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Influence of poverty on digital education in Uganda's rural secondary schools: reference to covid-19 lockdown: a case study of Kayunga District in Uganda

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Abstract

This study explored the impact of poverty on digital learning, examined the role of parents' income in the success of digital education in rural schools, and provided suggestions to improve teaching and learning using digital facilities in times of pandemic in rural schools. Uganda's rural schools lack enough facilities to support the online school system. And there is a lack of in-depth analysis of poverty's influence on digital education. This study used cross-sectional survey data utilizing quantitative and qualitative research approaches. The findings revealed that rural schools in Uganda do not receive efficient digital education where parents and guardians of the school-going children cannot afford the financial costs of the digital devices that could support children's home digital learning. Parents' income plays an influential role in the digital education of their children. 38.7% of the parents are farmers, and 6.3% of parents are not employed at all. Over 22% of students revealed that their parents supported more than four school-going children. There is a need for governments, institutions and local communities to develop a technological infrastructure for digital learning and develop new curriculums which can support virtual classrooms. Areas that emerged for further research: The situation of digital education in semi-urban Uganda.

Keywords
Poverty, digital education, rural schools, COVID-19

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1. Introduction

Poverty is often considered a complex social problem related to economic, social, cultural, and other factors in the historical process of mankind's continuous hustle (Longjun Zhou,2021). Many poor people live in countries that lack sufficient resources, of which such countries have poverty rates of over 20% (Manuel, Desai, Samman, & Evans, 2018). Africa suffers from the scarcity of necessities of life like food, clean water, health care, heating fuel, and cash income (Mattes, 2020). Countries have used education as a key tool in eliminating poverty and promoting social development and progress. Among the sustainable development goals (SDGs) adopted by the United Nations member states, education is a significant transformation with the innovation of digital technologies (Sinha, & Bagarukayo, K. (2019).

In 2015, Heads of state worldwide committed to eradicating poverty for all people in their particular countries by 2030 (Marcus et al., 2022). However, research reveals that there is still a funding gap of $125 million each year in the poorest countries in education, social protection, and health which are pivotal in reducing poverty.

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During the COVID-19 pandemic, educational institutions were shut down worldwide, negatively impacting over 60% of students and causing an intense disruption of the education system (Alqahtani& Rajkhan,2020). This made it compulsory for educationists in developing nations to rapidly adopt, consolidate and embrace technology to contain the challenging time (Temitayo, D., 2020). At this moment, they witnessed school administrators fidgeting to convert traditional classes to online formats. Modifications in educational delivery modes have been rapid and constructive. Digitalizing education involves the integration of users and platforms on personal computers, smartphones, and other devices. For this to be effective, governments, institutions, and local communities should aim at developing a technological infrastructure for distance learning, adaptive curriculums for online learning developing new curriculums which meet the needs of the employment world, research and developing new laboratories and online classroom concepts for efficient virtual learning (M. Bakata& D. Radosav,2020).A broader view of digital learning includes approaches like adaptive learning, blended learning, e-textbooks, virtual classrooms, open education resources, mobile learning, and online personalized learning (M. Bakata& D. Radosav,2020). Covid-19 exposed how unprepared developing countries have been for increased reliance on the Internet, primarily in work and education affairs (Badawi, 2022).

In Uganda, the presidential directive of March 2020, schools and institutions were replaced by digital learning systems to ensure that teaching continues at all levels of education (Babirye, 2020). However, several schools were not prepared for the new digital education system. Makanga, 2022 also contends that; limited access to electricity, internet, television, and other digital devices among rural households led students to miss out on e-learning during the COVID-19 lockdown, which caused over 15 million children to keep out of school. To address this concern, the government offered e-learning in response, but poor households and those outside the cities were disadvantaged. Rural schools in Uganda did not have enough e-learning facilities to support the online school system. There is a lack of in-depth analysis of the influence of poverty on digital education, especially in rural schools. This study attempts to fill this gap by exploring the impact of poverty on digital teaching and learning during the COVID-19 lockdown.

