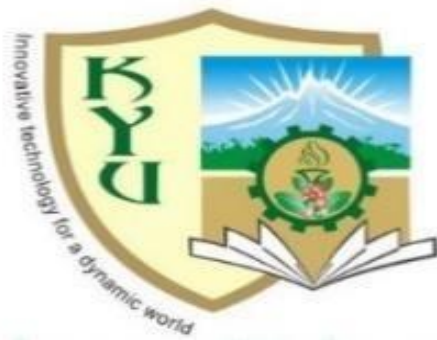


AFRICAN JOURNAL OF BUSINESS, ECONOMICS AND INDUSTRY (AJOB EI)



**KIRINYAGA
UNIVERSITY**



AFRICAN JOURNAL OF BUSINESS, ECONOMICS AND INDUSTRY (AJOBEI)

Volume 4 (1), 2024

KIRINYAGA UNIVERSITY, KENYA

ISO 9001: 2015 Certified

AFRICAN JOURNAL OF BUSINESS, ECONOMICS AND INDUSTRY (AJOBEL)

Editorial Board

Editors

Prof. Charles Omwandho, PhD

Prof. Jane Kerubo, PhD

Dr. Jotham Wasike, PhD

Advisory Board

Prof. Mary Ndung'u, PhD

Prof. Charles Omwandho, PhD

Administration & Logistics

George Ngorobi

Nellyann Kathomi

Simon Gacheru

© Copyright 2024, Kirinyaga University

Copyright Statement

All rights reserved. Seek the University permission to reproduce, distribute, display or make derivative content or modification.

AFRICAN JOURNAL OF BUSINESS, ECONOMICS AND INDUSTRY (AJOBEL)

Email: journals@kyu.ac.ke

ISSN: 1410-6779

**KIRINYAGA UNIVERSITY
P.O Box 10500
NAIROBI, KENYA**

Preamble

African Journal of Business, Economics and Industry (AJOBEL) is a distinguished academic peer-reviewed publication that disseminates original research, academic and scholarly output that contribute to growth of knowledge in Business, Economics, Industry and Education. The journal targets professionals and researchers in academia, industry, education, government agencies/policy makers highlighting the intersection of business, economics and industry with emphasis on transformative role of technology in sustainable economic development. The topics covered in this issue highlight the effects of technology on students' behavior in Kenyan Universities to analyzing the impact of Collective Bargaining Agreements (CBA) implementation on retention of medical staff in workplace, the benefits of using educational technology in teaching and learning processes in Universities, challenges and how best the latter can be addressed to improve these processes. Readers are invited to engage with and appreciate the dynamic landscape of business, economics and industry as applied to sustainable development.

Table of Contents

PREAMBLE	3
THE EFFECT OF TECHNOLOGY ON STUDENT BEHAVIOUR IN KENYA UNIVERSITIES.	5
EFFECT OF CBA IMPLEMENTATION ON EMPLOYEE RETENTION AMONG MEDICAL OFFICERS IN COUNTY GOVERNMENTS IN KENYA	12
USING EDUCATIONAL TECHNOLOGY IN TEACHING AND LEARNING IN KENYA IN UNIVERSITY: IS IT A BLESSING OR NOT	22

THE EFFECT OF TECHNOLOGY ON STUDENT BEHAVIOUR IN KENYA UNIVERSITIES

KIMANI A., KERUBO J.,

Kirinyaga University, KENYA

Email: alicekimani2001@gmail.com

Abstract

Technology is part of human day-to-day life; its presence in the education sector no exception. Thus teaching and learning have become digital. We live in a digital world of technology, and we are part of the Net Generation. The percentage of people who have smartphones and computers is very high and students in universities use technology to acquire and receive information, do research, conduct online business, and manage boredom. Behaviour is how human beings act or respond to a particular stimulus and behaviour change takes place in the physical, mental, and social phases of human life from infancy through childhood, adolescence to adulthood. In this paper, we focus on the effect of technology on students' behaviour in Kenyan universities. The paper is based on a theoretical review of the literature. We start with a conceptual definition of terms such as "technology" and "technology in education" and then move on to define "behaviour change." After the definitions, we discuss the uses of technology in universities in Kenya and its effects on the behaviour of students. Behaviour change is discussed about teaching and learning, academic integrity, academic performance and social interaction. The positive and negative effects of technology on student behaviour are highlighted and we make suggestions on how technology can be used in universities for positive behaviour change among students.

Keywords: Technology, Technology in Education, Behaviour Change, Academic Integrity, Social Media

Introduction

Technology is everywhere and effects our lives in the modern digital world. This applies to the educational field as well since technology has fundamentally changed how we teach and learn. Use of technology in higher education institutions for teaching and learning is growing, and students are now more dependent on it than ever before (Bourner and flowers 1997). It is therefore crucial to investigate the effect of technology on changes in student behaviour in higher education institutions.

