

Unpacking ICT Readiness and Students' Preparedness for National Examinations During the Covid-19 Pandemic in Uganda. A Case of Kamuli and Jinja Districts of Uganda.

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ABSTRACT: Although the advent of the novel Covid 19 pandemic led to education disruptions in Uganda, it as well widened the scope and role that information and communication technology can play in education. There was always a negative attitude towards embracing technology in the teaching and learning for purported reasons such as; financial, insufficient technical skills, insufficient equipment, management support, school culture, perceived usefulness, time consuming and others. This study set out to establish the extent of readiness in using information and communication technology (ICT) in the absence of physical class interaction that was not possible due to intermittent total lock downs. The objectives of the study were; to examine the relationship between ICT infrastructure and student preparedness for national examinations; to investigate the relationship between technological skills and student preparedness for National examinations; and to assess the relationship between management support and student preparedness for National examinations. The study employed a cross sectional research design, data were collected and analyzed quantitatively using descriptive and inferential statistics using the Pearson chi square analysis of independence. The key findings revealed that the students' performance was independent of ICT infrastructure (P value=0.992>0.07), technological skills (P value=0.143>0.07) and management support (P value=0.075>0.07) which implied that the students were not prepared to use ICT as preparation for national examinations. The study may be of significance to; curriculum developers, MoES and policy makers, society and schools' administration. The study thus recommends that Ministry of Education and Sports (MoES) and curriculum developers, embed and embrace the uptake of ICT as part of instruction in the schools of Uganda to prepare for similar education disruptions.

KEYWORDS: ICT infrastructure, ICT readiness, lockdown, management support, student preparedness.

INTRODUCTION

Education is a continuous process that is evidenced by progression from one class to another and from one cycle/ level to another. This means that the education trajectory should not be disrupted regardless of any circumstance. There should be any possible creative or innovative mechanism to ensure that education continues amidst disruptions. Jinja and Kamuli districts where this study was carried out, are among the twenty-two districts found in the Eastern region of the Republic of Uganda. They border the Buganda region and are separated by the Nile river. They form an urban setting but with secondary schools that possess the characteristics of both urban and rural settings. The variations in the state of secondary schools (rural-urban settings) facilitated the selection of samples from these districts without misinforming the quality of the findings. The study therefore aimed to establish if the innovative ICT learning mode helped the students to proceed with learning during the lock down and to show if the students were prepared for the introduction of such a learning mode ahead of sitting for their UCE national examinations.

BACKGROUND

Globally, ICT is recognised as a tool for improving teaching and learning (Midila, 2021). ICT usage includes but not limited to both new and old communication technologies such as radios, televisions, computers, fax, scanners, print media and internet (Mukhula, Manyiraho, Atibuni & Olema, 2021). However, in the past, there has been continuous neglect and fear for using technology enhanced teaching and learning especially in Uganda's education system (Kizito, 2019; Nyakito et al. 2021). Other teachers have always had insufficient ICT devices, negative attitude towards learning and using ICT skills in teaching (Keirungi, 2021). Technology enhanced learning was only left to the international schools and some higher education systems but with an intention of attracting more students and ensuring convenience in learning for those who were not able to access the institutions.

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Students' preparedness to ICT enhanced learning can be assessed from equipment capability, technology skills, self-directed learning skills and motivation (Widodo, Wibowo & Wagiran, 2020). The readiness of the institution and the management as a whole is also critical when introducing ICT as a learning mode. The institution readiness must be considered before considering the adoption of e-learning and ICT usage as this will determine its likelihood of success (Blacer-Bacolod, 2022). The lack of integration of ICT has greatly affected the elementary levels of learning as well as the secondary levels. It is the advent of the novel Covid 19 pandemic which hit the whole World and all businesses including but not limited to schools. This sent the schools and other education institutions into forced recess in form of unprecedented and intermittent total lockdowns, in an effort to curb the spread of the deadly and contagious virus. It is estimated that 64.6% of the World student population was affected by the lockdowns (UNESCO, 2020) and in Uganda about 73,000 education institutions, 548,000 teachers and 15million learners were directly affected by the school closures (MoES, 2022). There was a need to continue with learning and teaching in a remote way because it was not clear when the education institutions would re-open given that the virus was still spreading and the education calendar was to be disrupted. Some parents even feared that their children were over growing surpassing the appropriate age which they presumed for the given classes. It was evidently safer to study using ICT devices that allowed real time interaction between the teacher and the learners.

