



# Exploring Tanzanian secondary school teachers' challenges and opportunities in the use of tablets as a pedagogical tool in teaching and learning

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## ABSTRACT

This paper explored Tanzanian secondary school teachers' challenges and opportunities in using tablets as a pedagogical tool for teaching and learning. For the past few years, the United Republic of Tanzania (URT) has distributed more than 290,000 tablets in primary and secondary schools. However, these tablets are still underused, and there is no documentation of the challenges and opportunities they bring. The study, guided by the constructivist learning theory, employed both quantitative and qualitative methodology. A target population of 758 respondents from secondary schools, and data were collected using questionnaires, interviews, and observations. The collected quantitative data were examined and analyzed using the Statistical Package for the Social Sciences (SPSS). The study founder's severe challenges include limited access to electricity, lack of technical support from the school management when the tablet encounters a problem, lack of adequate training to effectively use tablets, lack of confidence in using the tablets, lack of the skills to install the necessary apps on their tablets related to teaching and learning, lack of accessibility to ICT-based resources, language problems (barriers), limited access to the internet, and a few noted that they have limited time. This study revealed various opportunities due to the use of tablets in secondary schools. Some of these opportunities encourage teachers to experiment with innovative teaching strategies, help teachers to increase their technological skills and digital literacy, foster professional growth, and encourage lifelong learning. Tablets enable teachers to collaborate and share teaching resources with colleagues more easily, provide a platform for teachers to communicate more effectively with parents and guardians, help to broaden the range of various subjects/content to teach, enhance personalized learning opportunities, and improve communication and global exposure. The findings will benefit policymakers, teachers, and curriculum developers in Tanzania by providing valuable insights into how to effectively support and encourage tablet use in secondary education.

**Keywords:** Challenges, Opportunities, ICT in Schools, Pedagogical Tool, Secondary School, Teachers, Tablets, Use of Tablets

## I. INTRODUCTION

In the 21<sup>st</sup> Century, technology is no longer a choice. Every person and sector uses technology. It transforms socio-economic activities and the way people live (Kongsgården & Krumsvik, 2016; Ali, 2021; Ali, 2013; Mondal & Das, 2021). Business operations, the education process, and many more activities have been transformed and led to the reimagining of governance dynamics (United Republic of Tanzania (URT), 2003). The education sector is one of the critical sectors that have been transformed by technology in its processes. Many countries have witnessed the integration of ICT in the education Sector for teaching and learning (f et al., 2015). As a result, governments of respective countries are forced to put in place policies, procedures, and Information and Communication Technology (ICT) infrastructure to enable the Integration of technology into teaching and learning practices (Tamim et al., 2015). Some governments are formulating ICT policies and replacing old chalkboards with interactive digital whiteboards, while others are doing what it takes to put in place the required ICT infrastructure. Some governments in Africa use smartphones, laptops, tablets, and e-readers for learning and teaching. Other governments also use an innovative flipped classroom model in which students watch lectures at home on a computer and use classroom time for more interactive exercises (Ali, 2013; URT, 2003).

Despite being a developing country, Tanzania is not left behind in integrating ICT for teaching and learning. In recent years, it has been supporting such integration at different levels of education, including secondary schools (Ali, 2021). Such efforts include implementing various ICT policies, for example, the development and implementation of the ICT policy for basic education in 2007, the ICT policy of 2016, and the national education and training policy of 2014 (United Republic of Tanzania (URT), 2007; URT, 2015). All these efforts are to ensure that the ICT integration in the education sector is beneficial and successful. Across all policy documents, the government emphasizes the effective use of ICT for teaching and learning at all levels, in diverse learning contexts, in teacher education, and in curriculum



development (Ali, 2021). Furthermore, the government's 2030 vision for Tanzania aims to provide a “smart class” for every school (URT, 2022). Hence, various efforts are underway to equip every child at all levels of education with digital tools, such as laptops (URT, 2022).

The government's ICT infrastructure, including an extensive optical fiber backbone spanning 8319 km, the national ICT data center (NIDC), and submarine cables such as EASSY and SEACOM, enables the country to adopt new technologies at a lower cost and expand broadband connectivity to rural areas (URT, 2021). To train teachers, tutors, and education management, the government holds several workshops and seminars. These illustrate ICT in education. Tanzania has invested heavily in classroom ICT equipment and training. Desktops, smartphones, laptops, printers, photocopiers, projectors, and televisions have been supplied to primary and secondary schools (Manyengo, 2021). This remarkable foundation supports extensive use of ICT in education. Tanzania's commitment to using ICT to improve education and beyond is also noted.

There are several efforts to digitize resources to improve teaching and teach, as well as digital literacy, among elementary, secondary, and technical secondary school teachers (Manyengo, 2021; Ali, 2013). Manyengo (2021) notes that incorporating digital competences into teaching and learning is difficult. Many teachers use digital tools for simple tasks such as typing and organizing exam results. According to Lytle (2012), teacher preparation programs should include purposeful technology training to encourage the use of ICT. Technology integration into education and assessment is unfamiliar to many teachers. This is related to college and university training. They often overlook educational shortcomings because they were taught fundamental technical and basic skills. Tanzania recognizes this issue and has taken steps to address it. In 2015–2016, tutors and lecturers received short-term retooling and in-service training to strengthen their ICT skills (URT, 2018). This proactive government strategy helped bridge the gap and equip teachers with ICT skills for the classroom. Even as these efforts continue, the world is changing, and technology is spreading. Tablets in school are the latest innovation. Tablets may enhance teaching and teach (Ali, 2021). Tablets are useful for education because they can run low-cost instructional apps (UNESCO, 2023). Tablets also improve education administration, teaching, and learning. Table use in teaching is rising significantly. Tamim et al. (2015) list Antigua & Barbuda, Australia, Brazil, India, and Iran as participants. Jamaica, Pakistan, Russia, Turkey, and the UAE use tablets in school. The US has also accepted cheaper tablets for educational use (Ditzler et al., 2016).