This paper uses a literature review to determine the effects of technology on changes in student behaviour in higher education in Kenyan Universities. The use of human inventions and discoveries to satisfy human needs and desires is referred to as "technology." In this paper, technology is used to include the use of computers, tablets, and smartphones (Pokhrel and Chetri 2021). The various ways this technology has been incorporated into higher education are highlighted and the way use of technology has affected how students' in Kenyan Universities study, communicate and interact with one another is discussed.

Definition of Terms

Technology – all the ways people use their inventions and discoveries to satisfy their needs and desires. It is a planned, systematic method of working to achieve planned outcomes, thus people use technology to achieve their goals.

Technology in Education is the application of technology to the processes involved in operations of educational institutions including teaching and learning.

Social media is the mode of interaction between people where they share, create and exchange information and ideas on platforms like twitter, Facebook, Instagram, YouTube and others. According to Mayfield (2008), use of social media has been highly integrated in education.

Use of Technology in Teaching and Learning

Technology has long been integrated in higher education with a range of technological tools and applications being used in the classroom to enhance learning. Some of the most commonly used technologies include online learning platforms, educational software, mobile applications, and social media (Dutta, 2020).

Education in 21st century, has evolved significantly thus one can study from the comfort of their homes whenever it suits them. The introduction of the internet has made this easier. Thus students can miss a physical class and still learn what the teacher taught because classes are recorded using a voice or video recorder and listen to recorded content whenever they choose to (Morris et al, 2019).

Many universities have adopted e-learning platforms like Moodle, Blackboard, and Google Classroom to facilitate online learning and provide students with access to course materials, submit assignments, and interact with their peers and instructors (Raza et al 2022). With the rise of remote learning due to the COVID-19 pandemic, video conferencing tools like Zoom, Microsoft Teams, and Google Meet have become essential for conducting virtual classes, lectures, and meetings. These platforms offer a range of features, such as video conferencing, discussion forums, and instant messaging, which enhance student engagement and participation in the learning processes (Pokhrel and Chetri 2021).

Many universities also have digital libraries that provide students and faculty access to a wide range of electronic resources, including journals, e-books, and databases. Equally, interactive whiteboards are widely used in classrooms to enhance the learning experience by providing students with visual aids and interactive elements (Hendal 2020).

Mobile applications such as Dropbox and Google drive have become increasingly popular in higher education due to their flexibility and convenience. These applications provide students with easy access to course materials and information on the go enabling students to store, organize, and share information from their mobile devices.

Social media among them Twitter, Facebook and LinkedIn have also had a significant impact on higher education having facilitated communication and collaboration among students and instructors, enables easy dissemination of course materials, promotion of events, and facilitation of discussions.

Effects of the Use of Technology on student behaviour change

The following areas of student behaviour have been affected with introduction of technology in the learning space:

Teaching and learning

Technology has significantly influenced student learning styles in Kenyan universities. The lecture based-teacher centered traditional teaching methods in Kenya have been significantly impacted by technology driven new ways of learning, such as online discussions, multimedia presentations, and collaborative learning platforms.

Technology has also made it possible for students to take courses and earn degrees online, which has given them greater flexibility and convenience (Kearsley 2002). Online learning has allowed students to learn at their own pace and from anywhere in the world especially post the COVID-19 pandemic period using online learning platforms like Google Meet, KNET, Google Conference, Zoom, and Microsoft Team. Through the use of the internet, students can do research, complete assignments, and communicate with lecturers from remote locations.

According to Youssef and Dahmani (2008), technology has made learning more interactive and engaging, and led to increased student participation in classroom activities. Thus, with the use of multimedia tools such as videos, images, and audio,

students can better understand complex concepts and engage more actively in the learning process.

It has facilitated collaborative learning through online peer to peer discussion forums, and video conferencing, improved group work, and more active participation in classroom activities and equally made it easier for instructors to provide timely and detailed feedback to students, which has helped to improve student understanding of the subject matter and their performance. This has also led to changes in student behaviour, with many becoming more receptive to feedback and willing to improve their work.

Collaborative learning has also reduced direct person to person contacts leading to physical loneliness among the students since students do not enjoy face-to-face meetings during lectures.

Academic integrity

Both positive and negative effects of technology have been seen on academic integrity. The accessibility of online resources like digital libraries and databases is one of the benefits of technology for maintaining academic integrity. These tools give students access to a wealth of knowledge that can improve their research and writing abilities. Also, adoption of plagiarism detection software has improved professors' ability to spot cases of plagiarism, which has enhanced student accountability and responsibility. Technology has also made it possible to conduct online assessments, including quizzes, exams, and assignments.