Having received clearance from the education ministry, the innovative way to continue with the education processes despite the education halt, was to use technology enhanced learning for schools, colleges and universities because it was possible without necessarily converging into schools. However, the first anticipated relatively cheaper strategy to use radios and television to deliver lessons to these affected learners hit a dead end as some regions purportedly did not have access to a radio or television set while some claimed that they lacked electricity and network reception for the radios and televisions in their areas, while others feared the lack of concentration to the lessons aired out on such devices. In June 2020, the GoU through the Covid 19 Emergency education response project (CERP) sought a \$14.7 million grant from the Global Partnership for Education (GPE) to cushion and mitigate the impact of Covid 19 through supporting continuity of learning during lock down in the pre-primary, primary and lower secondary levels of education (MoES, 2022).

To the National Curriculum Development Centre (NCDC), the integration of ICT in teaching and learning is one of the aspirations for the new reforms in the education curriculum especially at the lower secondary. This therefore was a blessing in disguise for the implementation of such reforms basing on the techno-phobia that has permeated in the teaching fraternity. However, in this paper we hypothesize and argue that the use of ICT to enhance teaching and learning especially at the lower levels of learning like secondary schools did not favour the entire schools equally and therefore undermined the inclusivity as a critical principle for education access across the Globe. In fact, as Atwine (2021) posits, the reality was that most school children were not learning. Could this be attributed to internet accessibility and ICT issues? For example, according to the Uganda Communications Commission (UCC), Uganda has the highest priced internet in the East Africa region. In Uganda for instance, buying a gigabyte of data costs approximately (\$2.75), as compared to Kenya's (\$2.48), Rwanda (\$2.25) and Tanzania's (\$2.25). This makes the application of ICT very difficult for learning especially in the rural setting schools. Some of the critical questions that one should be asking is that; were the learners ready for the uptake of ICT in learning at that time? This includes the resources, the physical ICT infrastructure, the internet connectivity and/or the general acceptance of this approach to teaching? Or was there continuity and/or sustainability of the ICT led education drive in the schools even after the restrictions and lockdowns were lifted or eased? All these questions inspired taking on such a study in the selected districts of Jinja and Kamuli and alongside the research questions informed the analysis and interpretation of the findings.

Significance of the study

The study may be of significance to the following;

i) To the Curriculum developers

The component of ICTs in teaching and learning is very critical. Therefore, the findings from this study may be of significance to the curriculum developers at the NCDC to incorporate ICT in all the curriculum documents especially incorporating ICT enhanced assessments so that the learners can get to learn the ICT and therefore be able to apply it for national examinations or even later in their world of work.

ii) To the schools' administration

Findings of this study may be of significance to the various schools especially those where the study was carried out. The findings may show how ready or un ready their students were prior to sitting for national examinations. This may implore the school administration to put up mechanisms that enhance ICT readiness by students for any such education disruption or even for their own development of ICT skills in their students and teachers.

iii) To MoES and other policy makers

Introducing ICTs for learning is fundamental for quality education especially at secondary level, but students' readiness to use the ICTs is another factor. The findings from this study may inform the MoES and policy makers on the best ICTs infrastructure that

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works for all regions and schools in Uganda putting into consideration the power, internet accessibility and the requisite skills that the teachers and students may have in implementing the use in teaching and learning transactions.

iv) To society

The members of the community/ society may not be aware of the role and the type of ICTs that may be used for teaching and learning. For instance, the society may undermine some ICTs like radios, televisions and mobile phones as potential learning equipment. The findings may therefore educate the society on utilising the unknown ICTs in education and training.

Statement of the problem

In the entire World, the outbreak of the deadly Covid 19 viral disease brought disruptions to education which was facilitated by the total lock downs, very strict health protocols and tight restrictions (Blacer-Bacolod, 2022) all geared towards curbing the spread as a result of congregation. The government thought of continuity of learning by developing and distributing home learning materials to the 15 million affected learners. However, only 20% of the self-study materials for learners in P1-P7 and S1-S4 were printed and distributed (Atwine, 2021). In order to promote real time learning, virtual learning using ICTs was the alternative to widen the catchment area of teaching and learning. The sudden shift from conventional classroom learning to online learning did not provide ample time to teachers and/or learners to prepare themselves for this transition to a new learning transaction. However, this was mired by the inadequacies associated with high costs of internet, limited bandwidth, shortage of skilled personnel, technology illiteracy population and inadequate infrastructure (Tumwesige, 2020) which evidences that all were not prepared for by the learners, teachers and government. Although, accessibility to ICT remains a serious global concern, the problem of phobia of new technologies is another challenge (Midila, 2021). According to the National IT survey of 2017/2018 it was found that 65.3% of the households owned a radio, 21.8% owned a television, while only 5.9 % had access to a computer at home (NITA, 2018). This could result into a digital divide between the urban and rural learners who may be incapacitated to access the internet and electricity. In addition, Uganda's internet penetration is 29.4% compared to Tanzania's 38% and Kenya's 53% (Why internet is so expensive in Uganda, 2022). This clearly demonstrated the unpreparedness for the ICT enhanced learning as an intervention to continue with learning. The problem at stake therefore is to understand the influence of ICT on students' preparedness for national examinations , the lessons learnt from which conclusions and recommendations may be drawn for future preparedness and redirect policy of education reforms in Uganda, otherwise the reforms may not be possible without a robust ICT practice and culture in the schools of Uganda.

