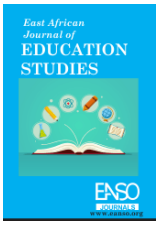

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Original Article

Awareness of Using Tablets as Potential Assistive Pedagogical Tool among Primary School Teachers in Nachingwea District

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Awareness, Tablets, Pedagogy, Mobile Learn.

ABSTRACT

This study investigated the awareness of using tablets as Potential assistive pedagogical tools among primary school teachers. The Technological Pedagogical and Content Knowledge (TPACK) model was adopted to show the process of professional development for teachers as a consequence of technology implementation in classrooms. Triangulation design with concurrent orientation was used that enables data collection, interpretation and analysis using quantitative and qualitative approaches at a single phenomenon and same time. Data collection tools included closed-ended questionnaires and an interview guide. Descriptive statistics and thematic analysis were used to analyse data. The findings revealed that all the respondents were familiar with the use of tablets, but they differed in terms of knowledge and skills of how to change the devices in facilitating the teaching processes where there are those with high awareness, medium awareness and low awareness. The study recommends that the government should provide in-service training in ICT to build teachers' ability to use tablets as assistive pedagogical tools. The findings of the study bear significant practical implications for a broad range of stakeholders, including learners, teachers, educators, policymakers, mobile companies, industry professionals, researchers, NGOs, and society at large. The results aid educational stakeholders, and policymakers in making informed decisions about increasing the provision of modern ICT tools to teachers.

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INTRODUCTION

The use of tablets is garnering significant interest across various sectors, particularly in education (Kim et al., 2019; Kalogiannakis & Papadakis, 2019). The devices, along with smartphones, appear to supersede laptops as innovative tools for facilitating student learning (Tamim et al., 2015).

Studies in European schools revealed that actual tablet use in classrooms was low and varied greatly between countries. For instance, Greece and Turkey expressed reservations about tablet technology, limiting its classroom use, while countries like Romania and Poland embraced it (Monteiro et al., 2017). Thus, regional differences and cultural aspects might impact the adoption and efficacy of tablets as teaching tools. Therefore, promoting the importance of tablets in education worldwide was crucial.

In East Africa, studies revealed a low usage rate of ICT tools including tablets, in education. In Uganda study by Tulinayo et al. (2018) indicates a negative attitude and a lack of a systematic teaching approach, while research in Kenya by Amolloh et al. (2017) revealed positive perceptions of classroom technology use. These differences underscore the need for investigations into awareness of pedagogical understanding to enhance tablet utilization for educational purposes.

In Tanzania, existing literature on ICT integration in education revealed minimal use of ICT tools like computers, tablets, and smartphones in classrooms (Mfaume, 2019; Mwandosya, 2021; Ndibalema, 2020; Ndibalema, 2022). Factors such as limited experience in using ICT effectively, a shortage of reliable digital solutions, technological competencies, and internet access impede the incorporation of ICT in teaching and learning, thus, encouraging traditional teaching methods instead.

A study by Ndibalema (2014) on teachers' attitudes toward ICT use in secondary schools in Kondoa, Tanzania revealed a lack of awareness about the potential benefits of ICT in teaching, a sentiment echoed by Barakabitze et al., (2019). Meanwhile, a study by Mfaume (2019) in Dar es Salaam, Tanzania found that while teachers understood the benefits of mobile devices, they struggled to integrate them into educational practices.

Given this body of knowledge, it is evidenced that primary schools were underexplored, and there is uncertainty about the awareness and effective utilization of new ICT tools like tablets to transform teaching methodologies. Hence, this study aims to investigate teachers' awareness of using tablets as a pedagogical tool in primary schools, specifically in Nachingwea, Lindi.

METHODOLOGY

Research Design

The researcher employed triangulation concurrent design to examine a comprehensive understanding of teachers' awareness of the potential benefits of using tablets in educational settings as it involved merging data collected during interpretation as well as during data analysis.

Study Location

The study was conducted in the Nachingwea district within the Lindi region in Tanzania, targeting primary school teachers who have been selected from schools that have received personal tablets for classroom integration and personal use from the government. The Nachingwea district had been identified for its unique educational landscape, notably its academic progress both within the Lindi region and on a national scale. According to the National Examination Council of Tanzania results in the year 2021, Nachingwea is among the top ten districts in Tanzania that have shown a marked improvement in academic performance. This trend was observed over the years 2019, 2020, and 2021 in the Primary School Leaving Examination (PSLE) and the Standard Four National Assessment (SFNA). Additionally, the district's performance in secondary school examinations, particularly the Advanced Certificate of Secondary Education Examination (ACSEE), had been remarkable. These achievements had contributed to the Lindi region

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being named as one of the top three regions in Tanzania showing significant improvements in PSLE, SFNA, and ACSEE performances within a three-year period, as per the NECTA results and the President's Office, Regional Administration and Local Government (PO-RALG) report of Lindi in 2021

Targeted Population

For the purpose of this study, which aimed to explore multiple perspectives on the awareness of utilising tablets as a pedagogical tool among primary school teachers, the population consisted of primary school teachers and ward education officers in the Nachingwea district.