Technology also has negative effects on academic integrity one of them being the use of technologies to cheat in University examinations through the use of smartphones and mobile devices Bain, (2015). Thus students can access the internet and search for answers to examination questions or use messaging applications to communicate with each other and share answers but can also use mobile devices to store notes or prewritten answers, which they can then access during the examinations. This has resulted in deterioration of reasoning power of students as they rely on the internet for answers to examination questions and on calculators for calculations. Thus the brain of the internet users are more aligned to efficiently finding information than thinking through the questions to generate logical answers.

There is also risk of contract cheating through hiring other persons to accomplish a task or examination on a student's behalf (Walker and Townley 2012). Thus, students can now pay someone else to finish their academic work thanks to the existence of internet firms that promise to write essays and complete tasks. Contract cheating has significantly increased as a result, jeopardizing integrity of examinations and as many students no longer take University examinations seriously creating a vicious cycle where students continue to cheat and the quality of education continues to decline as students become more and more lazy in their studies.

Finally, universities and teachers are under increased pressure to implement anti-cheating measures. This requires significant time and resources, which could be better spent on improving the quality of education.

Academic Performance

There is improvement in the performance of the students since they can acquire a wide range of learning material. Technology has also enabled personalized learning, where students can learn at their own pace and style. Online learning platforms and educational applications can provide personalized feedback and adaptive learning activities, which can help students identify their strengths and weaknesses and improve their academic performance.

Online discussion forums, group projects, and video conferencing can promote peer-to-peer learning, stimulate critical thinking, and improve communication skills. Students who use technology to play games and search for information on the internet and are thus more enabled to improve their ability to find answers and better understand concepts.

Technology has also made it easier for students to manage their time and stay organized. Thus, online calendars, reminders, and productivity applications can help students keep track of their assignments, deadlines, and examination timetables hence reducing the stress and leading to improved academic performance.

Academic dishonesty through plagiarism have also increased yet the use of technology has made it more challenging for educators to identify cases of academic dishonesty.

Socializing

Despite the unhealthy impact of social media, many students use the media to develop vital skills and get access to online training, business and employment opportunities. On the other hand, parents have helped by purchasing smartphones and computers for their children to be used for additional productive causes like enabling the students to accomplish school work, research and staying in touch with family, friends and school mates.

There are several social media sites, including Facebook, Twitter, Linked-in, YouTube, blogs, WhatsApp, wikis, and tik-toks, where you may interact with new people through talking, video calling, blogging, using mobile connectivity, and sharing videos and images Talaue et al, (2018). Although these tools have some negative effects on students, they also improve user's abilities, keeping them informed and connected to the digital world.

How students communicate with one another has also been greatly impacted by technology (Ben et al 2010). Thus, it has become simpler for students to stay in touch with one another because of the increased connectivity brought about by technology. As a result of their improved ability to communicate and work together, students now mingle and interact with one another in different ways and find it simpler to keep in touch with friends and classmates inside and outside of school using instant messaging applications

like WhatsApp, Telegram, Instagram, and Twitter which have consequently changed the way they engage in social activities and to establish and maintain relationships.

The widespread availability of social media and instant messaging has led to an increase in technology addiction and dependence, which can harm students' mental and physical health as well as their academic performance.

Thus technology has introduced new distractions into the classroom, such as smartphones which the students use to stay connected to the internet throughout the lectures surfing the internet which is destructive to learning.

The internet generation has also used technology, particularly social media, to obtain incorrect information, watch inappropriate advertisements, and engage in other activities that corrupt their minds and thinking. The freedom of expression and access to social media has allowed people to express themselves by doing or writing whatever they want. Students are mostly affected by these actions; they are misled by the activities. In their free time, students tend to watch unproductive things on the internet, like pornography. Whenever one is surfing the internet, there are always advertisements that pop up that are inappropriate to watch.

Conclusion and Recommendation

Technology in the education sector is not something that can be ignored. Students are using technology in different ways, like in research, writing assignments, acquiring information, and socializing, among others. It has, however, been used to cheat during examinations and for plagiarism. This study has looked into all areas of the use of technology in school and given recommendations on the way the Universities should help to ensure that they are used in the right way for the right purpose and that there is no cheating in examinations. The following are the recommendations to be incorporated:

1. Due to the increase in cheating and copying of assignments, there is increased pressure on universities and teachers to **implement anti-cheating measures**. This requires significant time and resources, which could be better spent on improving the quality of education.
2. To manage the impact of technology on students' attention spans, institutions should encourage students to take a **digital detox**, a break from electronic devices and spending time in nature or engaging in other activities that do not involve technology. This can help students reset and improve their ability to focus on tasks.
3. To manage the impact of technology on plagiarism, institutions should **educate students on the importance of academic integrity through** workshops on proper citation and referencing as well as software tools that can detect plagiarism. Institutions should also have a clear policy on academic integrity and enforce it rigorously.

4. **Institutions should encourage students to** reduce continuous, prolonged hours spent surfing the internet and strict rules imposed on the content and information that students access.