Objectives of the study

The main objective of the study was to establish the extent of students' readiness in using ICT in the absence of physical class interaction in Kamuli and Jinja districts of Uganda.

The study was guided by the following specific objectives;

- a) to examine the relationship between ICT infrastructure and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.
- b) to investigate the relationship between technological skills and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.
- c) to assess the relationship between management support and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.

LITERATURE REVIEW

COVID-19 became synonymous with technology and the gaps associated with learning during the total lock downs were attributed to the digital divide between rural to urban areas (Fanelli, Cajuste, Cetta & Amanyana (n.d.) as well as size of the schools in terms of enrolment. During the Covid 19 total lockdowns in the entire world and specifically to Uganda, strategies were put in place to have continuity in learning of which some were feasible while others did not bear any fruits. This was allegedly and mainly attributed to insufficient students' readiness towards e-learning.

In this paper, we conceptualized ICT readiness as the perception and experiences that the learners got after exposure to this kind of learning transaction of which to the majority were going through it for the very first time. For instance, Bhaumik and Priyadarshini (2020), carried out a study using quantitative descriptive survey on 100 students in Delhi to establish their e-readiness to online learning during the Covid-19 lock down. Their findings revealed that access to online learning was found to be high, but the teachers online delivery skills and digital skills of the learners was found to be lacking.

Even before the advent of Covid 19 disease and the subsequent education disruption that led to the total lock down and closure of education institutions it was significantly associated with the students' academic performance. In a study by Osagie et al. (2019) on the role of ICT in the academic performance of postgraduate students at the university of Benin, findings revealed that there was a significant difference between the users and non-users of ICT facilities on academic activities. The study established that there is a positive impact of ICT on students' academic performance. Whereas their study poses both a contextual and knowledge gap (having

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conducted their study on postgraduate students and in another country), it can be in concordance with the role that ICT adoption can play in the academic performance of secondary school students in Uganda.

In a conceptual paper by Midila (2021) to establish the role of ICT enhanced instruction in COVID-19 lockdown in Nigeria, findings revealed that the use of technology enhanced accessibility and quality of education in the Covid-19 lockdown period, courses were taken online at a lesser and cheaper cost than the traditional physical learning environment. However, whereas the author states the barriers to ICT enhanced learning, there is no finding to reflect the ICT readiness of the students as proposed by the current study. Mukhula, et al. (2021), carried out a study to determine the level of ICT readiness and ICT policy implementation in secondary schools in Mayuge District, utilising the cross-sectional survey design and a sample of 232 secondary school teachers. From the study, it was revealed that there was a moderate level of ICT adoption readiness and a moderate level of ICT policy implementation, and a significant moderate positive relationship. However, in the study, the sample was on teachers who are the implementers of the ICT enhanced learning, but the students and their experiences as recipients of the ICT services were not considered at all in the study. The current study intended to collect the students' readiness for ICT during Covid 19 lockdown. This study chose students as a single unit of analysis because it is the students who may have found difficulties with the transition to the ICT technology in learning during the Covid 19 lock down.

The slow rate of ICT adoption prior to the Covid 19 lock down was facilitated by the high cost of internet and ICT gadgets. For instance, in a study by Eton and Chance (2022) on university students to illustrate how e-learning is used in Uganda, findings revealed that e-learning approaches in universities favourably correlated with financial implications, and some academic staff lacked e-learning training. However, the students reported that e-learning eased communication between them and their lecturers, although reported that internet and ICT gadgets were expensive.

In a study carried out by Kagoya (2020) in Uganda and Tanzania on the use of digital transformation to address the education challenges brought by Covid 19 revealed that there was an increase in digital transformation in home and personal learning among students who had prior faced challenges of technophobia. It is very pertinent to establish the students' readiness for ICT integration during the Covid-19 lockdowns. For instance, in an effort to establish whether ICT was being integrated in the teaching and learning process among secondary schools in Kigezi region, Mbabazi and Nafizi (2022) carried out a study to establish the integration of ICT in teaching and learning. The study employed a quantitative approach and was guided by the MICTIVO model of ICT integration. The results revealed that ICT was not being used in the teaching and learning process and most of the ICT infrastructure were not available in the schools and most of the respondents lacked ICT skills. To the contrary, Baluku and Kasujja (2020) carried out a mixed methods study to establish ICT usage and its influence on students' academic performance in Uganda Certificate of Education (UCE) in Kasese district. Using a sample of 291 respondents, a cross sectional research design and chi square test for analysis, their study established that accessibility to ICT resources in teaching influence the academic performance of students. Their study also revealed that the utilization of ICT infrastructure influences students' academic performance in UCE secondary schools in Kasese district.

