

Stimulating Active and Innovative Learning— A Post COVID Strategy in Secondary Schools in Uganda

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ABSTRACT

Education is key in supporting Uganda's Vision 2040. However the consistent failure in science subjects (especially girls), crucial in national industrialisation and development framework, government continued grapple with the COVID pandemic effects, socio-economic hurdles such as; early pregnancies, change of mindset for both students and sponsors and body physiological changes among learners are stumbling blocks to continued education. Both government and private education institutions need to tackle such hurdles collectively, hence a desire to advise on the way forward as schools prepare to open. The study employed quasi experimental design where 100 students on holiday (50 girls and 50 boys) were sampled from the villages in Buhweju, Mitooma, Rubiriizi and Sheema districts to watch videos on selected topics in science subjects and later assessed on their mastery and competences. We used a t-test approach to compare the achievements of both girls and boys subjected to an ICT mediated student-centered learning environment. We found out that there is a slight significant difference in their performance which was largely attributed to family chore overload on the girls' side. The findings further provided valuable information to promote active student-centered learning approach using available Information Technology devices. We thus conclude that ICT enabled learning registers big achievement in drawing attention of the learner

and permits the teacher to concentrate on assessment and self-evaluation which are vital in effective teaching and learning. Therefore, schools should promote self-directed study activities among learners and teachers put extra time in modes and dynamics of assessment.

Keywords: Innovative-active-student centered learning, ICT-mediated learning approaches, Digitization.

1. INTRODUCTION

Since the closure of education institutions world over both direct short and medium term effects on learners and government have been registered (Atlan, 2020). This disruption has long term implication on human capital, skills development and economic development (Di Domenico et al, 2020). The closure of schools has affected graduation of learners to subsequent levels hence loss in terms of capital investment for both government and investors while some learners drop out and others develop a negative mind set due to socio-cultural factors. This dilemma is not only felt by learners but also private investors in education and hundreds of thousands of teaching and non-teaching staffs who have lost their jobs.

With respect to organizational cultures, most schools have had to change and adopt operations to ensure continued learning with minimal disruptions (Chakraborty and Maity, 2020; COMESA, 2020). For, instance adoption of digitization of teaching

requires significant investments in IT equipment and maintenance costs for communications or internet services. Some schools had to cut down on teaching staff whose services may have been rendered redundant due to the newly adopted digitization of teaching. In addition, other schools reduced salaries of staff by as much as half the pre-COVID-19 periods. In relation to fostering integration in learning, most schools have adopted to virtual conduct of lessons. This has significantly enhanced efficiency and reduction of logistics costs. What remains daunting are the risks associated with safety and confidentiality of information exchange by stakeholders in the virtual platforms

The COVID-19 global lockdown was initiated to stem the spread of the virus. However, the impact of the lockdown has had far-reaching effects in different strata of life, including; changes in the accessibility and structure of education delivery to students, among others (Parkes et.al, 2020). As the global lockdown is being lifted in a phased manner in various countries of the world, it is necessary to explore its impacts to understand its consequences comprehensively.

1.1 Impact of the Global Lockdown on Education

About 143 countries enforced a country-wide school closure affecting 1,184,126,508 (67.6%) of enrolled learners globally across the pre-primary, primary, lower and upper secondary levels and tertiary education levels. The closure, especially for children, was justified by their lower immunity levels and higher tendencies for the transmission of symptomatic infections amongst children compared to adults (Pakpour and Griffiths, 2020). The efficacy of school closures has attracted attention of many educational institutions, peculiar to note is the transition of learning activities to the online model' by many institutions in the global North.

Significant pointers show that education delivery across the globe has been altered because of the COVID-19 pandemic. With an increased growth and adoption of technology in education, the overall market for online education is projected to hit \$350 billion by 2025 (EdTech, 2022). While online education has proliferated among educational institutions, some conventional

universities have recently proposed moving all courses online.