References

- Bourner, T., Flowers, S. (1997). Teaching and learning methods in higher education: A glimpse of the future. *Reflections on Higher Education*, 9(1): 77-102.
- Ben Youssef, A., Dahmani, M. (2008). The impact of ICT on students' performance in Higher Education: Direct effects, Indirect effects and Organizational change. *RUSC Universities and Knowledge Society Journal* 5(1):45-56
- Bain, L. Z. (2015). How students use technology to cheat and what faculty can do about it. *Information Systems Education Journal*, 16(3): 199-208 1545-<http://isedj.org/2015-13/> ISSN: 1545-679X.
- Dutta, A. (2020). Impact of digital social media on Indian higher education: alternative approaches of online learning during COVID-19 pandemic crisis. *International journal of scientific and research publications*, 10(5):604-611.
- Hendal, B. A. (2020). Kuwait University faculty's use of electronic resources during the COVID-19 pandemic. *Digital Library Perspectives*, 36(4): 429-439.
- Kearsley, G. (2002). Is online learning for everybody? *Educational technology*, 42(1): 41-44.
- Mayfield (2008). User Perceptions of Social Media: A Comparative Study of Perceived Characteristics and User Profiles by Social Media. *Online Journal of Communication and Media Technologies* 3 (4):149-178
- Michie S., Stralen M., West R. (2011). The Behaviour change Wheel: A Method for characterizing and designing behaviour Change. *Implementation Science*, 1-7.
- Morris, N. P., Swinnerton, B., Coop, T. (2019). Lecture recordings to support learning: A contested space between students and teachers. *Computers & Education*, 140, 103604.
- Pokhrel, S., Chhetri, R. (2021). A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher education for the future*, 8(1): 133-141.
- Talaue, G. M., AlSaad, A., AlRushaidan, N., AlHugail, A., AlFahhad, S. (2018). The impact of social media on academic performance of selected college students. *International Journal of Advanced Information Technology*, 8(4/5): 27-35.
- Raza, S. A., Zubaida Q., Wasim Q., Maiyra A., (2022). E-learning in higher education during COVID-19: evidence from the blackboard learning system. *Journal of Applied Research in Higher Education*, 14(4): 1603-1622.
- Walker, M., Townley, C. (2012). Contract cheating: A new challenge for academic honesty? *Journal of Academic Ethics*, 10: 27-44

EFFECT OF CBA IMPLEMENTATION ON EMPLOYEE RETENTION AMONG MEDICAL OFFICERS IN COUNTY GOVERNMENTS IN KENYA

NJOROGE D., KAMAU S., NDIRANGU Z.,

Kirinyaga University, KENYA

Correspondence: dnjoroge@kyu.ac.ke

Abstract

Following devolution of healthcare functions to Counties, retention of medical professionals has dealt heavy financial burdens on the County Governments in Kenya. This research examined how implementation of CBAs in Kenya's County Governments affected the retention of medical professionals. A descriptive research design was used to examine the consequences of implementing Collective Bargaining Agreements (CBAs) on retention of medical professionals within the County Governments of Kenya. With a targeted population of 930 medical professionals, a stratified random sampling technique, guided by the Krejcie and Morgan tables, was employed to select a representative sample of 272 participants. Primary data was acquired using mixed questionnaires distributed among selected respondents, complemented by supplementary information obtained from Kirinyaga County portal and repository, providing contextual insights into CBA implementation and medical employee retention. Data was analyzed using integrated descriptive and inferential statistics, including a regression model that explored the relationship between CBA predictors and employee retention. There was a moderately strong positive correlation ($r = 0.641$), indicative of the effect of CBA implementation on employee retention. Coefficient of determination (R^2) further elucidated that 41.1% of the variance in employee retention could be attributed to CBA implementation. However, 58.9% of employee retention was influenced by unexplored factors. This led to the conclusion that adoption of CBAs affected retention of medical staff in Kenyan County Governments. There is need for County Governments to promptly execute collective bargaining agreements in order to predictably retain medical staff.

Keywords: - Collective Bargaining Agreement, Employee Retention, Medical Staff.

Introduction

Employers' capacity and efforts to create a work environment that motivates workers to stay are key to employee retention (Cloutier et al 2015). Thus employers use a range of employee retention strategies to protect the human resource asset to support achievement of the organization's goals and objectives.

Collective Bargaining Agreement (CBA) is a contract that outlines the terms of an agreement reached during discussions between an employer and a union (Katz 2021) and can only succeed if both the union and management have a positive mindset leading to promotion of industrial peace and progress.

Regardless of the accelerated strategies by unions, many nations have had difficulties keeping their medical professionals on staff, raising questions as to whether Collective Bargaining Agreements have a play in improving retention (McDonald et al 2018). According to World Bank report (2020), the current worldwide turnover of medical workers worldwide has continuously climbed, reaching a peak of 27% by 2020.