This therefore accounts for the perceived low readiness in some schools at the advent of the total lock downs which were facilitated by the Covid 19 disease outbreak. The study by Mbabazi and Nafizi was in concordance with the one by Keirungi (2021) that inadequate devices, fear to use ICT and lack of interest to learn ICT skills hindered the ICT integration and therefore uptake of ICT as a mechanism of teaching in preparation for national examinations during the Covid 19 total lockdown.

The study therefore sought to test the following null hypotheses;

- Ho1 There is no relationship between ICT infrastructure and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda.
- Ho2 There is no relationship between technological skills and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.
- Ho3 There is no relationship between management support and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.

METHODOLOGY

Research design

The study employed a cross-sectional research design to establish the associative relationships between the variables of the study, utilising the quantitative approach of inquiry. According to Creswell (2009), a research design is a plan and procedure for research that span the decisions from broader assumptions to detailed methods of data collection and analysis. Creswell stresses that the orientation, type and nature of a particular study determines the choice of a particular research design. In this case, we aimed at establishing the relationship between the different variables conceptualized in this study to come up with conclusions on future students' ICT readiness and preparedness for unprecedented situations that may lead to education disruption.

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Research approach

The study took a quantitative approach to data collection and analysis. The approach was chosen because it aided the researchers to collect plentiful of data in real time, establish statistical relationship between the study variables which helps in generalization of the research findings to the entire population under study.

Data collection instruments

A five-point likert scale self-administered questionnaire was administered to the students in the selected schools and the respondents filled them and they were collected immediately.

Sampling and sampling procedure

The study utilized the simple random sampling technique of schools and respondents in order to minimise the possibility of bias during data collection.

Target population

The study targeted 'A' level students in senior six class of Kamuli and Jinja districts of Eastern Uganda from schools that were randomly selected from Kamuli and Jinja districts. These were targeted because they were the ones affected directly by the lockdown and subjected to virtual technology mode of learning prior to sitting their UCE National examinations. This is justified by a study by Mukhula et al. (2021), which concluded that secondary schools in Mayuge (one of the Eastern region districts) were in the early stages of domestication of ICT and ICT policy implementation.

Sample size:

The size of the population of the students was un known at the time of carrying out the study. Therefore, the study utilized the Cochran Formula (1977) for determining sample size of an unknown population. If the population size is unknown, the population proportion is unknown (Uakarn, Chaokromthong, & Sintao (2021).

$$n = \frac{z^2}{4(e)^2}$$

Where: n = sample size

z = 1.81 (z score at 93% confidence level)

e = 0.07 (desired level of precision)

$$n = \frac{1.81^2}{4(0.07)^2} = 167 \text{ students}$$

Data processing

The data collected was cleaned for inconsistencies, coded and entered into the computer for analysis.

Data analysis

Descriptive statistics were used to analyse the demographic data while inferential statistics of chi-square test of dependence and multiple regression analysis were used to analyse and establish the associative relationships with the aid of STATA version 15.0 statistical computer software. Because the data was categorical in nature, this justified a chi-square test of independence and later multiple regression analysis to establish the level of dependence between the variables in the study.

Response rate:

Out of the sample of 167 students supplied with questionnaires, 153 returned the questionnaires presenting a response rate of 92%. The reason for the high response rate was attributed to guided supervision when filling the questionnaires. According to Nulty (2008), a response rate of 60% or higher is appropriate. Creswell (2012) also concurs that survey researchers seek high response rates from participants so that they can have confidence in generalizing the results to the population they are studying.

Descriptive analysis

The respondents were asked the grade that they scored at their UCE levels to establish if the lock down and the subsequent introduction of ICT as a teaching and learning strategy affected their performance. The following were the findings based on the items measured during the study;

Performance at UCE level examinations

The respondents were asked to respond to the grade that they scored during their UCE national examinations. The purpose of this was to establish if the lock down had affected their performance in the UCE national examinations. This was also intended to establish if the innovation of ICTs as mode of learning in preparation for their examinations had any influence on how they performed.