Tanzania invested in ICTs and teacher training by giving 293,400 tablets in 2022. This shows its dedication to ICT-enhanced education. These tables are distributed as follows: 185,404 tablets for primary school teachers, 89,805 for secondary school teachers, 1,666 for school quality assurance officers, 1,353 for rectors in public teachers' colleges, 297 for reactors in community development colleges, 5772 for regional, district, and ward education officers, 996 for vocation Education Training Authority personnel, and 8,357 for the National Examination Council of Tanzania is clearly committed to using ICT to improve education and beyond. Despite these attempts, teachers have struggled to fully utilize tablets as instructional tools.

Research into educational tables has begun. Studies have examined the effects of tablets on student performance (Haßler et al., 2016; Walczak & Taylor, 2018; Mulet et al., 2019; Nowfeek & Mahrool, 2021). Tablet efficiency depends on how they are used in education, not on the device itself (Schmid et al., 2014). However, it depends on teachers' attitudes toward tablet pedagogy. With the right mindset, tablets work best as cognitive aids rather than as tools. Tablet use by teachers is well studied, but their attitudes toward using them as pedagogical tools are not. Tablets are used less in schools than the Tanzanian government spent distributing them. This investigation was conducted to determine whether the teachers' attitudes toward tablets caused this variation. In Tanzania, few studies examine primary school tablet use, and none examine secondary school teachers' perspectives regarding it. Therefore, understanding secondary school teachers' views on the use of tablets as pedagogical tools is crucial for guiding appropriate technology use and designing improved teaching and learning tools. By exploring teachers' attitudes toward the use of tablets as pedagogical tools, this study aims to close this gap. This study examines teachers' views on the use of tablets as pedagogical tools.

## 1.1 Research Objective

- i. Identify challenges associated with the use of tablets in teaching and learning
- ii. Establish the opportunities offered using tablets in teaching and learning

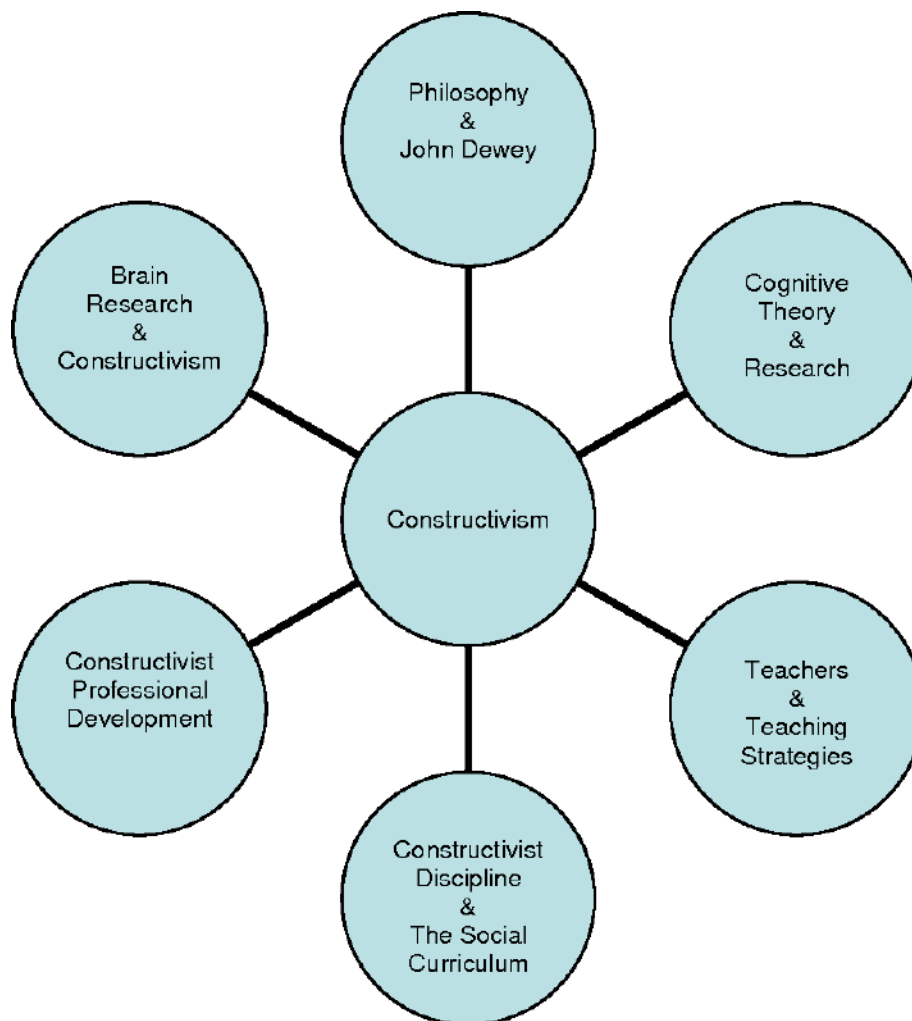
## II. LITERATURE REVIEW

### 2.1 Theoretical Review

#### 2.1.1 Constructivist Learning Theory (CLT)

Jean Piaget (1896-1980) is considered the father of the constructivist view of learning. The CLT is based on the idea that learners are active participants in their learning journey and that knowledge is constructed through experience. Learners develop schemas to organize acquired knowledge (Piaget, 1973; Piaget, 1964; Piaget, 1952). This model was grounded in the learning theories of Dewey, Piaget, Vygotsky, Gagné, and Bruner (Vygotsky, 1978; Chand, 2024;