With the exodus of health workers to the Global North, the Human Resources for Health (HRH) crisis has become more acute in many developing nations around the world. The "Pull factors, such as higher earnings and better living conditions in the destination nations, are generally behind this 'skills drain,' but there are also 'push forces,' among them inadequate technology, limited training options, and poor wages (WHO 2019).

Statement of the Problem

According to the County Government of Kirinyaga's 2020 budget, the salaries of medical professionals were allotted 1.582 billion shillings or 55.63 percent of the overall budget for the County. The County has however reported an increasing rate of turnover of its medical workers in public health facilities despite significant County government expenditure and allocations of funds to health sector.

According to Kirinyaga County HR Office (2022), a total of 386 healthcare professionals, encompassing clinical officers, nurses, medical laboratory officers, chemists, and dentists, were terminated from their positions by the County Government in 2019 as a consequence of a strike. Extensive study has been conducted on labor relation techniques, although limited attention has been devoted to examining their impact on employee retention. The primary objective of this study was to address the existing knowledge gap by examining the impact of collective bargaining agreements on employee retention within the medical practitioner sector of County Governments in Kenya.

Specific objective

To find out the effects of collective bargaining agreement implementation on employee retention among medical workers in County Governments in Kenya.

Research Question

Does implementation of CBAs affect retention of medical staff in Kenya's County Governments?

Conceptualization of the study

Collective Bargaining Agreement • Collective agreements • Amendments of salaries • Role of trade unions (Independent Variable)	Employee Retention • Intent to leave • Employees length of service • Recommendations and referrals (Dependent Variable)
--	---

Literature Review

Theoretical Framework

This research was based on the perception that workers' performance is influenced by workplace Human Relations characteristics. Thus, workers should be satisfied and find significance in their work because of favourable human relations characteristics including coordination, job satisfaction, and human treatment (Van der Meer and Wielers 2013). Thus managers should take more interest in their employee feelings, prioritize them and understand that they are social beings who are complex and therefore should not be treated as machines. Fundamentally, employees are more motivated when their basic requirements are met by their employers. Motivation refers to an individual's willingness to strive for and continue putting in efforts towards achieving organizational objectives (Asaari et al. 2019). Thus, the more motivated healthcare workers are, the higher the quality of treatment delivered. However, the contrary has been recorded in numerous healthcare institutions in East African nations including Kenya hence the need for improvement of working conditions to motivate healthcare personnel. One of the primary impediments to improving national healthcare systems is a chronic scarcity of trained healthcare personnel. Healthcare personnel's difficulties limit their desire to remain in the Kenyan health system as exhibited by their periodic strikes and continuous movement to the developed Northern Nations like United States of America, Canada, United Kingdom, Australia and South Africa among others.

According to Parashakti et al (2020), healthcare personnel are highly motivated by an excellent work environment that is safe, supportive, and conducive for work. Poor working conditions, excessive workload, delayed pay, low wages, and long-term strikes demotivate healthcare workers in Kenya, making them less inclined to stay in the country and contributing to the country's healthcare system's vulnerability. Because of the excellent working conditions at nonprofit and foreign institutions, healthcare workers are driven to leave public hospitals and relocate to these locations Parashakti et al., (2020)

According to Hellwig (2021), unhappiness with irregular salary payments, wage increases, or remunerations based on the provisions of the work contract is the most common reason for this dissatisfaction. Dissatisfaction among employees may be expressed either formally or informally. Thus, unlike formal techniques, which are pre-planned and structured, informal methods tend to come out of the blue and surprise management. There are both official and informal disagreements in the workplace. Formalized industrial disputes, such as strikes, are often organized by a labour organization (Hellwig 2021).

The theory was useful in this research because it provided an understanding that employees are social beings with needs and demands and would only stick with an employer who prioritizes their needs. In this regard, the theory helped understand the importance of collective bargaining implementation in motivating employees to stay with an organization.

Empirical Review

Tuoi and Huyen (2021), evaluated the impact of collective bargaining on employee retention in Vietnam. Participants in 95 constructions, textile, and apparel industries were sent 285 questionnaires and the response rate included 255 questionnaires. The research incorporated both qualitative and quantitative research designs and data analyzed using SPSS 20.0. It was observed that implementation of collective bargaining agreement was positively correlated with the retention of workers in the enterprises.

Joseph, (2015) studied effect of environmental pressures on Collective Bargaining Agreements in Canadian public sector from 1998 to 2013. The study analyzed metrics on union membership, pay agreements, strike action, and employee representation and observed that public sector unions' relative bargaining power fell throughout this period and predicted that collective bargaining in the public sector would continue being constrained in the future.