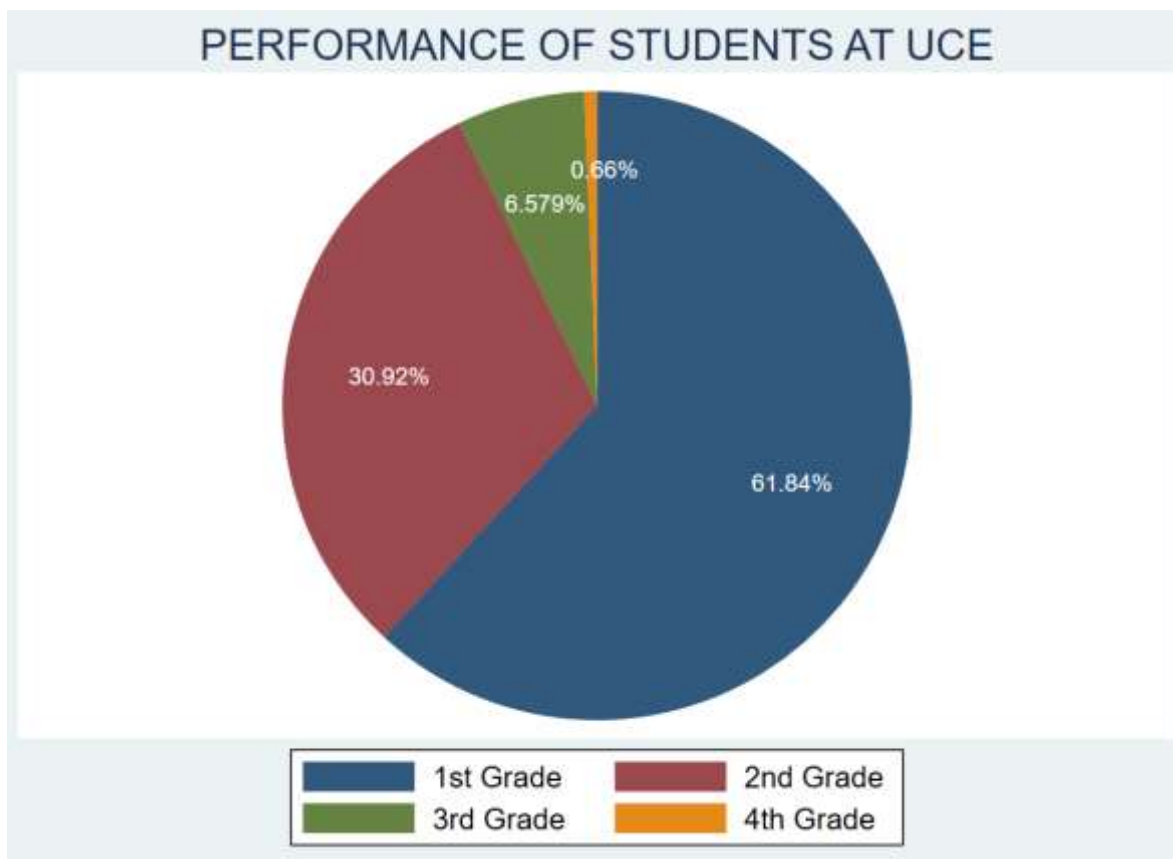


Figure 1: Pie chart showing the performance of the students at UCE level.

From a total of 153 respondents, the results reveal that 61.84% reported to have attained a 1st Grade at their UCE examinations sat in 2021. This was followed by 30.92% of the students who reported to have scored a 2nd Grade, 6.579% scored 3rd Grade while only 0.66% of the students reported to have scored a 4th Grade in the UCE examination of 2021.

This led to further investigation of what ICT resources they had used during the lockdown for purposes of learning ahead of their preparations for the UCE examinations.

Usage of ICT resources

Table 1 Showing the responses on the ICT resources that the students used during the lockdown.

ICT RESOURCES	FREQUENCY	PERCENTAGE
1. RADIO	54	16.36
2. TELEVISION	86	26.06
3. PHONE	89	26.97
4. PC / LAPTOP	28	8.48
5. INTERNET	57	17.27
6. NONE	16	4.85
TOTAL	330	100.00

Source: Field data 2023

The respondents were asked about the ICT resources they used during the lockdown for purposes of learning in preparation for the national examinations. The responses were based on a multiple response question. The findings revealed that television and phone were the most widely used ICT resources by the students at 26.06% and 26.97% respectively. There was also a negligible difference between access to the internet and radio as ICT resources which were reported at 17.27% and 16.36% respectively. A few of the respondents had used personal computers or laptops for learning purposes at 8.48% while 4.85% of the respondents reported not to have had access to any ICT resources during the lock down for learning purposes.

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CHI SQUARE TEST OF INDEPENDENCE

Chi square test of independence was run between the two categorical variables; performance of students at UCE and students' preparedness to utilize ICT resources for purposes of learning during the lock down to test for presence of a relationship between the two. Results are presented as in Table 2.

Table 2: showing the chi square test of independence between students' preparedness to utilize ICT resources for purposes of learning during the lock down and students' performance at UCE.

