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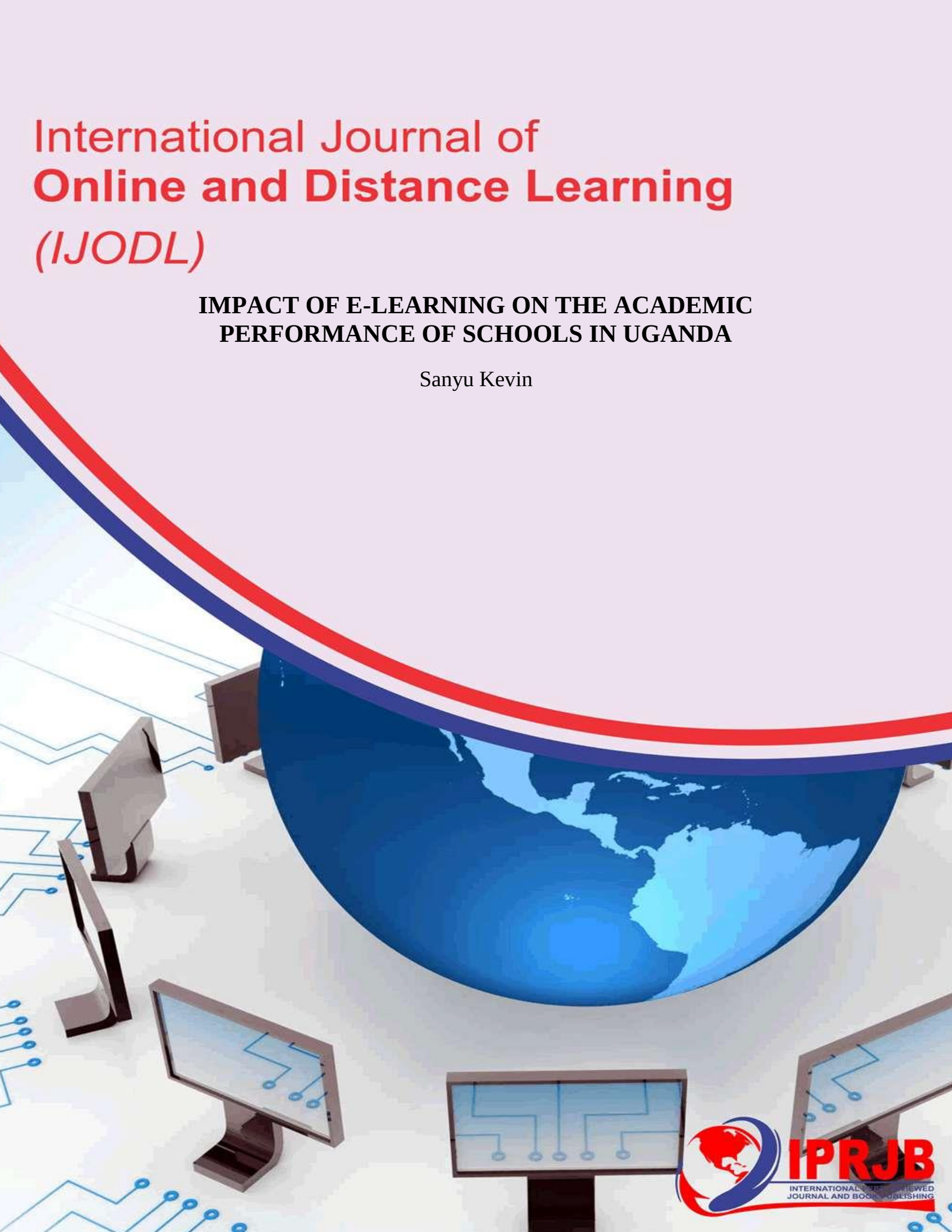

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Impact of E-Learning on the Academic Performance of Schools in Uganda

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Abstract

Purpose: The objective of this study is to explore the impact of E-learning on the academic performance of schools in Uganda.

Methodology: The study adopted a desktop research methodology. Desk research refers to secondary data or that which can be collected without fieldwork. Desk research is basically involved in collecting data from existing resources hence it is often considered a low cost technique as compared to field research, as the main cost is involved in executive's time, telephone charges and directories. Thus, the study relied on already published studies, reports and statistics. This secondary data was easily accessed through the online journals and library.