Sampling Procedure

The research utilised two primary techniques of sampling: simple random sampling and purposive sampling. Simple random sampling was employed to obtain a sample of primary school teachers from primary schools in Nachingwea. In each selected school, teachers were assigned numbers, then selected randomly by using table of random numbers. While Purposive sampling used to select key informants such as information technology teachers, ward education officers and heads of schools. These individuals were chosen based on their specific knowledge and experience with using tablets for educational purposes and overcoming associated challenges

Sample Size Determination

The researcher utilised Slovin's formula to ascertain an appropriate sample size. The study encompassed a sample of 163 teachers. The calculation employing Slovin's formula is detailed below:

$$n = \frac{N}{1+Ne^2}$$

Where: n = sample size, N = Population of teachers = 818 (according to Tanzania Basic Education Statistics [BEST] 2023), e = specified marginal error (precision) = 0.07 (7%)

Therefore

$$n = \frac{818}{1+818\times0.07\times0.07} = 163$$

Data Collection Methods

The researcher relied on primary data gathered directly from participants through questionnaires and interviews.

Questionnaire

The questionnaire was created by a researcher in Swahili and English language and was used to collect quantitative data, on the perceived awareness of tablets as potential assistive pedagogical tools in teaching and learning.

Interview

For the qualitative portion of the study, semi-structured interviews were conducted by the researcher. Before interviewing informants, the researcher conducted a pilot study to test the reliability and validity of the interview questions to measure the objective of the study. During interview sessions researcher recorded all interviews, then researcher transcribed the audio records and coded them for further analysis.

Data Analysis

This section presents the data analysis conducted in this study. The study utilised both quantitative and qualitative analysis. Data analysis involved a sequential process of editing, coding, classification, and tabulation of the gathered data, aimed at organising them for the purpose of gaining insight from the data.

Quantitative Analysis

Upon the collection of questionnaires, the initial step involved coding the data for efficient processing. This coding process was essential for translating the raw data into a format that could be readily entered into a computer program for subsequent analysis using IBM SPSS Statistics software version 20.

Thematic analysis

For the qualitative portion of the study, a thematic analysis approach was adopted. This analytical technique involves the interpretation of data to discern patterns of meaning across the dataset. Thematic analysis is especially appropriate for

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identifying and analysing themes within the data, offering detailed descriptions, and facilitating interpretation of various facets of the topic under investigation. The transcribing process was done through recorded audio and then coding which involved colour coding to merge related ideas into summarized themes.

Validity and Reliability

To ensure the validity and reliability of the research tools, multiple measures were implemented. Firstly, content validity was established by having experts in educational technology and pedagogy review the questionnaire to confirm its comprehensiveness, relevance, and clarity. Secondly, construct validity was ensured by grounding the design of the questionnaire and interview questions in existing theories and literature concerning the use of technology in education.

Ethical Consideration

The researcher ensured that respondents participated based on informed consent, providing sufficient information about the study to allow them to understand the implications of their participation and make a fully informed decision without experiencing any pressure or coercion. To ensure confidentiality, the questionnaires were assigned numbers instead of names, and the data was processed anonymously.

RESULT AND DISCUSSION

Question about level of Awareness of Using Tablets as Potential Assistive Pedagogical Tool. Based on this research question, respondents were asked to identify their level of awareness of using tablets as assistive pedagogical technological tools in primary school where the majority 160 (99%) of respondents affirmed that the use of tablets needs continuing professional development in technical and pedagogical field, followed by 156 (96%) of respondent who affirmed that: they keep using IT techniques effectively, for example, PowerPoint presentations, multimedia presentations, or digital professional contents, while 148 (91%) of respondents who agreed that the uses of tablets in education assists in the managerial task.