2. Literature review

With the education system developing and undergoing changes, the COVID-19 pandemic created new problems for the education system, especially during the lockdown periods, which affected many lives of learners who could not access digital learning programs put in place during the lockdown (Babirye B., 2020). Electricity is a prerequisite for using digital tools. Unfortunately, In Uganda, only 26% live in houses connected to the national grid, about 35% live in households with a television set, 11% have access to a computer, and the poorest citizens (14%) are less likely to be connected to the national electricity network. (Makanga, 2022). Solar energy, an alternative energy source in rural and remote communities in Uganda, is also expensive for rural people (Adebayo al, et 2018).

Effective use of digital technologies demands that teaching staff be adequately trained in using distance education as a mode of delivery(Makokha et al., 2016). However, Uganda lacks skills and sufficient human capacity, contributing to low digital implementation. It also lacks a national digital skill framework that guides government policies, programs, curricula, and standards for digital skills(MoE S, 2020). This report further stressed that the high youth population out of school, low foundational literacy and numeracy learning outcomes, and relatively high adult illiteracy rate hinder the wide development of primary and intermediate digital skills necessary for Uganda's digital education vision. With limited access to electricity, digital learning becomes an impossible reality for learners. Literature reveals that 80% of Uganda's schooling children live in rural areas where private and public schools are characterized by a lack of resources with underdeveloped school infrastructure (Babirye B., 2022). Most schools in Uganda lack enough facilities to support the online school system. In addition, income levels are generally low in urban and rural areas. Uganda has made significant investment and policy reforms in education since 1997 however, this has not yet translated into expected results concerning poverty reduction through human capital investment (Datzberger, 2018).

Online education offers increased access to high-quality education and allows students to become active learners rather than passive recipients of learning. However, note that digital education requires higher economic considerations. Sinha et al., (2019) also further stress that; Digital education is vital to encourage education via online mode. However, there is still a failure to tap into poverty and its influence on the affordability of ICT/ digital technologies. However, there is still no in-depth analysis of poverty's influence on digital education, especially in rural schools. This study attempted to fill this gap by exploring the impact of poverty on digital teaching and learning during the COVID-19 lockdown. It also aimed to explore the impact of poverty on digital learning and established solutions, examined the role of parents' income in the success of digital education in rural secondary schools, and provided suggestions to improve teaching and learning using digital facilities in times of pandemic in rural schools. The findings of this study can enable parents to know their financial role in the success of digital education for their children. Also, equip teachers and school managers with information on economic hindrances to the success of digital education in rural secondary schools. The study was conducted in rural secondary schools of Kayunga district in Uganda and delimited itself to the influence of poverty on digital education in rural secondary schools.

3. Material and Methods

This paper is based on empirical findings. It used a cross-section of survey data collected in May and June 2022 from students, teachers and school administrators of rural secondary schools. Data was collected from the Kayunga district of Central Uganda since it has got a number of rural schools with low electricity connection. The study used a mixed research presentation of data collection, processing, and reporting, facilitating detailed opinions and statistics from research respondents. A cross-sectional research design and a cross-section of heterogeneous study participants were considered appropriate for this study. The case study approach facilitated the collection of detailed and reliable findings. The examination held intervening variables constant and focused on the independent and dependent variables. Poverty was the independent variable, and digital education was the dependent variable. Rural schools were indicated by conditions like the role of parents' income in the success of digital teaching in rural schools and suggestions to improve digital learning during the pandemic. Under the quantitative approach, the researcher asked close-ended questionnaires with Linkert order of 5 questions to students and teachers self-administered. Qualitative data on this attribute included open-ended questions in a face-to-face interview with the school administrators. Questions of variables included *What is the employment status of your parent/ guardian? How were you able to acquire data? How many meals do you have at home in a day? How many school-going siblings do you have? How many computer lessons do you have in a week at school?*

4. Results and Discussions

This chapter presents the findings of the study. The investigation focused on the influence of poverty on digital education in Uganda's rural secondary schools in Kayunga District, Uganda. The study specifically examined the impact of poverty on digital teaching and learning in Uganda's rural schools.