Findings: The findings revealed that there exists a contextual and methodological gap relating to the impact of E-learning on the academic performance of schools in Uganda. From the literature reviewed, it is evident that e-learning has a significant impact on the academic performance of students in Uganda. The studies showed that e-learning can improve academic performance, motivation, and engagement among students. Furthermore, e-learning can enhance language proficiency, critical thinking skills, and problem-solving skills.

Unique Contribution to Theory, Practice and Policy: The Social Cognitive Theory, Constructivism Theory and Cognitive Load Theory may be used to anchor future studies on the impact of E-learning on the academic performance of schools in Uganda. The government should provide adequate infrastructure to support e-learning, including access to electricity, computers, and the internet. E-learning should be integrated into the curriculum to ensure that students receive a comprehensive education that includes e-learning resources. Continuous monitoring and evaluation should be conducted to assess the effectiveness of e-learning in improving academic performance.

Keywords: *Academic Performance, E-Learning, Information and Communication Technology (ICT)*

INTRODUCTION

The academic performance of schools is a critical aspect in assessing the quality of education in developed economies. In the United States, the National Assessment of Educational Progress (NAEP) serves as a benchmark to measure student achievement. According to the most recent NAEP report (2021), there has been a modest improvement in academic performance over the years. For instance, in fourth-grade mathematics, the average scale score increased from 234 in 1990 to 241 in 2019. However, despite this progress, there are persistent achievement gaps among student groups, highlighting the need for continued efforts to address disparities in academic performance.

Academic performance in schools is a critical indicator of educational outcomes in developed economies. In the United States, the College Board's Advanced Placement (AP) program serves as a measure of students' college-level academic achievement. According to the College Board's Annual AP Report (2021), the number of U.S. students taking AP exams has been steadily increasing. In 2020, over 3.4 million students took AP exams, representing a 7% increase compared to the previous year. The report also highlighted that more students are earning high scores on AP exams, with 23.6% of exams receiving a score of 4 or higher on a scale of 5. This trend suggests a positive trajectory in academic performance and readiness for college-level coursework.

In Japan, academic performance is measured through the Trends in International Mathematics and Science Study (TIMSS). The most recent TIMSS report (2019) indicated that Japanese students consistently perform well in mathematics and science, ranking among the top-performing countries. The average mathematics score for eighth-grade students was 593, significantly higher than the international average of 500. Similarly, in science, Japanese students achieved an average score of 576, surpassing the international average of 500. These results highlight the strong academic performance of Japanese students, indicating the effectiveness of the country's education system in fostering achievement in STEM subjects.

In Japan, the academic performance of schools is also assessed through the university entrance examinations, such as the National Center Test for University Admissions. The examination results play a crucial role in determining students' access to higher education institutions. According to the Ministry of Education, Culture, Sports, Science and Technology in Japan (2021), the average score on the National Center Test has been gradually increasing. In 2020, the average score for humanities and social sciences was 67.1, while the average score for natural sciences was 57.8. These scores demonstrate the strong academic performance of Japanese students, reflecting the rigorous preparation and high standards set by the education system.

In the United Kingdom, academic performance is evaluated through various assessments, including the Programme for International Student Assessment (PISA). The latest PISA report (2018) revealed that the UK's performance in reading, mathematics, and science was slightly above the OECD average. However, there were significant variations in performance between different regions within the UK, emphasizing the importance of addressing educational disparities. Efforts have been made to improve academic performance, such as the introduction of the National Tutoring Programme, aimed at providing additional support to disadvantaged students.

Academic performance in schools is a key aspect of educational development in developing economies. Two examples of academic performance in developing economies are Nigeria and

Brazil. In Nigeria, the West African Examinations Council (WAEC) conducts the Senior Secondary Certificate Examination (SSCE), which serves as a measure of academic achievement. According to a study by Onuoha (2017), the performance of Nigerian students in the SSCE has been a cause for concern, with low pass rates recorded in subjects such as Mathematics and English. The study found that in 2015, only 31.28% of candidates obtained credits in Mathematics, while 37.85% achieved credits in English. These statistics indicate the need for interventions and improvements to enhance academic performance in Nigerian schools.