PERFORMANCE OF STUDENTS AT UCE	STUDENTS' PREPAREDNESS TO UTILIZE ICT RESOURCES FOR PURPOSES OF LEARNING DURING THE LOCK DOWN		
	NO	YES	Total
1st Grade	6	88	94
2nd Grade	7	40	47
3rd Grade	2	8	10
4th Grade	1	0	1
Total	16	136	152

Source: Field data 2023

Pearson $\chi^2(3) = 12.1181$ Pr = 0.007

According to Table 2, above, results of the test revealed a P value of 0.007 which is less than 0.07 (P value = 0.007 < 0.07) at 93% level of significance. This indicates that there is a statistically significant relationship between students' performance and students' preparedness to utilize ICT resources for purposes of learning during the lock down.

This was in line with the study by Osagie et al. (2019) that there is a positive impact of ICT on student performance which calls for MoES and the schools' administration to endeavour and integrate ICT in all learning activities if the students are to be ready for its use and preparation for national examinations. This was also similar to the findings by Baluku and Kasujja (2020) that accessibility to ICT resources in teaching influence the academic performance of students.

Table 3: Chi square test of independence between students' preparedness to utilize ICT resources for purposes of learning (dependent variable) during the lock down and the independent variables

INDEPENDENT VARIABLES	STUDENTS' PREPAREDNESS TO UTILIZE ICT RESOURCES FOR PURPOSES OF LEARNING DURING THE LOCK DOWN			
	No	Yes	Pearson chi	P value
ICT Infrastructure				
1. Yes	11	102	0.2413	0.623
2. No	5	35		
Technological skills				
1. Yes	13	122	0.8399	0.359
2. No	3	15		
Management support				
1. Yes	15	110	1.7355	0.188
2. No	1	27		

Table 3, above, presents a summary of the relationship between the dependent variable (students' preparedness to utilize ICT resources for purposes of learning during the lock down) and the constructs of ICT readiness (ICT infrastructure, technological skills and management support) as the independent variable. It thus presents an explanation of the relationship between the dependent and independent variables of the study. Thus, a chi square tested the hypothesis as illustrated in table 3.

H₀₁ There is no relationship between ICT infrastructure and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda.

The study revealed a P value of 0.623 which is greater than 0.07 (P value 0.623 > 0.07) at 93% confidence level, thus we accept the null hypothesis that there is no relationship between ICT infrastructure and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda. This implies that there is no statistically significant relationship between ICT infrastructure and students' preparedness for national examinations.

H₀₂ There is no relationship between technological skills and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.

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The study revealed a P value of 0.359 which is greater than 0.07 (P value $0.359 > 0.07$) at 93% confidence level, thus we accept the null hypothesis that there is no relationship between technological skills and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda. This therefore implies that there is no statistically significant relationship between technological skills and students' preparedness.

H₀₃ There is no relationship between management support and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.

The study revealed that the P value as 0.188 which is greater than 0.07 (P value = $0.188 > 0.07$) at 93% confidence level, thus we accept the null hypothesis that there is no relationship between management support and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda. This implies that there is no statistically significant relationship between management support and students' preparedness for national examinations.

The chi square test of independence therefore revealed that there is no statistically significant relationship between student preparedness for National examinations in Kamuli and Jinja districts of Uganda and ICT readiness (ICT infrastructure, technological skills and management support). Thus, this prompted the need for further analysis to investigate the presence of any existing relationships by taking care of the reference groups in each of the variables using the Binary logistic regression technique.

BINARY LOGISTIC REGRESSION

Binary logistic regression was run at the multivariable level. It is a model that shows whether students' preparedness to utilize ICT resources for purposes of learning during the lock down in Kamuli and Jinja districts of Uganda was dependent on all or any of the three independent variables in the study that is; ICT infrastructure, technological skills and management support. After further analysis, the findings revealed that students' preparedness to utilize ICT resources for purposes of learning during the lock down, was independent of ICT infrastructure, technological skills and management support.

Table 4: Logistic regression between the independent variables (ICT infrastructure, technological skills and management support) and students' preparedness to utilize ICT resources for purposes of learning during the lock down.

Logistic regression	Number of obs	=	153
	LR chi2(3)	=	5.35
	Prob > chi2	=	0.148
Log likelihood = -48.584433	Pseudo R2	=	0.052

Students' preparedness to utilize ICT resources for purposes of learning during the lock down.	Coef.	Std. Err.	z	P>z	[93% Conf. Interval]	
ICT INFRASTRUCTURE						
Yes	0.0077	0.8129	0.01	0.992	-1.5856	1.6010
TECHNOLOGY SKILLS						
Yes	1.5815	1.0810	1.46	0.143	-0.5371	3.7002
MANAGEMENT SUPPORT						
Yes	-2.1408	1.2005	-1.78	0.075	-4.4937	0.2121
_cons	2.6706	1.0464	2.55	0.011	0.6198	4.7215

The model above revealed that ICT readiness (ICT infrastructure, technological skills and management support) explains only 5% of the variations in the students' preparedness to utilize ICT resources for purposes of learning during the lock down. This implies that ICT had a very minimal impact on the students' performance at UCE national examinations. However, the study by Mukhula, et al. (2021) to determine the level of ICT readiness and ICT policy implementation in secondary schools in Mayuge District revealed that there was a moderate level of ICT adoption readiness and a moderate level of ICT policy implementation. Therefore, according to logistic regression, the hypotheses were tested as follows;

H₀₁ There is no relationship between ICT infrastructure and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda.