Jonassen, 1991; Harasim, 2012). According to Piaget (1964), learning involves modeling, transforming, and understanding how objects are constructed. Through interactions with the environment, we change our internalized view of the world. Views on separate constructs can be changed in different ways. Instead of a stimulus followed by a response as a means of learning, Piaget (1964) proposed a circular relationship between the two: a stimulus can cause a response, and that response can affect how the next stimulus is viewed. One’s cognitive schema, or the way one thinks of a topic or object, is updated by external stimuli. Schemas can be adapted to stimuli through either assimilation or accommodation (Ertmer & Newby, 1993; Brown et al., 1989; Schunk, 1991). Assimilation involves taking new information from the environment and fitting it into pre-existing schemas, whereas accommodation is the process of changing cognitive schemas to accommodate something new from the environment. Both of these processes can be used simultaneously and alternately throughout life. Mir et al (2025) reflected on a few questions that can be applied to the constructivist theory of learning: (1) How does learning occur? (2) Which factors influence learning? (3) What is the role of memory in this learning theory? (4) What types of learning are best explained by the theory? Constructivism equates learning with meaning created through experience; the mind filters input from the world to produce its own unique reality (Narayan et al, 2013). Thus, humans learn by internally constructing meaning rather than acquiring it. As people learn, they continually build personal interpretations of the world from input by experiences and interactions. The internal representation of one’s knowledge is constantly open to change, and there is no objective reality that learners are striving. Individual and environmental factors are both critical to the constructivist theory of learning. It is the specific interaction between these two variables that creates knowledge (Mir et al, 2025). Actual behavior is also determined by both of these factors. Every action is an interpretation of the current situation (environment) based upon the history of previous interactions that one has encountered (individual). Narayan et al. (2013) also noted that the culture or specific environmental context is the most salient and influential contributor.



**Figure 1**  
*Constructivist Learning Theory* (Adopted from Piaget (1964))



As shown in the figure above, CLT has many elements and depicts how they affect students' learning. In terms of knowledge construction, every student begins the learning journey with some preexisting knowledge and then continues to build their understanding on top of that, selecting which pieces of the experience to add, making everyone's knowledge unique. On the side, learning is a social activity. Students interacting with others are vital to constructing knowledge, including Group work, discussions, conversations, and other interactions, all of which are important for creating understanding (Brown et al, 1989). Also, the CLT emphasizes that learning is an active process in which students must engage in discussions and activities to construct knowledge. CLT sees Learning is contextual, whereby Isolation is not the best way to retain information. While CLT depicts people learning to learn as they learn, it also reflects That Learning exists in the mind. Finally, CLT believes that knowledge is personal and motivation is key to learning. Because every person's perspective is unique, so will is the knowledge gained. Every individual comes into the learning activity with their own experiences and will take away different things. As with active participation, motivation is key to making connections and fostering understanding. Students cannot learn if they are unwilling to reflect on their preexisting knowledge and engage their thinking (Schunk, 1991).

## 2.2 Empirical Review

The commencement of the 21st century marked a paradigm shift across multiple sectors (Anagün, 2018; Tamim et al., 2015). Information and Communication Technology (ICT) has significantly improved production, efficiency, and results in agriculture, industry, health, mining, and particularly in education (Mondal & Das, 2021). Education is significantly influenced by the extensive integration of Information and Communication Technology (ICT) (Mondal & Das, 2021; Simin et al., 2015). This transformative phase has altered pedagogical techniques, shifting from conventional content-centric approaches to cultivating 21st-century abilities inside the educational framework (Tamim et al., 2015); (MoEVT & UNESCO, 2015). This indicates a transition in education from old pedagogical methods to a contemporary learner-centered approach. Nonetheless, nations exhibit disparate advancements in ICT across their sectors, attributable to inadequate infrastructure that impedes equitable access to resources and the expertise required to integrate digital tools.

The significance of education as a catalyst for progress in several fields is undeniable. An educated population constitutes the foundation of a skilled workforce essential for economic growth, innovation, and productivity (Anagün, 2018). Moreover, education cultivates critical thinking, problem-solving, and adaptability—essential attributes for navigating difficulties in health, mining, industry, and agriculture (Kaur, 2017). Conversely, digital tools are essential motivational instruments that enable teachers to enhance their creativity and boost students' comprehension (Nowfeek & Mahrool, 2021). Research indicates that educators must possess proficiency and confidence in integrating ICT, including technical, pedagogical, and content knowledge, to use digital tools such as tablets effectively in the classroom (Anagün, 2018). When used effectively, digital tools promote individual learning and student collaboration during classroom activities. Information and Communication Technology (ICT) facilitate students' transition from the classroom to the global context by enabling connectivity, connecting the curriculum to their everyday experiences, and promoting diverse learning opportunities.

### 2.2.1 Challenges in the Use of Tablets in Teaching and Learning

The use of tablets in secondary education presents distinct obstacles for instructors (Kongsgården & Krumsvik, 2016). Ali (2013) categorizes these obstacles into three primary domains: social, pedagogical, and technical. Socially, many parents of secondary school students believe that the use of tablets will surely destroy their teachers' and students' character if not managed well. While some believe that pedagogical obstacles include the language barrier, others face challenges in fitting the curriculum into the teaching and learning process through tables. Technically, many teachers lack the skills and support needed to use a laptop (Prosper & Nderogo, 2024). As a result, many teachers fear using tablets. However, Prosper and Nderogo (2024) found a moderate level of challenges in incorporating tablets into their teaching methods. Numerous studies have investigated the difficulties associated with tablet usage. A study by Kumi-Yeboah and Campbell (2015) indicated that some educators in the USA lack pedagogical guidance for integrating devices into the educational process to enhance the use of tablets in advancing students' content knowledge. Educators face the challenge of understanding the mechanics of tablet use in the classroom, including computing environments; interactions among various applications and file types; file format compatibility and conversion tools; the evaluation of comprehensive management solutions; and the practical simplification of these concepts for teachers (Prosper & Nderogo, 2024)

The research by Sothery et al. (2025) using Technology Acceptance Model (TAM) (Davis, 1986), With a convergent mixed-methods design, employed both probability and non-probability sampling technique, Findings indicated that technical problems, inadequate training, limited storage capacity, and inadequate internet connectivity are significant hindrances to the successful use of tablets in managing schools in public secondary schools in Songea District Council. Results also indicated that there is resistance to the adoption of tablets by some teachers and administrators



because of low digital literacy, preference for customary approaches, and insufficient technical support. It is suggested, from the findings, that school managers such as heads of schools, ward education officers, and district education officers require adequate training on the effective use of tablets for administration in public schools coupled with provisions of improved infrastructure, and conducive supportive policies (Sothery et al., 2025).

