	21.25
	Strongly agree	61	76.25
Access to technology tools and resources positively impacts the quality of teaching and learning	Strongly disagree		
	Disagree		
	Neutral	2	2.50
	Agree	15	18.75
	Strongly agree	63	78.75
Technology-enabled learning experiences foster critical thinking and problem-solving skills among students	Strongly disagree		
	Disagree	1	1.25
	Neutral	2	2.50
	Agree	16	20.00
	Strongly agree	61	76.25

**Source: Researcher, 2024**

Therefore, the majority (68.75 percent) of the respondents agreed that using technology in teaching enhances student engagement and participation. Additionally, most respondents (91.25 percent) agreed that integrating educational technology in the classroom improves students' academic performance, and the majority (86.25 percent) agreed that effectively using technology in teaching contributes to better student learning outcomes. Furthermore, the majority (97.50 percent) of the respondents agreed that teachers who receive adequate training and support in



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educational technology implementation are more effective in their teaching practices. Moreover, the majority (97.50 percent) of the respondents agreed that access to technology tools and resources positively impacts the quality of teaching and learning, with no disagreement from any respondent. Finally, the majority (96.25 percent) of the respondents agreed that technology-enabled learning experiences foster critical thinking and problem-solving skills among students.

### **Conclusion**

The use of technology in teaching helps to increase student engagement and participation. Additionally, integrating educational technology in the classroom has been shown to improve students' academic performance. Effectively using technology in teaching contributes to better student learning outcomes. Furthermore, teachers who receive adequate training and support in educational technology implementation are more effective in their teaching practices. Moreover, access to technology tools and resources has a positive impact on the quality of teaching and learning, with no disagreement from any respondent. Finally, technology-enabled learning experiences help to foster critical thinking and problem-solving skills among students

### **Recommendation**

Based on the findings of the study, the following recommendations were made;

- i. There is a need for all teachers in schools to receive adequate training and support in educational technology to effectively embrace technology in their teaching as it positively impacts the quality of teaching and learning.
- ii. Schools ought to integrate education technology by enhancing students' access to a wider range of educational resources and materials as it not only increases students' motivation and interest in learning but also improves students' critical thinking and problem-solving skills.

### **Suggestions for Further Research**

The study suggests the following as areas for further research;

- a) Before making policy recommendations, it is important to replicate the study using a representative sample of schools in Kenya, instead of generalizing based on a study conducted in only one administrative sub-county.
- b) Future studies need to look at the specific types of education technologies available in various learning institutions.

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## **References**

- Agyemang, K., & Asiedu, E. (2021). The Effect of Student Administration Technology on Academic Performance: Evidence from Ghanaian Universities. *International Journal of Educational Technology in Higher Education*, 18(1), 1-16.
- Ainin, S., Naqshbandi, M. M., Moghavvemi, S., & Jaafar, N. I. (2015). Factors influencing the use of e-learning among students in Malaysian higher education institutions: A structural equation modeling analysis. *Computers in Human Behavior*, 42, 247-257.
- Akinsanya, O., & Adeoye, O. (2021). Online assessment technology and academic performance of undergraduate students in Nigeria. *International Journal of Emerging Technologies in Learning*, 16(11), 93-103.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1-26.
- Bryson, J., & Hand, L. (2021). Evaluating the Impact of Student Administration Technology on University Performance. *Journal of Higher Education Policy and Management*, 43(2), 235-250. doi:10.1080/1360080X.2021.1891899
- Chao, Y. J., Chen, K. H., & Chen, P. C. (2017). An empirical investigation of students' acceptance of a cloud-based learning system. *Journal of Educational Technology & Society*, 20(2), 27-37.
- Chen, Y. L., Chen, Y. L., & Huang, J. J. (2021). The effect of a flipped classroom approach on student engagement and academic performance in high school science classes in Taiwan. *Journal of Educational Technology & Society*, 24(3), 212-223.  
<https://shulezote.co.ke/place/constituency/nairobi/mwala/?page=12>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- eKitabu. (2020). *eKitabu Digital Learning Survey Report 2020*. Retrieved from <https://www.ekitabu.com/2020/09/14/ekitabu-digital-learning-survey-report-2020/>
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of education and work*, 14(1), 133-156.
- Gibson, S., & Foster, D. (2021). An Evaluation of Online Proctoring Technology: Comparing Exam Performance in Person and Online. *Journal of Educational Technology Systems*, 50(4), 430-442. doi: 10.1177/0047239521990193
- Hariz, N., & Bouchentouf, S. (2020). Impact of E-Learning on Academic Performance: Case Study of Algerian Students. *Journal of Information Technology Education: Research*, 19(1), 33-47.
- Kaptelinin, V., & Nardi, B. A. (2006). *Acting with technology: Activity theory and interaction design*. MIT press.
- Kenya Institute of Curriculum Development. (2021). *Education Technology*. Retrieved from <https://kicd.ac.ke/education-technology/>