The study revealed that the P value was 0.992 which is greater than 0.07 (P value $0.992 > 0.07$) at 93% confidence level, thus we accept the null hypothesis that there is no relationship between ICT infrastructure and students' preparedness for National

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examinations in Kamuli and Jinja districts of Uganda. This implies that there is no statistically significant relationship between ICT infrastructure and students' preparedness for national examinations. However, this was inconsistent with the finding by Baluku and Kasujja (2020) in a study to establish the influence of ICT infrastructure to academic performance in Kasese district that revealed that the utilization of ICT infrastructure influences students' academic performance at UCE in secondary schools.

H₀₂ There is no relationship between technological skills and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.

The study revealed that the P value was 0.143 which is greater than 0.07 ($P \text{ value } 0.143 > 0.07$) at 93% confidence level, thus we accept the null hypothesis that there is no relationship between technological skills and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda. This therefore implies that there is no statistically significant relationship between technological skills and students' preparedness for national examinations. This was in contrary with the study by Mbabazi and Nafizi (2022) in their study to establish the integration of ICT in teaching and learning. The results from their study revealed that ICT was not being used in the teaching and learning process and most of the ICT infrastructure were not available in the schools and most of the respondents lacked ICT skills. This implies that the students were not prepared for use of ICT in teaching and learning.

H₀₃ There is no relationship between management support and student preparedness for National examinations in Kamuli and Jinja districts of Uganda.

The study revealed that the P value as 0.075 which is greater than 0.07 ($P \text{ value } = 0.075 > 0.07$) at 93% confidence level, thus we accept the null hypothesis that there is no relationship between management support and students' preparedness for National examinations in Kamuli and Jinja districts of Uganda. This implies that there is no statistically significant relationship between management support and students' preparedness for national examinations.

This is further indicated by the independence of performance on ICT infrastructure, Technology skills and Management support whose P values were all greater than 0.07 at 93% confidence level i.e., $P \text{ value } = 0.992$, $P \text{ value } = 0.143$ and $P \text{ value } = 0.075$ respectively. This is an indication that the students were ill prepared to use ICT for learning purposes during the lockdown in preparation for UCE examinations. The detailed analysis of the models is presented in the following tables;

Table 5: Logistic regression between ICT infrastructure and students' preparedness to utilize ICT resources for purposes of learning during the lock down.

Logistic regression

Number of obs = 140

LR chi2(4) = 11.69

Prob > chi2 = 0.0198

Log likelihood = -39.667596

Pseudo R2 = 0.1284

Students' preparedness to utilize ICT resources for purposes of learning during the lock down.	Coef.	Std. Err.	z	P>z	[93% Conf. Interval]	
The integration of ICT in teaching and learning impacted my performance in UCE examinations.						
Yes	0.2861	0.6851	0.4200	0.6760	-0.8408	1.4129
Access to ICT resources improved my critical thinking skills and problem-solving abilities in preparation for UCE examinations						
Yes	-2.2379	0.7219	-3.1000	0.0020	-3.4253	-1.0505
Access to ICT resources positively affected my motivation to learn and preparation for UCE examinations						
Yes	0.7281	0.7037	1.0300	0.3010	-0.4294	1.8857

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Students in schools with ICT infrastructure were better prepared for UCE exams than those without						
Yes	-0.1944	0.6212	-0.3100	0.7540	-1.2162	0.8274
_cons	3.0081	0.6204	4.8500	0.0000	1.9876	4.0286

Table 5 above indicates that ICT infrastructure accounts for only 12.84% of the variation in students' preparedness for national examinations. There is a statistically significant relationship between students' preparedness to utilize ICT resources for purposes of learning during the lock down and an improvement in the critical thinking skills and problem-solving abilities in preparation for UCE examinations since its P value was less than 0.07. (P value= 0.002<0.07) at 93% confidence level. An increase in students' preparedness to utilize ICT resources for purposes of learning during the lock down, would lead to a 2.2379 reduction in the critical thinking skills and problem-solving abilities of the learners. Due to the presence of opportunities for ICT resources, the students may not create room to think and enhance their problem-solving skills.

Table 6: Logistic regression between technological skills and students' preparedness to utilize ICT resources for purposes of learning during the lock down.