The research by Dias and Victor (2022) examines the intricate dimensions of mobile device utilization in education. Their findings align closely with educators and learners, depicting these gadgets as catalysts for increased student motivation and the transformation of pedagogical methods (Ali, 2013; Lubuva et al., 2022). Despite acknowledging specific obstacles, such as difficulties with communication, collaboration, and research proficiency that may hinder the efficient use of ICT devices (Dias & Victor, 2022), the prevailing attitude among educators and students is notably hopeful. The incorporation of instructional tools enabled by ICT devices fosters new applications and provides rapid access to abundant educational resources (Ngeze, 2017; Dhital, 2018).

A study by Masasi et al (2021) provides additional insights into the limitations of utilizing mobile phones for teaching and learning in secondary education. This study used both qualitative and quantitative exploratory methods, engaging a diverse group of participants comprising teachers, school administrators, students, quality assurance officers, and district education officials. The study's findings underscore significant concerns, particularly the inadequate training provided to instructors to use technology tools effectively to improve educational practices. Furthermore, it underscored the adverse impact of insufficient ICT infrastructure on obstructing technological progress, particularly within the educational sector (Masasi et al., 2021). These results correspond with prior studies conducted by Montrieux (2015) and Ojo & Adu (2018).

Camilleri and Camilleri (2020) investigated the use of mobile learning technology among primary school children, concentrating on their experiences with educational applications on smartphones and tablets. Their qualitative study demonstrated that students' interaction with tablet-based educational applications positively influenced their mathematical abilities (Camilleri & Camilleri, 2020). This research primarily focuses on students' perceptions of using educational applications on technological devices, while highlighting the need to investigate teachers' experiences, particularly their interactions with technology, such as using tablets for instruction.

An exploratory focus group study was conducted to deepen understanding of the effects of tablet use on teaching and learning. This study, carried out in a secondary school with a history of tablet integration since 2012, included 18 teachers and 39 pupils. Montrieux et al. (2015) elucidate that tablets are considerably impacting teaching and learning processes. These tablet devices often facilitate changes in how students acquire knowledge, fostering engaging, dynamic learning environments enhanced by multimedia resources. This discovery aligns with the conclusions of previous specialists in the domain. It is essential to emphasize the need to evaluate how proficiently teachers utilize technology to enhance their instructional methods.

Finally, Dhital (2018) review in Nepal rigorously analyzed the essential ideas and functions of information and communication technology (ICT) in government schools. This study primarily examined the numerous obstacles these schools encounter in utilizing ICT to improve educational quality. Dhital (2018) contends that ICTs serve as highly effective tools for enhancing knowledge and skills, thereby improving the quality of educational delivery. Nonetheless, the evaluation revealed numerous significant problems, including a deficiency of competent educators, insufficient hardware and software resources, and an unreliable electrical supply (Dhital, 2018). Given the essential role of information and communication technology (ICT) in enhancing teaching and learning, it is crucial to identify the conditions for its effective implementation in government schools. These requirements include skilled labour, dependable electrical infrastructure, adequate hardware, and suitable software resources (Dias & Victor, 2022; Masasi et al., 2021).

### **2.2.2 Opportunities Offered Using Tablets in Teaching**

The integration of tablets in education has undeniably created numerous opportunities for instructors. These prospects are firmly based on research and practical experience. Haßler et al. (2016) assert that technology, particularly tablets, has become a crucial facilitator of teacher professional development and significant pedagogical transformation. This acknowledgement underscores the essential role of technology in facilitating educators' development and promoting creative pedagogical approaches. Delgado et al. (2015) emphasize that technology enables educators to transform their teaching practices effectively. This aligns with the findings of DiVall and Zgarrick (2014), who found that tablet use enabled teachers to explore innovative teaching strategies, indicating a notable transformation in their instructional methodologies.

Moreover, Chou's (2014) study underscores the tangible advantages of incorporating iPads into educational practices, particularly within a large school district in the Midwestern United States. This combination has enhanced collaborative opportunities and refined educators' and students' creativity. Furthermore, Dhital (2018) contends that the integration of technology, such as tablets, has catalyzed innovation in educators' instructional processes. A study in Nigeria demonstrated that the use of electronic devices in education facilitates instructional innovation among educators



(Onyema, 2019). The use of tablets in education has created a transformative environment where technology catalyzes professional growth, pedagogical advancement, and the exploration of innovative teaching methods, collaboration, creativity, and teacher-driven innovation. These opportunities jointly enhance a modern educational experience.