According to Nana (2017), collective bargaining agreements had a positive impact on employee retention. A random purposive selection technique was used to recruit 15 participants from five labour unions in Washington, DC, for semi-structured face-to-face and telephone interviews. Collective bargaining agreements, had an impact on employee retention. The author recommended that unionized businesses in the Washington DC metropolitan region should consider adjusting their negative hiring and retention policies.

Methodology

A descriptive research strategy was used for this research. From a population of 930 medical professionals employed by the Kirinyaga County Government, a sample size of 272 was determined using the tables created by Krejcie and Morgan (1970) and stratified random sampling. Questionnaires were used to collect primary data while secondary data was obtained from the website and database of Kirinyaga County Government. After administering the Cronbach Alpha reliability test to a sample of doctors working at

Embu Level V Hospital, the resulting value of 0.813 suggested that the research instrument was valid for its intended purpose. Statistical software SPSS 24.0 was used to analyze the data. The study used a simple regression model, with the following form:

$Y = \beta_0 + \beta_1 X_1 + e$, where,

Y = Employee Retention

β_0 = constant (coefficient of intercept)

X_1 = CBA implementation

e = error term

Analysis and Findings

Response rate

There was a 66.2% participation rate.

Descriptive statistics for Collective bargaining agreement implementation

Presence of a collective bargaining agreement between employee and employer

		Frequency Percent	
Valid	Yes	160	88.9
	No	20	11.1
	Total	180	100.0

Based on the findings, 11.1% of the respondents indicated that they were not aware of any CBA between them and their employer. The majority of respondents, (88.9%) accepted that they had a collective bargaining agreement with the County Government. These results showed that indeed there were collective bargaining agreements signed between the medical practitioners and their employers.

Descriptive Statistics on CBA implementation

Descriptive statistics on opinions on CBA implementation

Statement	Strongly disagree %	Disagree %	Undecided %	Agree %	Strongly agree %	Mean	Std. Dev
Employee representation and consultation in the CBA process affect employee retention	3.3	9.4	8.3	45.6	33.3	3.96	1.05
My trade union uses collective bargaining agreements to negotiate for better pay and workplace protection	4.4	10.0	3.9	44.4	37.2	4.00	1.10
CBA is consistently implemented across all cadres of employees	38.9	45.6	5.6	6.7	3.3	1.90	1.00
My salary has always been adjusted upward after the CBA process	45.6	44.4	1.7	5.6	2.8	1.76	0.94
Availability and implementation of CBA affect my decision to stay with my current employer	5.0	10.0	4.4	47.2	33.3	3.94	1.11
My trade union has a significant influence on my terms and conditions of employment	6.7	15.6	10.0	40.0	27.8	3.67	1.22

78.9% (mean 3.96, SD = 1.05) of respondents indicated that employee representation and consultation affected retention of workers 8.3 were undecided 9.4% disagreed while 3.3% strongly disagreed with the statement that employee representation and consultation in the CBA process affected their retention. This implied that employees valued their consultation before an agreement was made and that this gesture affected their retention.

81.6% (mean 4.00, SD = 1.10) of the respondents unanimously agreed with the statement that trade unions used CBA to negotiate for better pay and workplace protection, 3.9 were undecided, 10.0% disagreed and 4.4% strongly disagreed. These findings were in line with observations of Takupiwa (2019), who established that for CBA to be successful, there ought to have been negotiations between the union and the management representatives to come up with an agreement on wages and other work-related issues.

84.5% (mean 1.90, SD = 1.00) of the respondents disagreed with the statement that implementation of CBA took place across all cadres of employees, 5.6% were undecided, 6.7% agreed while 3.3% strongly agreed with the statement. These observations implied that the employer only implemented the CBA for a few medical cadres and disregarded the others.

The majority of the respondents 90% (mean 1.76, SD = 0.94) were in disagreement with the statement the medical workers' salaries were always adjusted upward after the CBA process, 1.7% were undecided, 5.6% were in agreement while 2.8% strongly agreed with the statement. This implied that the medical practitioners' salaries were not always adjusted by the employer even after the CBA.

80.5% (mean 3.94, SD = 1.11) of the respondents indicated that implementation of CBA affected their decision to stay, 4.4% were undecided, 10% disagreed while 5% strongly disagreed with the statement. This implied that the medical practitioners valued the implementation of CBA and based their decision to stay with the employer based on the same. These findings are in line with previous observations (Tuoi and Huyen 2021, Joseph 2015, Nana 2017) who all concluded that collective bargaining agreements had a significant effect on employee retention.

Opinion on whether CBA Implementation Affects Employee Retention

Frequency Percent			
Valid	Yes	145	80.6
	No	35	19.4
Total		180	100.0

Based on the findings, 80.6% of respondents agreed that CBA implementation affected their retention while 19.4% felt otherwise.