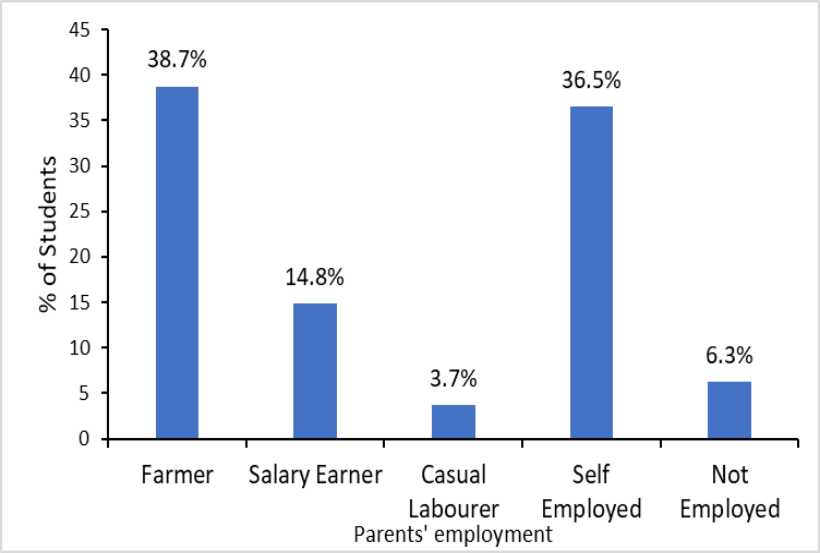

Figure 1: Parents' employment status.

Study findings revealed that 38.7 percent of the parents are farmers, and 6.3 percent are unemployed. This makes it practically impossible for such parents to meet the digital requirements of their children's education. With such findings, it is questionable for digital education to yield fruits if the government does not subsidize digital education devices to make digital education affordable to even rural learners. In the face to face interview with the school administrators, they revealed that several children did not get support from their parents, especially in acquiring data, because parents have inadequate earnings.

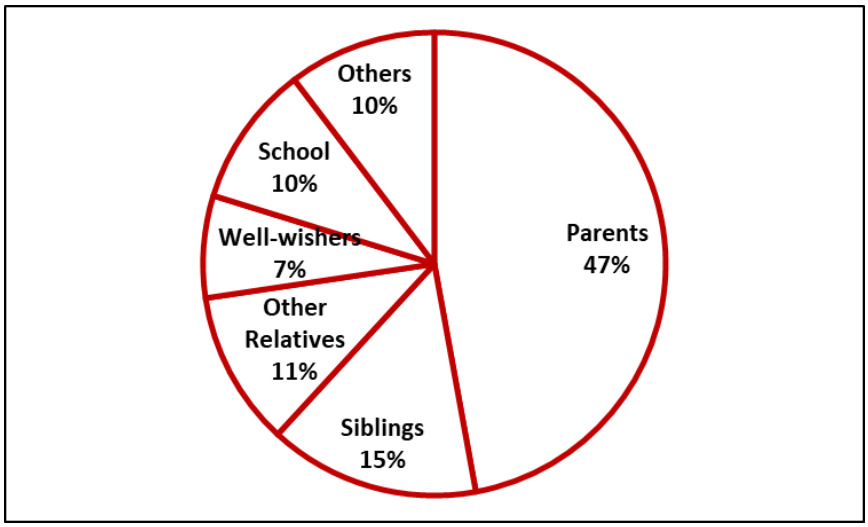

Figure 2. Source of data to the learner

Study findings revealed that 47 percent of the parents provided data for their children's home learning period during the lockdown. Others were supported by their siblings (15%). Students who missed online lessons were the main reason for a lack of data to facilitate their learning. This connects to the income and employment levels of the parents.

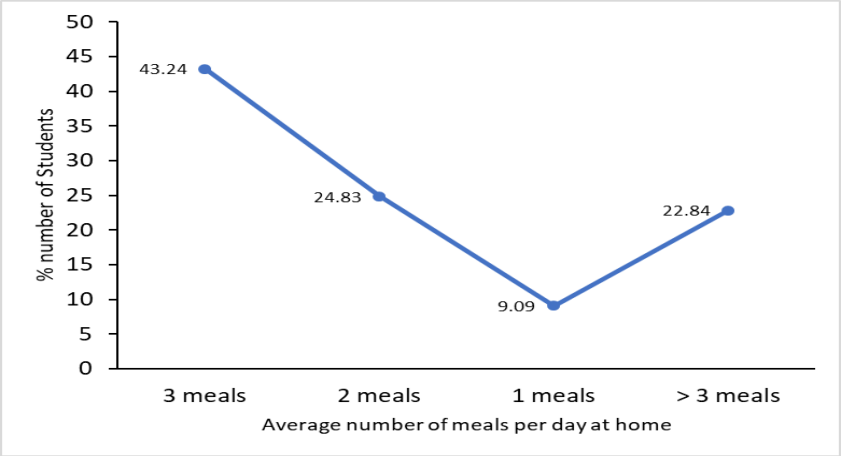

Figure 3: average number of meals per day at home.