### 2.2.3 ICT Integration in Education: Paradigm Shift and Challenges

The education sector, acknowledged as the cornerstone of societal advancement (Mondal & Das, 2021), experienced a substantial transition, integrating vital 21st-century competencies into its fundamental curriculum (Anagün, 2018). Nevertheless, this transition presents significant potential but also numerous obstacles. Resource constraints, assessment limitations, teacher-training gaps, resistance to change, and equity issues are major obstacles to the use of ICT in educational practice (MoEVT & UNESCO, 2015). The era when educators debated the legitimacy of Information and Communication Technology's impact on teaching and learning, as well as its potential to enrich the educational environment for meaningful learning, has long passed (Tamim et al., 2015). This is due to our existence in a digital realm, where educational materials such as books are archived as e-books. To facilitate effective communication, educators must use novel methodological tools. These tactics facilitate communication and collaboration between teachers and students, allow for content creation and sharing, and promote problem-solving in a global context. Research has substantiated the assertion that technology enhances students' performance (Tamim et al., 2015). Nonetheless, the belief persists that integrating ICT into the curriculum, primarily through tablets, will revolutionize the educational landscape (MoEVT & UNESCO, 2015). Tablets have swiftly evolved into multifunctional instruments in educational environments. Research indicates that the use of digital resources, such as tablets, in education has revolutionized teaching and learning, shifting from conventional to contemporary approaches (Simon & Ngololo, 2015)—the educational paradigm positions instructors as central figures in implementing the curriculum. According to Anagün (2018), research indicates that understanding teachers' attitudes towards digital tools, particularly tablets, requires examining their acceptance or resistance to new technology (Nowfeek & Mahrool, 2021). Educators are essential agents who influence student learning and play a pivotal role in implementing innovative educational methodologies (Anagün, 2018). Furthermore, educational advancement is significantly dependent on teachers' abilities, viewpoints, motivation, dedication, and beliefs (Nowfeek & Mahrool, 2021). Nonetheless, educators lack understanding of the pedagogy of technology use (Nowfeek & Mahrool, 2021).

### 2.2.4 Integrating ICT in Education: Thinking of Pedagogical Approaches

The use of ICT in education requires a thorough transformation of teaching methods and curricular material (Mondal & Das, 2021). This transition prioritizes skill development over rote memorization, emphasizing critical thinking, creativity, cooperation, communication, and digital literacy (MoEVT, 2023). Furthermore, integrating technology is essential to improving educational experiences, facilitating access to information, and equipping students for a technology-oriented society (MoEVT, 2023). Furthermore, research indicates that most educators have been trained within the conventional learning paradigm, making it challenging for them to adapt to innovations and integrate digital technologies into their pedagogical practices (Mavellas et al., 2016). Conversely, educators proficient in contemporary media are unable to implement their expertise in classroom instruction (Anagün, 2018). Moreover, research indicates that the ICT tools available in schools are insufficient or in poor condition, that teacher training and professional development are inadequately provided, and that technical support is inconsistently offered. Nonetheless, they can be enhanced periodically, and they are not in optimal condition for computer laboratories in educational institutions equipped with efficient tools and facilities (Simin et al., 2015). Both resources are unavailable at the school. Most secondary schools are inadequate; those that are accessible are underutilized for several reasons (Mavellas et al., 2016). Subsequent research indicated that the effective utilization of tablets and other digital tools requires appropriate implementation and supervisor support (Simin et al., 2015). The failure to identify when information is necessary and to possess the skills to search for, assess, and utilize relevant information remains a challenge for educators due to digital literacy (Anagün, 2018).

## III. METHODOLOGY

### 3.1 Research Design

This study was quantitative and survey-based. Quantitative research uses numerical data and statistical methods to identify correlations among variables and draw conclusions about the phenomena under study, according to Oranga and Matere (2025). It quantifies observations, measures variables, and generalizes conclusions to larger populations using statistical, mathematical, or computer methods. Quantitative and survey research designs objectively assess variables, test theories, and detect trends through statistical analysis of numerical data, thereby enabling generalization of findings (Oranga & Matere, 2025). It was chosen for its accurate, reproducible, and unbiased findings, enabling evidence-based decision-making and predictive analysis.



### 3.2 Study Area

This study on exploring Tanzanian secondary school teachers' challenges and opportunities in the use of tablets as a pedagogical tool in teaching and learning was conducted in Tanzania's main language, specifically covering fifty-four secondary schools. These schools included both public and private institutions.

### 3.3 Target Population

The research was conducted in Tanzania. The target population included 254 secondary schools. Of the secondary schools, 151 are public, and 103 are private. The survey involved 758 secondary school teachers, comprising 348 females and 410 males (BEST, 2020).

### 3.4 Sampling Techniques and Sample Size

The research employed random sampling techniques to identify participants and public secondary schools included in the study. Ndenje-Sichalwe and Elia (2022). Random sampling is a technique in which the population is divided into fixed, periodic intervals. A determination is made to choose every tenth participant from the population. This indicates that the population will be segmented into a predetermined periodic interval scale (Ndenje-Sichalwe & Elia, 2022). A precise sample size computation is fundamental to study planning. This underscores the necessity of meticulous attention to the precision of sample size estimates, since neglect may yield results rife with errors rather than meaningful conclusions (Fellows & Liu, 1997). This study selected the most prevalent and efficient approach for calculating the requisite sample size to adequately reflect the specified population; specifically, the National Education Association (Neagu) formula was employed. National Education Association (NEA) formula:

$$S = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P), \text{ where:}$$

$S$  = Required sample

$X^2$  = Table value of chi-square for 1 degree of freedom at the desired confidence level

$N$  = Population size

$P$  = Population portion (assumed to be 0.50, since this would provide the maximum sample size)

$D$  = Degree of accuracy as a proportion (0.05).

When using the NEA formula, cognizance must be taken of the sample size relative to the population size. As the population size grows, the sample size increases at a diminishing rate and stabilizes at slightly more than 380. As a result, the study used 780 secondary school teachers.

### 3.5 Data Collection Instrument

Secondary school teachers were given a 21-item survey to assess their attitudes toward tablet use, as well as their competence, obstacles, and opportunities. These statements were assessed on a five-point Likert scale from "1 - Strongly Disagree" to "5 - Strongly Agree." The poll included 758 public and private secondary school teachers from 254 Tanzanian institutions. Questionnaires and document reviews were used to collect primary and secondary data. Scales, focus groups, and literature ensured validity, while consistent methodology and trustworthiness measures-maintained dependability.

### 3.6 Data Analysis

The collected quantitative data and participant responses were analyzed rigorously using the Statistical Package for the Social Sciences (SPSS) version 20.0, with descriptive statistics. This analytical approach facilitated the extraction of valuable insights from the data, allowing for a comprehensive examination of teachers' competencies, challenges, and opportunities in using tablets for teaching.

