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## ICT Usage and Learning Outcomes of Pupils in Primary Schools in Uganda

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# **ICT Usage and Learning Outcomes of Pupils in Primary Schools in Uganda**

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## **ABSTRACT**

Learning Outcomes of pupils have become an issue of concern in developing countries. Resource poor countries have decried the poor performance of pupils each year, and yet few schools use Information and Communication Technologies (ICTs) to enhance pupil engagement and learning outcomes. Using both quantitative and qualitative approaches, the study is a cross-sectional survey, with a proportionate random sample of primary schools drawn from both rural and urban settings. This study intends to assess the existing ICT infrastructure, the extent of ICT usage as well as the effect of ICT usage and pupil engagement on the learning outcomes of pupils in the primary schools in Uganda.

## **Keywords**

ICT Usage, Pupil Engagement, Learning Outcomes.

## **INTRODUCTION**

The foundation level of education is critical in achieving economic growth and development since it yields higher social returns of investment. Thus learning outcomes at primary level have become a major concern, especially in developing countries (Chapman, Muijs, Reynolds, Sammons & Teddlie, 2015). However, there has been consistent decline in the learning outcomes (Kaahwa & Muhumuza, 2018; Kisakye, 2016).

While progress has been made in identifying factors responsible for learning outcomes, most emphasis has been on socio-economic factors, student factors, parental factors, and the learning environment (Chapman et al., 2015; Eric, Hanushek & Woessmann, 2010). Studies that have explored how ICTs affect learning outcomes of pupils are still sparse and yet the use of ICT has been acknowledged to facilitate the development of numeracy and literacy skills at lower levels. The few studies that have applied ICTs in teaching and learning have been at secondary school and tertiary institutions level. Information and Communication Technologies (ICTs), understood as the technologies that help to collect, store, edit, access and disseminate information need to be emphasized at the foundation level or initial stage of learning in personal growth. It is further evident that studies done on pupil learning outcomes have largely been in the resource rich countries. This leaves a dire knowledge gap in this subject among the poor countries.

In Uganda, the dismal learning outcomes have become an issue of concern (Ministry of Education and Sports, 2016b; UBOS, 2017; UWEZO, 2019). There have been government efforts to improve learning outcomes through promoting ICT usage, traced in formulation of the ICT policy framework in 2003 and government approval of a curriculum for ICT training. However, this initiative largely excludes the primary schools yet they lay the foundation of the education system.

While primary education is a foundation to the education system, primary schools rarely integrate ICTs in teaching and learning. The purpose of this paper is to assess the existing ICT infrastructure, the extent of ICT usage in learning and teaching as well as the effect of ICT usage and pupil engagement on learning outcomes of pupils in primary schools in Uganda.

## LITERATURE

### **ICT Usage and learning outcomes**

While there are various definitions of ICT, this study confines itself to ICT for education including the applications that are integrated in teaching and learning (Kashaf et al, 2010). Kaware and Sain (2015) define ICT as the modern technologies that combine digital devices and associated software to facilitate the learning process.

The connection between ICT usage and learning outcomes can be traced from the works of Clark (1983) and Lockard and Abrams (1994) when ICTs were promoted as a means to transform and save education. The increased adoption of ICTs in teaching and learning heightened in the 1990s, but to date there is no clear conclusion on the extent to which ICT affects learning outcomes.

Some studies have found significant relationships between the use of ICTs and the learning outcomes, while others have not (Mechlova and Malcik, 2012). This does not however negate the fact that ICTs are a major driver of education especially in the current COVID19 times. Technology helps to prepare pupils for the changing digital literacy competences needed to survive in today's highly digitized society. Obaydullah & Rahim (2019) emphasize the role of ICT in teaching and learning, and argue that ICT programs can reduce on the overall dropouts and grade repetitions of pupils. Higgins and Thompson (1995) also states that ICT can enhance interaction between the teacher and the learner.

The way the teacher and learner use the technology makes a difference in the teaching and learning process that ultimately improves on their learning outcomes. For instance, the internet can help the pupils and teachers interact while surfing or searching for useful materials for the learning process. The internet connections present teachers and pupils with the opportunity to collaborate with each other, a thing that textbooks and lessons cannot do.

Today, ICTs are not only part of the curriculum but are also viewed as tools to support learning in any form, from the low level ICTs to the most sophisticated ICTs. ICTs have been considered as enablers of the numeracy and literacy skills of pupils in primary levels of education. International organizations like UNESCO today consider ICTs as a core aspect of education. We foresee a situation where ICTs will be embedded in the lives of the pupils than ever before.

### ***Pupil engagement and learning outcomes***

It is expected that when pupils are engaged to the classroom and the learning process, their learning outcomes will improve. Pupil engagement not only affects school changes directly but also increases pupils' satisfaction, lowers dropout rates and improves pupils' learning outcomes. Thus learning outcomes are strongly linked to pupil engagement, especially the behavioral and emotional engagement.

Abubakar (2017) and Audas and Williams (2001) confirm that pupils' behavioral and emotional engagement is among the best predictors of learning and personal development. Pupils that are engaged have a higher retention of concepts and can comprehend and construct knowledge. Engaged pupils find the classes more motivating and interesting, which supports them while writing their final examinations.