Logistic regression
 Number of obs = 136
 LR chi2(4) = 10.77
 Prob > chi2 = 0.0956
 Pseudo R2 = 0.1410
 Log likelihood = -32.818017

Students' preparedness to utilize ICT resources for purposes of learning during the lock down.	Coef.	Std. Err.	z	P>z	[93% Conf. Interval]	
I was confident using technology for studying and preparing for UCE exams Yes	1.0654	0.7811	1.3600	0.1730	-0.2195	2.3502
I used technology for educational purposes even before covid-19 Yes	-0.5626	0.7068	-0.8000	0.4260	-1.7252	0.6001
I received formal training on the use of ICT in preparation for learning during covid-19 lock down Yes	-0.1601	0.7051	-0.2300	0.8200	-1.3198	0.9996
Knowing how to use ICT helped me to study and prepare for UCE exams Yes	-1.1637	0.7298	-1.5900	0.1110	-2.3641	0.0366
Students who were able to use ICT had an advantage in preparation for UCE exams Yes	-1.4301	0.8433	-1.7000	0.0900	-2.8171	-0.0430
Technology will impact education and exam preparation in the future Yes	-0.4492	0.8676	-0.5200	0.6050	-1.8763	0.9779
_cons	4.4258	1.1483	3.8500	0.0000	2.5370	6.3146

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Table 6 above indicates that technological skills accounts for only 14.10% of the variations in students' preparedness for national examinations. It further revealed that the students' preparedness for national examinations is independent of the presence of technological skills among the learners. This was based on the fact that there is no statistically significant relationship between technological skills and students' preparedness for national examinations at 93% confidence level. That is, all the P values were greater than 0.07. Regardless of the students having not had technological skills, they still performed well at UCE examinations considering majority of the learners passed in 1st and 2nd grades i.e., 61.84% and 30.92% respectively.

Table 7: Logistic regression between Management support and students' preparedness to utilize ICT resources for purposes of learning during the lock down.

Logistic regression

Number of obs = 150

LR chi2(4) = 7.78

Prob > chi2 = 0.1685

Log likelihood = -47.031223

Pseudo R2 = 0.0764

Students' preparedness to utilize ICT resources for purposes of learning during the lock down.	Coef.	Std. Err.	z	P>z	[93% Conf. Interval]	
The school management offered ICT support towards preparation for UCE exams Yes	-0.1718	0.6700	-0.2600	0.7980	-1.2739	0.9302
Special assistance or ICT resources were provided by the school management to aid in learning for exam preparation Yes	-0.4934	0.6793	-0.73	0.468	-1.6109	0.624
The school management frequently communicated updates and information related to ICT in preparation for UCE exams Yes	-0.7923	0.6694	-1.1800	0.2370	-1.8934	0.3088
I noticed improvement in my learning abilities in preparation for national exams since the school management was supportive in terms of ICT Yes	0.2188	0.7008	0.3100	0.7550	-0.9339	1.3715
Students who received more support from their school management performed better in National exams Yes	-0.9771	0.7049	-1.39	0.166	-2.1366	0.1824
_cons	3.3818	0.6604	5.12	0	2.2955	4.4681

Table 7 above indicates that management support accounts for only 7.64% of the variations in students' preparedness for national examinations. It further revealed that the students' preparedness for national examinations is independent of the management support in ICT to the learners. This was based on the fact that there is no statistically significant relationship between management support and students' preparedness for national examinations at 93% confidence level. This is because all the P values were greater than 0.07. Therefore, regardless of the students having not been supported by their school management, they still performed well at UCE examinations considering that majority of the learners passed in 1st and 2nd grades i.e., 61.84% and 30.92% respectively.

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For all the three models, the R-squared was not a good fit considering the low variations of the dependent variable arising from the independent variables and thus there may be various other factors that could have accounted for the variations in the performance of the learners other than ICT readiness. The positive impact of ICT on students' performance is something which can be realised with time through further investment in integration of ICT in learning to better prepare learners for ICT integration in learning for future preparation of unprecedented learning/ education disruptions.

CONCLUSION

From the findings in the study we established that the students were ill prepared for the use of ICT for learning probably attributed to the fact that they were not using ICT based learning. The advent of the Covid 19 disease and the associated total lock downs forced the MoES and the schools to continue with learning in a remote way. ICT based learning was the prevailing alternative and there were a variety of ICT resources that the students had to choose from to continue with learning amidst the lock down and tough restrictions and health protocols.

Recommendation(s)

We recommend that the MoES should ensure that ICT Integrated learning is part of the pedagogies in all schools at all levels, not only to develop the learners' technological skills, but also to keep both the learners and teachers ready and prepared for any unprecedented education disruptions which could affect the learners' performance if they were not ready for ICT use.

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