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- Kenya National Bureau of Statistics. (2020). Basic Education Statistical Booklet. Retrieved from <https://www.knbs.or.ke/download/basic-education-statistical-booklet-2020/>
- Kihoro, J., Mburu, L., & Njagi, N. (2021). The Impact of E-Learning on Academic Performance among University Students in Kenya. *International Journal of Scientific and Research Publications*, 11(2), 902-908.
- Kim, J. H., & Lee, J. (2020). The effects of a mobile learning application on students' self-efficacy and academic achievement. *Computers & Education*, 146, 103765.
- Lai, K. W., & Gikas, J. (2020). Effects of technology integration on student achievement in middle school mathematics: A randomized controlled trial. *Computers & Education*, 144, 103694.
- Lefebvre, M., & Jourdan, F. (2022). The impact of security technology on student performance: evidence from French universities. *Higher Education*, 1-18.
- Li, R., & Ma, X. (2019). The effects of virtual reality-based learning environment on student engagement and academic achievement. *Educational Technology Research and Development*, 67(2), 427-445.
- Macharia, J. K., Wamalwa, F. M., & Kihoro, J. M. (2019). The Impact of Security Technology on Student Performance in Kenyan Universities. *International Journal of Innovative Research in Education*, 6(3), 1-9.
- Ministry of Education, Kenya. (2020). Digital Learning Programme. Retrieved from <https://education.go.ke/digital-learning-programme/>
- Mutinda, M. M., Kanyi, J. M., & Ileri, P. M. (2021). Effectiveness of Using Technology in Teaching English Language among Secondary School Students in Kenya. *International Journal of English Language Teaching*, 9(1), 63-72.
- Mwakalinga, E. C., & Moshi, E. F. (2021). The use of student security technology and its impact on academic performance: A case study of universities in Tanzania. *Journal of Education and e-Learning Research*, 8(2), 117-129.
- Nardi, B. A. (1996). Studying context: A comparison of activity theory, situated action models, and distributed cognition. In B. A. Nardi (Ed.), *Context and consciousness: Activity theory and human-computer interaction* (pp. 69-102). MIT Press.
- Njoroge, P. W., Kariuki, P. N., & Gathumbi, A. (2021). Assessing Teachers' Preparedness to Use Technology in Teaching in Secondary Schools in Kenya. *Journal of Education and Practice*, 12(16), 114-122.
- Nkuba, J. K., & Tshilenge, F. M. (2022). Impact of student security technology on academic performance: A case study of universities in Congo. *Journal of Education and Practice*, 13(10), 1-10.
- Nyambega, G., & Kimemia, J. (2022). Factors Influencing the Adoption of Student Administration Technology and Its Impact on Performance: A Case of Kenyan Universities. *Journal of Education and Practice*, 13(7), 53-63.
- Ochola, F., Oboko, R., & Oganje, B. (2021). Student Administration Technology and Academic Performance in Kenyan Universities. *International Journal of Educational Management*, 35(2), 342-356.

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- Ombati, M. O., Omwenga, E. I., & Ong'ondo, R. O. (2020). Effect of Electronic Security on Student Performance in Kenyan Secondary Schools. *International Journal of Education and Research*, 8(1), 1-12
- Onyango, R. O., & Kibet, A. (2022). Effectiveness of the Grade Management Information System on Student Performance in Public Primary Schools in Kenya. *Journal of Education and Practice*, 13(4), 53-62.
- Rwigema, J., Mbabazi, J., & Munyemana, A. (2021). The Impact of Student Administration Technology on Academic Performance: Evidence from Rwandan Universities. *Journal of Education and Practice*, 12(10), 118-128.
- Schumann, M., & Schmitz, J. (2021). Student perceptions of security technology and its impact on academic performance: A study in Germany. *Journal of Further and Higher Education*, 1-18.
- Sifolo, N., & Mashele, M. (2021). The effectiveness of computer-based testing on academic performance: A quasi-experimental study of Grade 11 students in South Africa. *South African Journal of Education*, 41(1), 1-11.
- Tadesse, T., & Abiy, E. (2021). Assessing the effectiveness of technology-enhanced learning on students' performance in higher education. *Journal of Educational Technology in Higher Education*, 18(1), 1-18.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wachira, P., & Kibet, A. (2021). Impact of e-Examination System on Kenya Certificate of Secondary Education Examination Performance in Kenya. *Journal of Education and Practice*, 12(17), 65-76.
- Wang, Y., & Liu, S. (2021). The Impact of Student Administration Technology on Academic Performance in Chinese Universities. *Journal of Educational Technology Development and Exchange*, 14(1), 69-78.
- Wu, C., & Chen, Y. (2021). The Impact of Computer-Based Testing on English Language Proficiency Examination: A Randomized Controlled Trial. *Language Assessment Quarterly*, 18(3), 312-325. doi: 10.1080/15434303.2021.1889148
- Zainuddin, R., & Perera, C. J. (2020). Exploring the effect of technology use in teaching and learning on student academic achievement: A case of Malaysia. *International Journal of Emerging Technologies in Learning (iJET)*, 15(18), 81-97.