However much digital learning has been vehemently accepted, the transition to virtual (online) learning still poses challenges and opportunities. For instance, the research groups' mode, student learning and informal conversations that creates enculturation of students in an intellectual environment (Sung and Hwang, 2013; Reigeluth, 2016). Such challenges include poor internet network, limited finances to access the internet and unavailability of electronic devices for student's use. This is compounded by a shortage in electricity supply and educators who are not versed in the use of digital technology for instruction. While estimates show about 80% of the population in Southeast Asia have access to the internet, about 39% in Vietnam and less in some African countries, of which Uganda is part. This makes the switch to effective digital learning impracticable in such countries and Uganda in particular. Despite such challenges, new opportunities suffice online, making it easy and possible for students to attend without travelling long distances (Hannafin et.al, 2014).

Furthermore, the closure of school also has adversely impacted on young people as they experience a disruption in their education. In some parts of Africa, the lockdown has created anxiety among some young people who postulate on how education will proceed post-lockdown due to loss of family income, repetition of the school year, or even failure in national examinations. There is also the loss of motivation and lack of concentration to study because of working on the farm or doing household chores.

More so, the lockdown has brought about a standstill as some researchers engage in minimal research efforts due to shutting down fieldworks and restrictive measures in laboratory access (Collins et.al, 2021). This insinuates that new ways of working have been learnt and new technologies embraced. However lockdown has prompted a reduction in administrative burden and the truncation of meetings which comes with mental and academic stress.

However, what remains challenging is the extent to which ICT mediated learning can minimize social economic impacts associated with them. It has been

noted that digitization has direct implication on employment levels, especially among the youth, which remains a major challenge world over (EdTech, 2022). For example as access to loans by e-loans to low income groups becomes easy, there are still cases of non-performing loans in many schools. The online provision of health and education services, these are prohibitively accessible to low income groups who can hardly afford internet services, let alone digital phones. Besides, most educational institutions, especially secondary schools are largely ill equipped to provide on-line services due to low levels of investments.

Education is key in supporting Uganda's Vision 2040. Recently the national curriculum development centre (NCDC) rolled out the lower secondary curriculum which is famously known as competency based. The guiding principle here was that learners vary in their rates of exploration, discovery and application. Instead of awarding positions; in terms of first through last, the government of Uganda advised that each learner be assessed against the set competencies. This is a good step into churning out a practical oriented student. Although the new curriculum seems lucrative, many schools and so teachers are not yet conversant with it. This will soon escalate into the earlier problem of large failure rates especially in science, the hinge for realisation of vision 2040.

Additionally, despite the consistent failure in science subjects (especially girls), crucial in national industrialisation and development framework, government continues to grapple with the COVID pandemic effects, socio-economic hurdles such as; early pregnancies, change of mindset for both students and sponsors and body physiological changes among learners are stumbling blocks to continued education. In most secondary schools, teaching and learning out puts are envisaged in summative evaluation results; Uganda Certificate of Education (UCE). This has uncultured a tendency to pass exams against mastery of concepts and their application. Now that schools have opened, many students shall come amidst many stumbling blocks. Both government and private education institutions need to tackle such hurdles collectively, hence a desire to advise on the way forward to effective teaching and learning. The envisaged approach is thus

digitization of learning (E_learning without internet). This initiative calls for innovation of teachers and creative mindset of both teachers and learners. Learning should take place anywhere and anytime so that the teacher concentrates on assessment of learning and discovering learners' abilities. Thus determining the next course of action best to enhance learning for a lucrative product (learner). This shall register a significant improvement in learning; hence active and innovative learning.

2. LITERATURE

2.1 Student-Centered Learning

Student-centered learning facilitates the students to achieve all the skills which are important in mastering the content and enhance the learners' abilities to set out their learning objectives in respect to the expected objectives (Leow, 2015). At the end of learning process, students should be able to think critically, evaluate tangible evidence, come-up with arguments that generate hypotheses for meaningful learning and solve problems in their environment.