Correlational Analysis

		Employee Retention	CBA implementation
Employee Retention	Pearson Correlation	1	.641**
	Sig. (2-tailed)		.001
	N	180	180
CBA implementation	Pearson Correlation	.641**	1
	Sig. (2-tailed)	.001	
	N	180	180

These results revealed a moderately strong positive correlation between collective bargaining agreements and employee retention implementation as indicated by the correlation coefficient ($r = .641$, $P = 0.001$). Since the P values were (<0.05), this implied that the correlation between the dependent and independent variables was significant.

Regression analysis for collective bargaining agreement implementation and employee retention

Model	R	R Square	Adjusted R Square	RStd. Error of the Estimate
1	.641 ^a	.411	.404	0.11615

Implementing a collective bargaining agreement was found to have a moderately substantial positive link with employee retention ($r = 0.641$). Implementation of a collective bargaining agreement explained 41.1% of the variation in doctor turnover in County Governments, as measured by the coefficient of determination ($R^2 = .411$). This demonstrates that variables other than the implementation of the CBA accounted for 58.9% of the retention of employees.

ANOVA analysis for CBA implementation and employee retention

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.692	1	38.628	25.693	.003 ^b
	Residual	172.448	178	4.464		
	Total	193.14	179			

a. Dependent Variable: Retention

b. Predictors: (Constant), CBA

At the 95% confidence level, the F-test results were ($F = 1, 178 = 25.693$) and $P = 0.003$, indicating that the model was significant.

Conclusion

Based on the results of the descriptive research, 80.6% of the respondents concurred with the statement that CBA implementation had a major effect on employee retention. A moderate positive connection ($R = 0.641$) was found between CBA adoption and staff retention. Implementation of the CBA explained 41.1% of the variance in employee retention, as measured by the coefficient of determination ($R^2 = .411$). These results suggest that CBA implementation accounted for just 41.1% of the variation in employee retention. At a 5% significance level, the model was found to be significant ($P = 0.003$) and had an F- test value of ($F = 1, 178 = 25.693$).

These observations are consistent with previous reports on the subject.

Recommendation

There is need for County governments to honor the collective bargaining agreements reached with employees in order to retain employees.

References

1. Hassan M.H.A.A., Desa N.M., Subramanian L., (2019); Influence of Salary, Promotion, and Recognition toward Work Motivation among Government Trade Agency Employees. *International Journal of Business and Management* 14(4):48 DOI:10.5539/ijbm.v14n4p48
2. Cloutier, O., Felusiak, L., Hill, C., & Pemberton-Jones, E. J. (2015). The importance of developing strategies for employee retention. *Journal of Leadership, Accountability & Ethics*, 12(2): 119-129.
3. Hellwig, M. (2021). 'Capitalism: what has gone wrong?': Who went wrong? Capitalism? The market economy? Governments? 'Neoliberal' economics? *Oxford Review of Economic Policy*, 37(4): 664-677.
4. Joseph B. (2015). Constraints on public sector bargaining in Canada, *Journal of Industrial Relations* 58(1):93-110 DOI:[10.1177/0022185615598189](https://doi.org/10.1177/0022185615598189)
5. Katz, W. (2021). Beyond Transparency: Police Union Collective Bargaining and Participatory Democracy. *SMU L. Rev.*, 74 (3): 419-445.
6. Kirinyaga County Government (2022). Health facilities in Kirinyaga County. <https://kirinyaga.go.ke>
7. Krejcie R.V, Morgan D.W (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*.

8. McDonald, P., Thorpe, K., Irvine, S. (2018). Low pay but still we stay: Retention in early childhood education and care. *Journal of Industrial Relations*, 60(5): 647-668.
9. Nana G. (2017). Exploring the Impact of Collective Bargaining Agreements on Employee Performance Management. Doctorate thesis; Walden University. Walden Dissertations and Doctoral studies.
10. Parashakti, R. D., Fahlevi, M., Ekhsan, M., Hadinata, A. (2020). The influence of work environment and competence on motivation and its impact on employee retention in the health sector. In 3rd Asia Pacific International Conference of Management and Business Science (AICMBS 2019)135: 259-267
11. Takupiwa N., (2019). Collective Bargaining: A catalyst for Dispute Resolution between Employers and Employees in the Retail Industry in Urban Mutare. *Ushus-Journal of Business and Management* 18(1): 1-13.
12. Tuoi T., Huyen S. (2021). The Impact of Collective Bargaining on employee retention: An Empirical Study in Vietnam, Print ISSN: 2288-4637 / Online ISSN 2288-4645 doi: 10.13106/feb.2021.8(5): 0873
13. Van der Meer, P. H., Wielers, R. (2013). What makes workers happy? *Applied Economics*, 45(3): 357-368.
14. World Bank Report (2020). World Bank Annual report 2020: The changing nature of work.
15. World Health Organization (2019). World Health Statistics. Monitoring health for SDGs.