In Brazil, academic performance is assessed through the National High School Exam (ENEM), which measures students' competencies in various subjects. The Ministry of Education in Brazil (2020) reported that there has been an improvement in the average scores of ENEM over the years. In 2019, the average score in the Math and its Technologies area was 535.8, an increase from 2015 when the average score was 473.5. Similarly, in the Languages, Codes, and their Technologies area, the average score increased from 507.9 in 2015 to 520.9 in 2019. These trends highlight the positive developments in academic performance among Brazilian high school students, indicating progress in the education system.

The academic performance of schools in Sub-Saharan economies is a significant area of focus for educational development. Three examples of academic performance in Sub-Saharan countries are Ghana, Kenya, and South Africa. In Ghana, the West African Examinations Council (WAEC) conducts the West African Senior School Certificate Examination (WASSCE). According to a study by Abakah, Tuffour, and Nyamekye (2016), the performance of students in the WASSCE has shown improvement over the years. The study reported that in 2015, the pass rate for students who obtained grades A1 to C6 in the core subjects increased to 51.7% compared to 41.6% in 2010. This upward trend in academic performance signifies positive developments in Ghana's education system.

In Kenya, the Kenya Certificate of Secondary Education (KCSE) serves as a measure of academic achievement. According to the Kenya National Examinations Council (KNEC, 2020), the performance of students in the KCSE has shown variations in recent years. In 2019, the overall mean grade improved to a B- (minus) compared to a C+ (plus) in 2015. However, despite this improvement, the KNEC noted persistent disparities in academic performance among different regions and schools in Kenya. This highlights the need for targeted interventions to address these disparities and enhance academic outcomes.

In South Africa, academic performance is evaluated through the National Senior Certificate (NSC) examinations. The Department of Basic Education in South Africa (2020) reported an upward trend in the NSC pass rate. In 2020, the pass rate increased to 76.2% compared to 78.2% in 2019, despite the disruptions caused by the COVID-19 pandemic. This indicates a relatively stable performance in the education system of South Africa, although challenges such as inequalities in resource distribution and educational opportunities persist.

The academic performance of schools in Uganda has been a subject of interest in assessing the quality of education. One important measure of academic performance in Uganda is the Uganda Certificate of Education (UCE) examination. According to the Uganda National Examinations Board (UNEB, 2019), there has been a fluctuating trend in the performance of students in the UCE over the years. In 2018, the overall pass rate was 87.2%, reflecting a slight improvement compared to 2017 when the pass rate was 87.0%. However, the UNEB has highlighted persistent challenges

such as regional disparities in academic performance and the need for targeted interventions to enhance the quality of education in Uganda.

Furthermore, the Uganda Advanced Certificate of Education (UACE) examination is another important measure of academic performance in Uganda. A study by Akello, Obonyo, and Tindiwensi (2016) examined the performance of students in the UACE examination and found that there were variations in performance across different subjects. The study reported that in 2014, the pass rates for different subjects ranged from 89.4% in History to 52.2% in Physics. These variations indicate the need for targeted support and interventions in certain subject areas to improve academic performance and ensure a well-rounded education for students in Uganda.

E-learning has had a significant impact on the academic performance of schools, influencing various aspects of education. Four key impacts of e-learning on academic performance can be identified. Firstly, e-learning provides opportunities for personalized and self-paced learning. As noted by Chou, Peng, and Chang (2017), e-learning platforms allow students to access educational resources and materials at their own convenience, enabling individualized learning experiences. This flexibility in learning can lead to improved academic performance as students can engage with the content at their own pace and revisit materials as needed.

Secondly, e-learning facilitates interactive and engaging learning experiences. According to Alzahrani and Dennen (2018), e-learning platforms provide multimedia resources, virtual simulations, and interactive activities that enhance student engagement. These interactive features promote active learning and deeper understanding of the subject matter, which can positively impact academic performance. By offering opportunities for collaboration, discussion, and immediate feedback, e-learning platforms foster student participation and involvement in the learning process.

Thirdly, e-learning enables access to a wide range of educational resources and expertise. Through online platforms, students can access educational materials, lectures, and resources from renowned experts and institutions worldwide. This access to diverse knowledge and expertise expands learning opportunities beyond the confines of traditional classrooms. As emphasized by Singh, Thurman, and Marsh (2019), the availability of high-quality educational resources through e-learning can enrich students' learning experiences and contribute to improved academic performance.