Study findings revealed that 43.24 percent of the learners were able to have 3 meals per day while at home. For other learners (9.09 percent), their parents can only afford just one meal per day at home. With such a status, it is very unconvincing that learners from such families can afford the cost of digital devices to support their digital education. The sampled teachers and school administrators also agreed with this fact supplementing that parents of rural schools are poor and that some of their learners only get decent meals while at school. The government should encourage rural transformation and ensure food security in rural households.

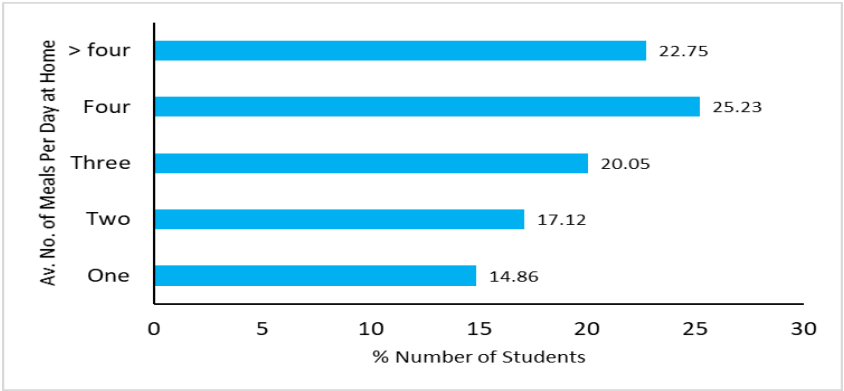

Figure 4 Number of schools going siblings.

Parents support more than one child in school. Over 22% of students revealed that their parents had other siblings they supported in school. This implies that parents really must be stable financially to meet the digital educational requirements of the children they support in school. This information checks the government to economically empower rural parents by providing them with interest-free loans to boost their incomes and be able to support all their children. Complementary interviews revealed related ideas. In their opinions, Head teachers comprehensively revealed that while digital gadgets were provided(phones, computers) most desirable(data) was not really available and accessible to all parents. Related interview opinions supported these results and included that the parents tried to provide however, they had a lot of children too requiring similar learning requirements like data and the like. Many children were told to do petty jobs like frying chapat and mandazi for sale to earn some income and purchase data for themselves. They ended up having irregular online classes, which made digital learning during the lockdown unsuccessful.

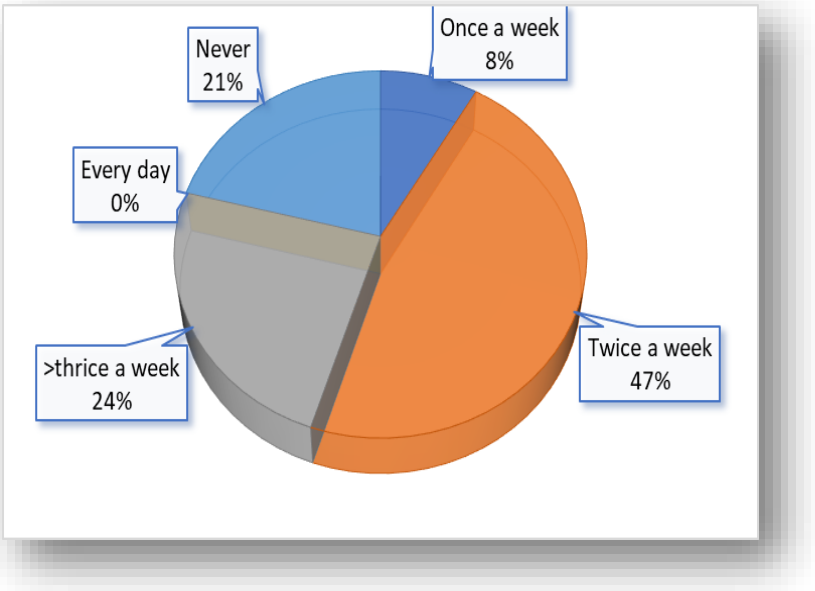

Figure 5: computer lessons attended at school in a week.