### 3.7 Ethical Considerations

Participation in this study was fully voluntary, and participants retained the right to withdraw their agreement at any time, for any reason, without incurring any duties or repercussions. Initially, both the researchers and volunteers participated in the informed consent procedure. Participants were provided with comprehensive information regarding the study's aim, goals, and objectives. They were explicitly directed to provide their comments with lucidity and integrity. Moreover, ethical considerations encompassed securing research approval, safeguarding participant confidentiality, and promoting a respectful and transparent research atmosphere.



## IV. FINDINGS & DISCUSSION

### 4.1 Demographic Information

This section delineates the demographic data of the respondents. The information presented pertains to the type of school, number of teachers, educational level, and teaching experience, with the significance of each category elucidated.

#### 4.1.1 Type of School and Number of Teachers

As detailed in Table 1 below, the study involved 758 secondary school teachers from 254 secondary schools in the Morogoro region. Among these participants, 348 were female, and 410 were male.

**Table 1**

*Demographic Characteristics of the Study*

School Type	No of schools	No of Teachers		
		Male	Female	Total
Public	151	209	201	410
Private	103	165	183	348
	<b>254</b>	<b>374</b>	<b>384</b>	<b>758</b>

#### 4.1.2 Educational Level and work Experiences

*Educational Level:* The participants' educational level was important to know, as it served as a key indicator of the basic Information and Communication Technology knowledge teachers acquired in their educational institutions. As shown in Table 2, the study found that 123 (16.2%) teachers had a certificate-level of education, 312 (41.2%) had a Diploma, 237 (31.3%) had a Bachelor's degree, 73 (9.6%) had a master's degree, and 13 (1.7%) had a doctoral degree. This implies that teachers' educational level is a significant factor influencing their ICT knowledge, with a higher percentage of diploma holders (41.2%) included in the study. This is based on a study by De Villa and Manalo (2020), which concluded that to improve the teaching-learning process, teachers need continual professional development to align with new pedagogies and learning technologies.

*Working experiences:* On the other hand, the study also examined the teachers' working experiences. The duration of work in a similar field was important, as it would foster a deep understanding of various issues in teaching and learning and facilitate the easy detection of pedagogical transitions from traditional to technologically integrated approaches. It was found that majority of the participants in teaching experiences ranges from less than 5 years were 173 (22.8%), 5-10 years were 120 (15.84%), 11-15 years were 114 (15.0%), 16-20 years were 170 (22.4%) and more than 20 years were 181 (23.9%) as displayed in Table 2. This demographic distribution suggests a balance between beginners and more experienced educators, providing a diverse perspective on technology adoption in teaching and learning. This finding is supported by the study of Aslan and Zhu (2016), which found that experienced teachers have low adoption of integrating Information and communication technology, such as tablets, into their teaching.

**Table 2**

*Distribution of Teachers' Working Experiences and Education Level*

Working Experience	Educational Level					Total
	Certificate	Diploma	Bachelor	Masters	Doctoral	
Less than 5 years	9 (1.2%)	31 (4.1%)	98 (12.9%)	28 (3.7%)	7 (0.9%)	173 (22.8%)
5-10 years	21 (2.8%)	12 (1.6%)	63 (8.3%)	21 (2.8%)	3 (0.4%)	120 (15.8%)
11-15 years	12 (1.6%)	42 (5.5%)	47 (6.2%)	11 (1.5%)	2 (0.3%)	114 (15.0%)
16-20 years	36 (4.7%)	103 (13.6%)	21 (2.8%)	9 (1.2%)	1 (0.1%)	170 (22.4%)
More than 20 years	45 (5.9%)	124 (16.4%)	8 (1.1%)	4 (0.5%)	0 (0%)	181 (23.9%)
Total	123 (16.2%)	312 (41.2%)	237 (31.3%)	73 (9.6%)	13 (1.7%)	758 (100%)

#### 4.1.3 Teachers owning Digital Tools

Table 3 presents the results on teachers' ownership of Digital Tools in Secondary schools in this study.

**Table 3***Status of Teachers Owning Digital Tools*

Type of Digital Tool	Number of owners	Owners in percent (%)
Tablets	708	93.4%
Smartphone	734	96.8%
laptop	176	23.2%
Desktop computer	43	5.7%
Digital Photocopier	7	0.9%
Digital Projector	2	0.3%
others	41	5.4%

Table 3 above shows that most secondary school teachers own more than one electronic device, such as a smartphone, laptop, desktop computer, or tablet. The highest response rate for tablets was among 758 respondents (708), at 93.4%, who own tablets and other electronic devices. At the same time, 734 teachers (96.8%) own smartphones and other electronic devices; 176 teachers (23.2%) own laptops and other electronic devices; and 43 teachers (5.7%) have desktop computers; 7 teachers (0.9%) have digital photocopier; 2 teachers (0.3%) own digital projector and 41 teachers (5.4%) owns other digital tools such as digital presentation pen, digital camera for content creation, and others. This finding shows that smartphones and tablets are even more relevant to secondary school students than other electronic devices, as noted by Aslan & Zhu (2016).

**4.1.4 Digital Tools and Ownership**

Table 4 presents the results on how teachers get Digital Tools in Secondary schools in this study.