Apart from that, 147 (91%) of respondents affirmed that inbuilt features of tablets like Word and Excel files reduce data loss, and using tablets helps teachers prepare different teaching aids through online content. Whereas, 146 (90%) of respondents agreed that tablets could assist in reducing the cost of printing classroom notes, followed by 145 (89%) who confirmed that the use of tablets, and smartphones, requires areas connected to the internet, electricity or solar power to recharge, while 143 (88%) of respondents confirmed that using tablets as assistive pedagogical tool reduce the scarcity of teaching and learning resources like books, as well as those who affirmed that, tablets make teaching and learning easier through differentiating teaching.

Furthermore, 139 (86%) of respondents affirmed the statement that: my experience helps me to use tablets in teaching, followed by 131 (81%) of respondents who agreed with the statement that using tablets enables teachers to create writing ability that they can easily share on tablets through social media, while 126 (77%) of respondents confirmed a statement: different apps and program installed in tablets device increase students' motivation, creativity and collaboration. And 120 (74%) of respondents posited that: using tablets in teaching demands a high cost of internet bundles.

In addition to that, 99 (61%) of respondents agreed that tablets assist teaching as they reduce the challenge of inadequate teachers in particular schools through online teaching via YouTube, followed by 98 (60%) of respondents who affirmed that tablets encourage pupils to express their views, ask questions, answer them, and allow and an opportunity to do so. 85 (52%) and 84 (52%) of respondents confirmed the statements said that I find planning using tablets challenging since I was not informed about the technology and how it is used in assisting teaching and learning; as well as using tablets increases time wastage in term of preparation and connectivity.

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In connection that 82 (51%) of respondents affirmed the declaration said that: difficulties in using tablets to teach make them stressed and nervous; while 73 (45%) of respondents affirmed the statement using tablets results in teachers neglecting important traditional learning resources and 70 (43%) of respondents agreed to the statement said that: using tablets enables teachers to create writing abilities that they can easily share on tablets. These findings are summarized in *Table 1* below as follows:

Table 1: Illustrate the respondents' level of awareness of using tablets as an assistive pedagogical tool

Description	n	%
The use of tablets needs continuing professional development in the technical and pedagogical fields.	160	99
My experience helps me to use tablets in teaching	139	86
Tablets could assist in reducing the cost of printing classroom notes	146	90
Inbuilt features of tablets like Word and Excel files reduce data lost	147	91
Difficulties in using tablets to teach make me stressed and nervous	82	51
The use of tablets, and smartphones, requires areas connected to the internet, electricity or solar power to recharge	145	89
Using tablets helps teachers prepare different teaching aids through online content	147	91
Using tablets as assistive pedagogical tools reduces the scarcity of teaching and learning resources like books	143	88
Using tablets increases time wastage in terms of preparation and connectivity	84	52
Using tablets in teaching demands a high cost of internet bundles	120	74
Using tablets results in teachers neglecting important traditional learning resources	73	45
I find planning using tablets challenging since I was not informed about the technology and how it is used in assisting teaching &learning	85	52
Using tablets enables teachers to create writing abilities that they can easily share on tablets through social media	131	81
I keep using IT techniques effectively for example PowerPoint presentations, multimedia presentations, or digital professional contents	156	96
I know nothing about integrating tablets as assistive tools in teaching and learning	70	43
The use of tablets in education assists in managerial task	148	91
Tablets assist teaching and reduce the challenge of adequate teachers in particular schools through online teaching via YouTube	99	61
Tablets encourage pupils to express their views, ask questions, answer them, and allow and an opportunity to do so.	98	60
Tablets make teaching and learning easier by differentiating teaching	143	88
Different apps and programs installed on tablets device increase students' motivation, creativity and collaboration	126	77

Source: Field Data, 2023

Table 1 above represents the views of respondents on the level of awareness of using tablets as assistive pedagogical tools in primary school. Generally, it was observed that all respondents had an awareness of how to use the tablets. However, they differ in demonstrating the tablets as a teaching and learning tool, as the interviewees pointed out.

In the interview guideline items included general and subject matter-related items; the themes that were elicited were cross-content in many instances. The distinct themes under this section included the following: (i) awareness concerning tablet usage and (ii) in-service training in ICT.

Awareness Concerning Tablets Usage

In the interview guideline respondents were asked to identify their level of awareness on using tablets, responses obtained indicated that the level of awareness among primary school teachers on the use of tablets varies. For example, a statement

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such as "*...They have a medium awareness...*" from Ward Education Officer B (WEOB) when analysed, indicates that the level of awareness among the primary teachers can be grouped into low, medium and high.

Statements such as, *"...some of us don't have the right usage. We use the tablet as a device to entertain our children at home..."* from WEOB confirmed that teachers with low awareness, used tablets as entertainment devices only by downloading games and movies for playing and watching respectively.