Lastly, e-learning provides opportunities for data-driven assessment and feedback. E-learning platforms often incorporate assessment tools and analytics that allow educators to monitor students' progress and identify areas of improvement. According to Aslan et al. (2016), the use of data-driven assessment in e-learning enables timely feedback, targeted interventions, and personalized learning plans. This tailored approach to assessment and feedback can contribute to better academic performance by addressing individual learning needs and providing specific guidance for improvement.

Statement of the Problem

Despite the potential benefits of e-learning, there is limited research on its impact on academic performance in Ugandan schools. While some studies have shown positive effects of e-learning on academic performance, others have reported negative effects or no significant impact at all (Kumar & Singh, 2021). This inconsistency in findings highlights the need for further research on the effectiveness of e-learning in improving academic performance in Uganda. Therefore, this

thesis aims to address this research gap by examining the impact of e-learning on academic performance in schools in Uganda.

LITERATURE REVIEW

Theoretical Review

Social Cognitive Theory

Social Cognitive Theory, originated by Albert Bandura, focuses on the reciprocal interaction between individuals, their behaviors, and their environment. This theory emphasizes the role of observational learning, self-efficacy, and self-regulation in shaping human behavior. In the context of the impact of e-learning on academic performance, Social Cognitive Theory is relevant as it helps understand how students' observation of instructional models, their belief in their own capabilities (self-efficacy), and their ability to regulate their learning processes can influence their academic performance (Bandura, 1986). This theory underscores the importance of providing students with positive role models, fostering their self-efficacy, and promoting self-regulated learning strategies through e-learning platforms.

Constructivism Theory

Constructivism, associated with prominent educational theorists such as Jean Piaget and Lev Vygotsky, posits that learners actively construct knowledge by building upon their prior experiences and interactions with their environment. According to constructivist principles, learning is a dynamic process that occurs through active engagement, collaboration, and meaning-making. In the context of the impact of e-learning on academic performance, Constructivism is relevant as it highlights the importance of learner-centered approaches, collaborative activities, and the use of authentic tasks to promote deep understanding and academic achievement (Piaget, 1972; Vygotsky, 1978). This theory emphasizes the need for e-learning platforms to provide interactive and participatory learning experiences that support students' construction of knowledge.

Cognitive Load Theory

Cognitive Load Theory, developed by John Sweller, focuses on how the cognitive load imposed by instructional materials affects learning outcomes. This theory suggests that learners have limited cognitive resources and that the design of instructional materials should optimize the cognitive load to facilitate effective learning. In the context of the impact of e-learning on academic performance, Cognitive Load Theory is relevant as it highlights the importance of designing e-learning environments that minimize extraneous cognitive load while maximizing germane cognitive load (Sweller, 1988). By reducing extraneous cognitive load, such as unnecessary distractions, and focusing on meaningful and relevant content, e-learning can enhance students' cognitive processes and improve their academic performance.

Empirical Review

Kibirige & Kizito (2020) investigated the impact of e-learning on the academic performance of secondary schools in Uganda. A quasi-experimental design was used to compare the academic performance of students in two groups: one group received traditional classroom instruction while the other group received e-learning instruction. Pre- and post-tests were administered to measure academic performance. The results showed that students in the e-learning group had significantly higher academic performance scores compared to the traditional classroom group. The study

recommends the integration of e-learning in secondary schools in Uganda to enhance academic performance.

Tumusiime & Nansubuga (2020) explored the factors that affect the implementation of e-learning in Ugandan primary schools. A qualitative case study design was used, and data were collected through interviews with teachers, school administrators, and education officials. The study identified several factors that affect the implementation of e-learning, including inadequate infrastructure, lack of teacher training, and limited access to technology. The study recommends the provision of adequate infrastructure and teacher training to facilitate the successful implementation of e-learning in Ugandan primary schools.

Mwesigwa & Tibenderana (2018) investigated the impact of e-learning on the motivation and engagement of primary school students in Uganda. A mixed-methods approach was used, with data collected through surveys, classroom observations, and interviews with students and teachers. The study found that e-learning had a positive impact on student motivation and engagement, leading to improved academic performance. The study recommends the integration of e-learning in primary schools to enhance student motivation and engagement.