**Table 4***Digital Tools and Procurement*

Digital Tool	How did you get				
	from Government		Bought Myself		Total
	Female	Male	Female	Male	
Tablets	297 (39.2%)	220 (29.0%)	87 (11.5%)	104 (13.7%)	708 (100%)
Smartphones	0 (0%)	0 (0%)	384 (52.3%)	350 (47.7%)	734 (100%)
Laptop	0 (0%)	0 (0%)	72 (40.9%)	104 (59.1%)	176 (100%)
Desktop Computer	0 (0%)	0 (0%)	49 (6.5%)	84 (11.1%)	133 (17.5%)
Digital Photocopier	0 (0%)	0 (0%)	0 (0%)	7 (0.9%)	7 (0.9%)
Digital Projector	0 (0%)	0 (0%)	0 (0%)	2 (0.3%)	2 (0.3%)
Others	0 (0%)	0 (0%)	13 (1.7%)	28 3.7%)	41 (5.4%)

As shown in Table 4 above, most secondary school teachers who own tables have received them from the government. In contrast, among 708 respondents, 73% (517 teachers) received tablets from the government, and 27% (191 teachers) bought their own. The finding shows the government's relevance in providing teachers with tablets to enhance teachers' learning and the accessibility of materials, and in enabling teachers to integrate the tablets with the Learning Management System. However, as you can see from Table 4, in addition to tablets, teachers also own other electronic devices, which they purchase with their own funds (not provided by the government). The study revealed that 384 female teachers (52.3%) and 350 male teachers (47.7%) own smartphones, for a total of 734 of 758 teachers. Also, the study revealed that 176 teachers own laptops, 133 own desktop computers, 7 own digital photocopiers, 2 own digital projectors, and 41 own other types of electronic devices, such as digital cameras.

**4.1.5 Challenges in Using Tablets in Teaching**

The second objective of this study was to pinpoint the challenges that teachers encounter when incorporating tablets into their teaching and learning practices. To gain insights into the challenges teachers face when using tablets for teaching and learning, we conducted a survey in which participants responded to four statements, each rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), as shown in Table 5.



**Table 5**  
*Challenges Facing Teachers in Using Tablets in Teaching and Learning*

Items	Strong Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
I don't use tablets during teaching due to limited access to electricity	102	13.5	46	6.1	81	11	103	13.6	426	56.2
I lack technical support from the school management when the tablet encounters a problem	79	10.4	67	8.8	97	13	123	16.2	392	51.7
I have not received adequate training to effectively use tablets for teaching and learning	98	12.9	73	9.6	54	7.1	107	14.1	426	56.2
I lack confidence in using the tablets for teaching and learning	69	9.1	56	7.4	47	6.2	131	17.3	455	60.0
I lack the skills to install the necessary apps on my tablets related to teaching and learning	125	16.5	24	3.2	43	5.7	146	19.3	420	55.4
I lack accessibility to ICT-based resources	87	11.5	74	9.8	32	4.2	142	18.7	423	55.8
I lack technical support when I am in the classroom for teaching and learning	65	8.6	69	9.1	41	5.4	108	14.2	475	62.7
I don't use tablets because of a language problem	51	6.7	87	11	45	5.9	107	14.1	468	61.7
I don't use tablets during teaching and learning due to limited access to the internet	178	23.5	147	19	41	5.4	145	19.1	247	32.6
I don't use tablets during teaching and learning because I have limited time	103	13.6	93	12	67	8.8	151	19.9	344	45.4

The study went further and conducted an analysis using descriptive statistics; see Table 6 below. The findings indicate an overall mean score of 3.89 on a five-point Likert scale, suggesting that teachers generally agree that they experience notable challenges in using tablets for teaching and learning. On a Likert scale, mean values close to 4.00 are commonly interpreted as indicating agreement or the presence of a substantial issue (Likert, 1932; Boone & Boone, 2012). This implies that challenges such as limited access to electricity and internet, inadequate technical support, insufficient training, and lack of confidence meaningfully hinder effective tablet integration among secondary school teachers in Tanzania. The overall standard deviation of 1.43 reflects moderate variability in responses, indicating that while many teachers face similar challenges, the severity of these challenges varies across individuals and school contexts, particularly between public and private schools. Overall, the results demonstrate that although teachers possess tablet competencies, persistent infrastructural and institutional barriers continue to limit optimal use of tablets in teaching and learning.

**Table 6**  
*Descriptive statistics of Challenges Facing Teachers in Using Tablets in Teaching and Learning*

Items	Mean	Std. Dev.
I don't use tablets during teaching due to limited access to electricity	3.93	1.46
I lack technical support from the school management when the tablet encounters a problem	3.90	1.39
I have not received adequate training to effectively use tablets for teaching and learning	3.91	1.48
I lack confidence in using the tablets for teaching and learning	4.12	1.33
I lack the skills to install the necessary apps on my tablets related to teaching and learning	3.94	1.49
I lack accessibility to ICT-based resources	3.98	1.42
I lack technical support when I am in the classroom for teaching and learning	4.13	1.34
I don't use tablets because of a language problem	4.13	1.31
I don't use tablets during teaching and learning due to limited access to the internet	3.18	1.61
I don't use tablets during teaching and learning because I have limited time	3.71	1.48
<b>Overall</b>	<b>3.89</b>	<b>1.43</b>

This mean score indicates that, on average, teachers perceived a moderate level of challenge when incorporating tablets into their teaching methods and learning process. In more detail, the findings indicate that teachers face various challenges when using tablets for teaching and learning. Limited access to reliable electricity appears to be a moderate concern, as is the lack of technical support from school management and inadequate training for effective tablet use. Notably, teachers express a lack of confidence in using tablets for teaching, with a mean score indicating agreement. This finding concurs with that of Greener and Wakefield (2015), who found that higher education teachers had issues



with digital confidence and with the pedagogical reasoning for integrating new technologies into teaching. These findings reiterate the need to address these challenges to effectively integrate tablets into teaching. School administrators and policymakers should consider strategies to provide better technical support, training, and resources to boost teachers’ confidence in using tablets as an educational tool.