The responses showed that teachers with medium and high levels of awareness benefit from the devices. Responses from Academic Teacher-A (AT-A) confirmed that tablet computers are crucial tools for storing pupils' information, preparing exams and classroom tests, and preparing lesson notes, lesson plans as well as schemes of work. The respondent AT-A says:

"I am very familiar with using this device. All my academic tasks are easily done through a tablet". (Source: interview data obtained from interviewee ATA on December 12th, 2023).

Generally, from the results above, it was found that all the respondents were familiar with the use of tablets, but they differed in terms of knowledge and skills of how to change the devices in facilitating the teaching processes. This result agrees with the finding of Timothy et al. (2015) who reported that the majority of respondents (72.8%) indicated that they were aware of ICT facilities in teaching primary school.

In-Service Training in ICT

Respondents were also asked if they ever attended IT training that would build and expand their awareness of using tablets as assistive tools in their teaching. The responses from the respondents showed that most had never been trained. This is confirmed by a statement such as, *"We don't have official training on how to use it",* from WEOB, However, the statement differs from Academic Teacher-C (AT-C) who admitted receiving two days of IT training. Respondent AT-C says: *"I once attended IT training. I teach teachers who need it."*

The above statements from WOEB and AT-C show that, first of all, no amount of time spent in college or university complete the preparation of the teachers for classroom tasks. Teachers like doctors, ministers and lawyers must continue with their education after graduation. Consistently, applying technique and materials make education in-service absolutely necessary. In-service training in ICT has played a role in meeting these challenges as proven that those who received in-service training in ICT their level of awareness on using tablets are higher than those who have not. In addition, those who have been trained have been spreading their knowledge to the untrained.

This result cemented by Kheng et al. (2005) who noted that servicing teachers need to be familiarised not only with the ICT but with teaching and instructional designed skills that will enable them to help their fellow teachers and their pupils in constructivist thinking, experimentation and problem-solving and learning linked to life situations.

Nevertheless, the results of this study relate positively with the 'action relating to reasons' so-called Technological Acceptance Theory where people's computer use was predicted by their intention to use the computer and that perceived usefulness was also strongly linked to this intention. According to Venkatesh and Davis (2000) when teachers are presented with new technology two key factors influence their decision from extended variables around them about how and when they will use it. First is an attitude toward use where the teacher's positive or negative feelings about performing the target behaviour (for example using a system). Basically, teachers' attitudes to many of these factors will depend upon how easily they perceive using ICT tools including tablets to be on a personal level as well as for teaching in the classroom. Second, behavioural intention where the teacher has formulated conscious plans to perform or not perform fine specified future behaviour.

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CONCLUSION

The study aimed to examine the awareness of using tablets as potential assistive pedagogical tools among primary school teachers in Nachingwea District Council, Lindi Tanzania. The level of awareness of using tablets by primary school teachers is high and varied. However, the use of tablets needs continuing professional development in technical and pedagogical fields. The study discovered that tablets assist teachers in performing administrative tasks, and they are aware that tablets assist in accessing online libraries and other aids, used as tools for teaching and learning in creating quizzes.

The findings from this study have provided more knowledge for related studies and opened up areas for further studies. The study provides insight into the awareness of using tablets as potential assistive pedagogical tools among primary school teachers.

Recommendation

The study recommends that government should provide in-service training in ICT so as to build teachers' ability to use electronic devices effectively, as well as arrange specific programmes and strategies to improve teaching from analogy to digital through MEWAKA or TRC as they did in few past years, as government established strategies to upgrade teachers from grade C and D teachers to grade A through *Mafunzo ya Ualimu kazini* (MUKA) program in Teacher's resource centre (TRC).

Educational sectors should establish serious and meaningful supervision and follow-up in the effective use of tablets as assistive pedagogy tools in warm language and provide support once they face challenges in tablet use. The government should extend the time of learning at least two weeks rather than hire teachers in two days which they learn a lot of programs without meeting the requirement thus teachers become confused.

The government could install special programs on tablets that relate to education which can be downloaded easily and directly like the earliest Samsung tablets provided to heads of schools and census program example files for books, admission information, statistics, and teaching aids. Mobile phone companies, donors, and educational stakeholders could establish a local area network to assist education institutions in providing internet (Wi-Fi). In university there is a university offer provided by the mobile phone company, thus it would be better if they could establish primary school staff offer for affordable prices in reducing the cost of internet bundles in upgrading and fostering the adoption of ICT technology tools uses including tablets effectively.

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