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.

References

1. Anderson. T., Dron. J. (2012). Learning Technology through three generation of technology Enhanced Distance Education pedagogy. *European Journal of Open distance and E-learning*.
2. Chepkwony, G., Rotich, E., Boit, M. (2019). An analysis of technological disruptions on e-learning in Kenyan universities: A case study of Moi University. *International Journal of Scientific and Research Publications*, 9(3): 245-253.
3. Communication Authority of Kenya report (2021). Framework for effective management of cyber security on E-learning platforms in public universities in Kenya. University of Nairobi.
4. Edgar D. (1969). Proposed Multimedia cone of experience. *Journal of Educational Technology*, 9(4):15-24.
5. Helsper E.J., Eynon R. (2010). Where is the evidence? *British Educational Research Journal* 36(3):503-520.

6. Johnson L., Adams, S., Cummins M. (2012). NMC Horizon report: 2016 higher education edition. The new media consortium.
7. Kariuki D.W., Michubu W.M., Otieno D.O., (2023). Blended Mode of Teaching and learning and its implication on undergraduate class Attendance: student Perspective. Innovative Digital practice and Globalization in Higher Education: 122-136.
8. Kimani J., (2021). Influence of institutional relation on choice of technology for the development of instructional materials for distance learning. Journal of online and distance learning 1(1): 29-44.
9. Kirschner P.A., Karpinski A.C. (2010). Computers in human behavior. 26(6): 1237-1245.
10. Kline R., Pinch T. (1996). Users as agents of technological change: The Social Construction of the Automobile in Rural United States 37(4): 763-795
11. Lucido P.L., Borabo R.G., (1997). Educational Technology; Goodwill Trading co., Inc, Proficiency Level of the Teacher Educating Students in the Use of Education Technology.
12. Macharia J. W., Muthaa G. M., Gikunda E. R. (2020). Effectiveness of Multimedia in Enhancing Student Engagement and Learning Outcomes in Kenyan Universities: A Systematic Review. International Journal of Emerging Technologies in Learning, 15(4): 4-19.
13. Maina J. W., Waithaka E. N. (2018). The Role of Educational Technology in Personalizing Learning in Higher Education Institutions in Kenya. International Journal of Education and Research, 6(5): 33-48.
14. Maina, J.W., Waithaka, E. (2018). Technological disruptions in higher education institutions in Kenya: A case study of Moi University. Journal of Education and Practice, 9(12): 51-57.
15. Mugambi I. N., Kagunda, L. N. (2019). The impact of technology integration on learning outcomes in Kenyan public universities. International Journal of Emerging Technologies in Learning, 14(13): 4-16.
16. Musyoka M., Meek D.R., Gentry M.A., (2017). Perception of Teachers Preparedness to Teach Deaf and Hard Learning Students with Additional Disability: A Quantitative Case Study. Journal of Development and Physical Disabilities 29(4). (JDPD).
17. Ndunda, W. (2019). University of Nairobi Cyber Attack Suspect in Court. Daily Nation. Retrieved from <https://www.nation.co.ke/news/University-of-Nairobi-cyber-attack-suspect-in-court/1056-5261406-kss30uz/index.html>
18. Njagi, L. N. (2019). Use of Educational Technology among Students in Kenyan Universities. International Journal of Education and Research, 7(7):29-38.
19. Njagi L. N., Ngaruiya K. N., Njoka J. M. (2018). Enhancing Student Participation in Learning through Collaborative Learning Tools: A Case of Kenyan Universities. International Journal of Education and Research, 6(5): 15-28.
20. Nyabuti M., Mwangi K.W., Ouso O.D., Kevin Esoh K., Muraya A.W., Mwangi C.K., Naitore C., Karega P., Rono G.K., Musundi S., Mutisya J., Mwangi E., Mgawe

- C., Miruka S., Kibet C.K. (2021). Open Science in Kenya. Where are we? *Frontiers in research metrics and analytics* (6) <https://doi.org/10.3389/frma.2021.669675>
21. Ocholla S., Odero. D. (2007). Internet Adaption & Assimilation in Kenya University Libraries: *Library Review* 56(6): 464-475.
22. Tucker L., Angie Q.A. (2021). Professional learning communities as a faculty support during the COVID-19 transition to online learning. *Online Journal of Distance Learning*. (OJDL)
23. Turkle S. (2011). Technology Reinvents Intimacy and solitude: Continuing higher education review 75:28-31.



Kirinyaga University
AFRICAN JOURNAL OF BUSINESS, ECONOMICS AND INDUSTRY

(AJOBEL)

Published by:

P.O BOX 143 - 10300 , KERUGOYA, KENYA

MOBILE +254709742000/+254729499650

Email: info@KyU.ac.ke

Website: www.KyU.ac.ke

KyU is ISO 9000: 2015 Certified