#### 4.1.6 Opportunities in Using Tablets for Teaching

The third objective of this study was to establish the opportunities offered by tablets for teaching and learning in Secondary Schools. As shown in Table 7 below, to gain insights into these, we conducted a survey in which participants responded to eight statements, each rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

**Table 7**  
*Opportunities in Using Tablets for Teaching and Learning*

Items	Strong Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
The use of tablets encourages teachers to experiment with innovative teaching strategies	87	11.5	41	5.4	34	4.5	103	13.6	493	65.0
The use of the tablet does help teachers to increase their technological skills and digital literacy	51	6.7	23	3	78	10	147	19.4	459	60.6
Using tablets in teaching fosters professional growth and encourages lifelong learning	37	4.9	21	2.8	64	8.4	138	18.2	498	65.7
Tablets enable teachers to collaborate and share teaching resources with colleagues more easily	39	5.1	75	9.9	35	4.6	156	20.6	453	59.8
Tablets provide a platform for teachers to communicate more effectively with parents and guardians	33	4.4	51	6.7	53	7	181	23.9	440	58.0
The use of tablets helps to broaden the range of various subjects/content to teach	66	8.7	54	7.1	32	4.2	127	16.8	479	63.2
Using tablets enhances personalized learning opportunities	45	5.9	88	12	43	5.7	171	22.6	411	54.2
Using tablets improves communication and global exposure	23	3.0	21	2.8	48	6.3	106	14	560	73.9

The results shown in Table 7 above were then analyzed descriptively, as shown in Table 8 below. The results show an overall mean score of 4.25 on a five-point Likert scale, indicating strong agreement among teachers regarding the opportunities that tablet use provides for teaching and learning. Mean values above 4.00 on a Likert scale signify strong agreement and reflect positive perceptions toward the measured construct (Likert, 1932; Boone & Boone, 2012). This finding suggests that teachers in Tanzanian secondary schools strongly perceive tablets as tools that enhance innovation in teaching strategies, professional growth, collaboration, communication, and personalized learning. The overall standard deviation of 1.19 indicates relatively low variability, suggesting that teachers’ views on the opportunities associated with tablet use are fairly consistent among respondents. The combination of a high mean and low dispersion indicates that tablet use offers significant, widely recognized opportunities to improve teaching and learning outcomes, reinforcing the potential of digital technologies to transform secondary education in both public and private schools.

**Table 8**  
*Descriptive Statistics of Opportunities in Using Tablets for Teaching and Learning*

Items	Mean	Std. Dev.
The use of tablets encourages teachers to experiment with innovative teaching strategies	4.15	1.39
The use of the tablet does help teachers to increase their technological skills and digital literacy	4.24	1.17
Using tablets in teaching fosters professional growth and encourages lifelong learning	4.37	1.08
Tablets enable teachers to collaborate and share teaching resources with colleagues more easily	4.20	1.21
Tablets provide a platform for teachers to communicate more effectively with parents and guardians	4.25	1.12
The use of tablets helps to broaden the range of various subjects/content to teach	4.19	1.31
Using tablets enhances personalized learning opportunities	4.08	1.26
Using tablets improves communication and global exposure	4.53	0.95
<b>Overall</b>	<b>4.25</b>	<b>1.19</b>

Generally, the findings of this study indicate that teachers recognize a wide range of opportunities associated with using tablets in teaching and learning. These opportunities range from encouraging innovative teaching strategies and fostering professional growth to facilitating collaboration and communication, as well as broadening the range of subjects/content to teach. This finding concurs with that of DiVall and Zgarrick (2014), who found that the use of tablets enabled faculty members at Northeastern University in Boston to improve productivity, and some also tried new teaching strategies and tools. These insights can inform educational strategies and policies to harness the potential of tablet technology for improved teaching and learning experiences.

## V. CONCLUSION & RECOMMENDATION

### 5.1 Conclusion

While the study revealed how teachers feel about using tablets for teaching and learning, it also identified various challenges. The challenges been found include limited access to electricity, lack technical support from the school management when the tablet encounters a problem, lack of adequate training to effectively use tablets, lack confidence in using the tablets, lack the skills to install the necessary apps on my tablets related to teaching and learning, lack accessibility to ICT-based resources, language problem (barrier), limited access to the internet and few noted that they have limited time. The good news is that there are various opportunities due to the use of tablets in secondary schools. Some of the opportunities are encourages teachers to experiment with innovative teaching strategies, help teachers to increase their technological skills and digital literacy, fosters professional growth and encourages lifelong learning, Tablets enable teachers to collaborate and share teaching resources with colleagues more easily, provide a platform for teachers to communicate more effectively with parents and guardians, helps to broaden the range of various subjects/content to teach, enhances personalized learning opportunities and improves communication and global exposure

To capitalize on this positive attitude, schools need to get more tablets into classrooms and invest in a solid ICT infrastructure. Teachers will need ongoing training to make the most of the devices, along with a system for monitoring and evaluating the impact of tablets on teaching and learning. If we can resolve known issues, encourage teachers to learn from one another, and ensure the school administration provides reliable tech support, we can ensure that tablets become a powerful tool for improving teaching and engaging students.

### 5.2 Recommendation

This study's findings indicate that to maximize the benefits of these tablets in Tanzanian classrooms, we must solve the identified obstacles and issues. The report advises that school administrators provide help to instructors regarding technological malfunctions. The report strongly advocates for comprehensive government commitment to provide professional training and support for secondary school educators, addressing the issue of inadequate training and assistance. Thirdly, regarding connectivity concerns, it is advised that the Tanzanian government establish fiber optic infrastructure in key core schools, enabling teachers from adjacent institutions to access and utilize these resources. It can also enhance mobile internet access by subsidizing the companies that offer these services. Ultimately, regarding the discrepancy with the existing curriculum, the Government should devise a method to incorporate Technology courses in colleges and teacher training institutions. Furthermore, secondary schools should provide teachers with sufficient time and handle the pedagogical issues within their institutions. This entails developing professional training that emphasizes the integration of technology into courses and offering tailored assistance for educators as they adapt to this new digital landscape. Moreover, enhancing the fundamental infrastructure is essential for fostering an environment conducive to the successful utilization of tablets.

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