This category of learning helps to find out the assumptions held by all types of such that an appropriate way of guidance to achieving stated learning outcomes is envisaged. Students are made to appreciate their responsibilities in the learning process and participate adequately. Students responsibilities may include: construction of a balanced reading time table, how to read for the tests and final exams, how to check for their answers and make other academic decisions. Hannafin, et.al (2014) stated "students may establish and pursue individual learning goals", but they did not take care of slow learners whom at times do have little or no learning expectation and constrain the reality in establishing learning outcome which are "SMART".

In most of teaching processes, teachers do a lot of work for the student in order to effectively implement the teaching. They organize teaching notes, set tests and quizzes, and examination questions, complement and supplement them during and after teaching sessions. They also set the teaching objectives which later turn into the indicators of learning out comes and teachers supervise students' research.

2.2 Integrating ICT into Learning

Processes

Considering the global and fast development of Technology application trends not only in universities but also in other research fields, ICT platforms are underutilized, some used for emailing purposes rather than facilitating the whole learning process (Sung and Hwang, 2013). It is basically the teachers at center of everything. He sends lecturer notes, assignments to learners and may receive the feedback through the same platforms. The teacher also uses audio visuals like projecting demonstrations on the screen, but still it's the teacher doing and the learner is left at the receiving end and less involved.

Teaching methods which involve learners frequently in the learning process like role play are rarely used (Reigeluth, 2016; Sunismi and Fathani, 2017). Online teaching embraces discussions but most of the teachers/students don't know how to innovatively and effectively use it. In some cases teachers still put notes at photocopying / printing points for students to pick and come for explanations in the lecture rooms. This is a bit traditional and puts the learner at a risk of not developing his ability to solve the problems around him or in his career and it is not a solution to very large classroom coming as the need for university education increases (Ganapathy et.al, 2017).

We note that learners have different ability in learning. What remains of concern; is how the two categories of learners respond to ICT mediated learning process in school environment. This particular question has not been answered in most of research in the area of teaching and learning Reigeluth (2016).

3. METHODOLOGY

Using a quasi-experimental design with posttest only, we subjected the 120 students (60 girls and 60 boys) selected from four different districts of greater Bushenyi to video lessons in Biology, Chemistry and Physics. The said districts comprised of Buhweju, Sheema, Rubirizi and Mitooma each raising 30 students of S.3 (15 boys and 15 girls). The mentioned group (S.3) was purposively sampled because they have been exposed more to O level syllabus and shall be joining S.4 once schools open and; it is the group adversely affected by body physiological changes. Each group of 15 watched a video of selected topics in science subjects and later the students were subjected to an assessment exercise to determine the effect of ICT mediated learning. Questionnaires and interview guides were then administered to help us explain their performance.

4. RESULTS

Table 1: Difference in the utilizability of ICT mediated learning between girls and boys

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	Df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances assumed	14.111	.000	-1.915	118	.065	-.43821	-.14382
Equal variances not assumed			-1.644	74.696	.078	-.45014	-.13189

Source: Primary data

The results of the analysis indicate that there was no significant difference in the utilizability of ICT mediated learning by the two groups of learners ($t = -1.915$, $P\text{-value} > 0.05$). The results further indicate that boys were slightly more appreciative

of an ICT-mediated learning environment than girls. Further interrogation indicated that girls had reduced levels of concentration due to loading of family chores and physiological changes.

5. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be drawn from the study:

An ICT-mediated learning enables the teachers easily disseminate information to students and as well help students learn easily.

ICT-mediated learning environments make the learning process more enjoyable and the management of class rooms with big numbers is improved. In this students' attention is drawn closest and enhances his/her concentration.

Students like it more when they are involved in learning process and their perceptions change positively towards achieving learning outcomes

The products of students subjected to student centered and ICT mediated learning environment are confident and practical the nature. They solve problems around them.

Therefore, lecturers and other education practioners should enable all the necessary learning process that is student centered and apply ICT while interacting with learners. To the managers of institutions, appropriate steps should be taken (like such learning tools / systems requirements elicitation and training of all users) to ensure all participants own the learning process. This shall help both the teacher and the student even when the numbers increase in class rooms.

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