### ***ICT Usage and pupil engagement***

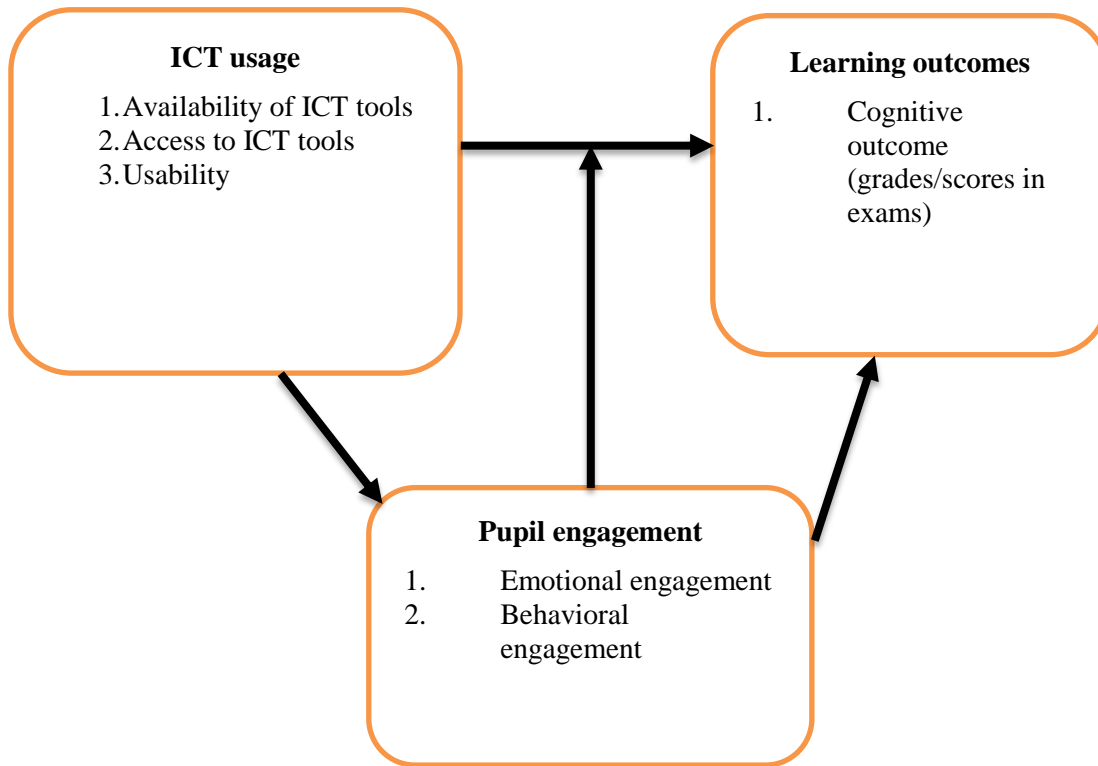
Pupil engagement is the way students are interested, curious, attentive or passionate about learning in classroom. Pupil engagement can also refer to pupils being active in their learning tasks and activities (Hao, Cui and Zhou, 2018). Fulton (2019) divides pupil engagement into emotional engagement (feelings and attitudes about learning tasks) and behavioral engagement (actions, effort, persistence, concentration or performance relating to learning tasks). Thus engagement is a multidimensional construct combining behaviors, thoughts, perceptions, feelings and attitudes (Reschly and Christenson, 2012).

In line with the cognitive multimedia learning theory, the auditory and visual effects of the technology makes pupils engaged as they search for new ideas and solve problems (Mayer, 2009). Thus ICTs increase learner motivation and engagement because the digital revolution and tools incorporate motivational elements that transform pupil engagement in learning (Mayer & Moreno, 2002, 2003; Siemens, 2005, 2017). ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful moving images can be used to provide challenging and authentic content that will engage the student in the learning process through both the auditory and visual impact. Pupils using ICTs for learning purposes become immersed in the process of learning (Jonassen, 1996).

### CONCEPTUAL FRAMEWORK

From the literature review debate, this study will be guided by the conceptual framework in the figure 1 below. The argument is that ICT usage affects the level of pupils' engagement, which in turn affects the learning outcomes of the pupils. But it is also possible that ICT usage affects the learning outcomes of the pupils directly.

**Figure 1: Conceptual framework**



## METHODOLOGY

The study is a cross-sectional and correlational survey employing both quantitative and qualitative approaches with concurrent triangulation (Corbin and Strauss, 2008). The target population are the Primary schools in Wakiso district, while the units of inquiry will be the teachers. A random proportionate sample of 412 schools will be drawn across both rural and urban schools, guided by The Uganda Schools Guide of 2020.

Structured questionnaires will be used to collect quantitative data while an interview guide will be used to generate a conversational analysis and tap in-depth interviews for qualitative data. The respondents for qualitative interviews will be selected purposively up to a point of saturation, while the sample for quantitative data will be selected using both random sampling and snow balling. The data will be triangulated, where the qualitative data will complement and strengthen the quantitative data.

The variables will be operationalized based on the literature and using instruments developed by earlier scholars. The instruments will be tested for reliability and validity. The qualitative interviews will be transcribed, coded to extract the emerging themes as well as the relationships in the texts and content analyzed using appropriate qualitative data analysis techniques recommended by Miles and Huberman (1994) and Creswell and Creswell (2017). Quantitative data will be analyzed using SPSS.

## CONCLUSION

From the debate, it is evident that ICT usage may have both a direct effect on learning outcomes and an indirect effect on learning outcomes through pupil engagement. Therefore pupil engagement mediates the relationship between ICT usage and learning outcomes. Thus primary schools need to adopt ICTs in teaching and learning, and create pupil engagement as a way of increasing learning outcomes.

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