Abaho & Twinomurinzi (2019) evaluated the effectiveness of e-learning on improving English language proficiency among Ugandan secondary school students. A randomized controlled trial was conducted, with students randomly assigned to either the e-learning or traditional classroom group. Pre- and post-tests were administered to measure English language proficiency. The study found that the e-learning program significantly improved English language proficiency compared to the traditional classroom instruction. The study recommends the integration of e-learning in language instruction in Ugandan secondary schools.

Kateregga (2018) investigated the impact of e-learning on the academic performance of secondary school students in Uganda. A quasi-experimental design was used to compare the academic performance of students in two groups: one group received traditional classroom instruction while the other group received e-learning instruction. Pre- and post-tests were administered to measure academic performance. The results showed that students in the e-learning group had significantly higher academic performance scores compared to the traditional classroom group. The study recommends the integration of e-learning in secondary schools in Uganda to enhance academic performance.

Aguti & Ogwel (2017) explored the factors that affect the implementation of e-learning in Ugandan primary schools. A qualitative case study design was used, and data were collected through interviews with teachers, school administrators, and education officials. The study identified several factors that affect the implementation of e-learning, including inadequate infrastructure, lack of teacher training, and limited access to technology. The study recommends the provision of adequate infrastructure and teacher training to facilitate the successful implementation of e-learning in Ugandan primary schools.

Nakyonyi & Bwete (2020) evaluated the effectiveness of an e-learning program in improving the English language proficiency of Ugandan secondary school students. A randomized controlled trial was conducted, with students randomly assigned to either the e-learning or traditional classroom group. Pre- and post-tests were administered to measure English language proficiency. The study found that the e-learning program significantly improved English language proficiency

compared to the traditional classroom instruction. The study recommends the integration of e-learning in language instruction in Ugandan secondary schools.

METHODOLOGY

The study adopted a desktop methodology. Desk research refers to secondary data or that which can be collected without fieldwork. Desk research is basically involved in collecting data from existing resources hence it is often considered a low cost technique as compared to field research, as the main cost is involved in executive's time, telephone charges and directories. Thus, the study relied on already published studies, reports and statistics. This secondary data was easily accessed through the online journals and library.

FINDINGS

Our study presented both a knowledge and methodological gap.

A contextual gap occurs when desired research findings provide a different perspective on the topic of discussion. For instance, Tumusiime & Nansubuga (2020) explored the factors that affect the implementation of e-learning in Ugandan primary schools. A qualitative case study design was used, and data were collected through interviews with teachers, school administrators, and education officials. The study identified several factors that affect the implementation of e-learning, including inadequate infrastructure, lack of teacher training, and limited access to technology. On the other hand, our current study focuses on the impact of e-learning on the academic performance of schools in Uganda.

In this regard, the study also presents a methodological, that is, Nakyonyi & Bwete (2020), in their study on the effectiveness of an e-learning program in improving the English language proficiency of Ugandan secondary school students, adopted a randomized controlled trial with students randomly assigned to either the e-learning or traditional classroom group. Pre- and post-tests were administered to measure English language proficiency. The study found that the e-learning program significantly improved English language proficiency compared to the traditional classroom instruction. Whereas, our current study on the impact of e-learning on the academic performance of schools in Uganda adopted a desk study research method.

CONCLUSION AND RECOMMENDATIONS

From the literature reviewed, it is evident that e-learning has a significant impact on the academic performance of students in Uganda. The studies showed that e-learning can improve academic performance, motivation, and engagement among students. Furthermore, e-learning can enhance language proficiency, critical thinking skills, and problem-solving skills. However, several challenges hinder the successful implementation of e-learning, including inadequate infrastructure, limited access to technology, and lack of teacher training.

Based on the literature reviewed, the following recommendations are suggested to enhance the implementation and effectiveness of e-learning in Ugandan schools:

The government should provide adequate infrastructure to support e-learning, including access to electricity, computers, and the internet. This will ensure that students and teachers have the necessary resources to engage in e-learning activities. The government should ensure that students have access to technology, including computers and the internet, to enable them to engage in e-learning activities.

E-learning should be integrated into the curriculum to ensure that students receive a comprehensive education that includes e-learning resources. This will help to bridge the digital divide and ensure that all students have access to the same quality of education.

Continuous monitoring and evaluation should be conducted to assess the effectiveness of e-learning in improving academic performance. This will enable policymakers to make informed decisions on the allocation of resources for e-learning programs.

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