Given the digital education trend in all countries, digital education in Uganda is not yet at its peak, especially in post-primary institutions. And no learner reported daily attendance of computer lessons at school. 21% of the students said they never attended computer lessons at school. Only 47% of the learners had computer lessons at least twice a week. This situation is alarming, especially on the side of the government. Effort in digital policies is still required, and a follow-up to check on the feedback on such policies. It also goes back to the electrification of rural communities and rural schools. The study findings revealed that some schools had no computers or computer laboratories.

4.1. Practical implication

COVID-19 demands that we re-think the direction to transmit e-learning or any other means to replace our traditional classroom-centric educational diversity systems. The study explores the impact of poverty on digital learning, examines the role of parents' income in the success of digital education

in rural schools, and then provides suggestions to improve teaching and learning using digital facilities when face-to-face learning is hindered. Useful in eliciting information that. Parents can use this to improve their provisions for their children embracing digital learning. Understanding poverty and digital learning will help teachers and parents meet individual learners' needs. The study's information informs policymakers to develop relevant e-learning policies that can facilitate and support rural schools to compete favorably with their counterparts in urban schools.

4.2. Theoretical implication

The analysis of Uganda's digital education reveals that access to electricity is still a major challenge in rural schools that calls for aggressive policy development structures to bring rapid changes in digital education. Poverty negatively impacts on digital education of learners in rural schools since most digital devices require money to access them. Study findings revealed that many parents are farmers and earn seasoned income. Rural schools in Uganda did not receive efficient digital education because of poverty, where parents and guardians of school-going children could not afford the financial costs of the digital devices that could support children's home digital learning. Through local leaders, governments should support rural communities in income-generating activities to raise income and support the digital education of their children.

4.3. Limitations and future research directions

In conducting this study, the following challenges were encountered; There was a need for a representative position of all schools in the Kayunga district that could be able to explore the magnitude of the study problem. However, achieving this would be tedious, costly, untimely, and valuable. Therefore, to minimize this limitation, two of the four public secondary schools in the district were covered, whose findings could be generalized. Interacting with minors as study participants, especially students at the lower secondary school, became challenging as their consent was needed from the school administration to participate in the study. However, after a series of explanations and self-introduction, consent was granted. The study focused on the influence of poverty on digital education in Uganda's rural secondary schools concerning covid-19 lockdown. Other areas that emerged for further attention were; Examining the post-COVID-19 impact on educational norms and the situation of digital education in semi-urban Uganda.

5. Conclusion and policy recommendations

The study found that rural schools in Uganda did not receive efficient digital education because of poverty, where parents and guardians of the school-going children could not afford the financial costs of the digital devices that could support children's home digital learning. There is a need to consider approaches like blended learning and open education resources than concentrating on only virtual classrooms. Parents' income plays an influential role in the digital education of their children. This study found that 38.7% of the parents are farmers, therefore earning seasoned incomes; 6.3% of parents are not employed at all, which means the government needs to subsidize digital devices to make them affordable. In addition, over 22% of students revealed that their parents supported more than four school-going children with their poverty levels, straining them financially. To adopt the global digitalization of education, yet rural parents suffer unemployment (6.3%). We need to consider approaches like blended learning. Through local leaders, governments should support rural communities in income-generating activities to raise income and support the digital education of their children. Financial support to rural SACCOs and saving groups should be prioritized. Many learners (21%) are not able to attend computer lessons in their schools, and 47% reported that they attend computer lessons at least twice a week. There is a need for governments, institutions, and local communities to develop a technological infrastructure for digital learning and develop new curriculums which can support virtual classrooms.

Interview opinions revealed that the majority of the parents are farmers who earn seasoned income, and had more than two school-going children to support, which made their digital learning provisions inadequate. In times of pandemic or unrest caused by any event, the government should make a considerable investment to increase digital infrastructure and ensure rural schools have access to digital technologies to make digital education practical. Identify the most disadvantaged students and provide them with free digital devices and the internet. Also, International government organizations and development partners should be engaged to be another supporting hand to the government to make digital devices and the internet accessible and affordable to even rural learners. Still, modifications in education delivery modes need to be rapid.

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