

Teacher Preparedness for Integrating ICT in Teaching Kiswahili Grammar in Public Secondary Schools in Mumias West Sub-County, Kakamega County, Kenya

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Abstract

This study investigated the integration of Information Communication and Technology (ICT) in teaching and learning Kiswahili grammar in public secondary schools in Mumias West Sub County. It acknowledges ICT's potential to enhance grammar skills when combined with traditional teaching methods, the study focused on assessing teacher preparedness for Integrating ICT in teaching Kiswahili grammar in public secondary schools. Guided by constructivist cognitive learning theory, the study utilized a descriptive survey design and convergent parallel mixed methods. The study targeted 69 Kiswahili teachers, 5128 form four students and 28 Heads of the Kiswahili department, 28 public schools. The student sample size was determined using the Krejcie and Morgan sampling table of 1970 from a total population of 5,128, which was 361 learners. Stratified sampling and proportionate probability sampling were used to select 9 schools, 9 Kiswahili teachers. Simple random sampling was used to sample 361 students and 9 heads of Kiswahili department were purposively sampled. Data was collected through questionnaires, interviews and document analysis, then analyzed with the aid of SPSS version 25 for quantitative data and narration for qualitative data. The study revealed that teachers were moderately prepared to integrate ICT in teaching, with 20.4% acquiring ICT skills through workshops and seminars, and 29.6% learning from colleagues. Teachers utilized ICT tools such as computers, smartphones, and video players for online tuition and grammar assignments, as well as for quick revision skits, particularly during school holidays. However, significant barriers identified were the teacher induction time, time required for teacher preparation among others affected the effective integration of ICT. Findings revealed also indicated a positive strong significant relationship between teacher preparedness and integration of ICT in teaching and learning Kiswahili Grammar ($r=0.796$, $p < 0.01$). The study concluded that ICT adoption among Kiswahili teachers varies significantly, highlighting the need for continuous professional development, specific approaches, and policy alignment to improve teaching and student outcomes in the digital age. Recommendations include prioritizing ongoing ICT skill

development for Kiswahili teachers with customized resources, aligned policies, infrastructure investments, and collaborative partnerships to enhance grammar instruction.

Keyword: ICT, teacher preparedness, Kiswahili grammar, teaching and learning, integration

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Introduction

Teacher preparedness in using ICT in teaching is key for the successful integration of technology in education. Chege (2014) emphasizes that effective ICT integration in learning hinges on teachers' training in computer usage for instructional purposes. Without adequate training, teachers are ill-equipped to harness the full potential of ICT tools, resulting in suboptimal teaching outcomes. Moreover, Ndwiki and Thinguri (2017), asserted that the integration of ICT could simplify the learning process, making it more efficient and engaging for students. However, the simplification and enhancement of learning through ICT were contingent upon teachers' proficiency and comfort with these technologies.

The level of ICT literacy among teachers is a significant concern. Muia

(2021) reveals that teachers' ICT literacy remains low, coupled with only moderate availability of ICT resources in schools. This deficiency in ICT skills and resources creates a barrier to effective teaching and learning, as teachers are unable to fully utilize available technologies to enhance student learning. Miima (2014) further supports this by noting that the application of ICTs to facilitate Kiswahili language learning was ineffective, largely due to the low ICT skills among both students and teachers. This highlights a critical gap in teacher preparedness that needs to be addressed through targeted professional development and increased access to ICT resources.

Moreover, the infrastructure necessary for ICT integration in teaching is often lacking. According to Ntorukiri et al.

(2021), schools suffer from low coverage of ICT infrastructure, primarily due to the high costs associated with investment in technology. The Ministry of Information, Communications and Technology (2019) has outlined measures to encourage ICT application in schools to improve teaching and learning quality, but the implementation of these policies faces significant hurdles. Ngavana (2018) points out that interactive ICT platforms can significantly enhance learning by enabling students to engage with content through animations and demonstrations, which are particularly beneficial for language learning. Despite these potential benefits, the lack of sufficient infrastructure and resources remains a major challenge that hampers teacher preparedness and the overall effectiveness of ICT integration in education.

Statement of the problem

The successful integration of ICT in education hinges on teacher preparedness, yet challenges like inadequate training and limited resources hinder this process. Teachers' low ICT literacy and insufficient school infrastructure result in suboptimal teaching outcomes and hinder the application of technology in subjects like Kiswahili. Addressing these gaps through targeted professional development and enhanced ICT resource availability is essential for effective ICT integration in Kenya's public secondary schools.

Study objective

To examine the level of teacher preparedness in using ICT in the teaching of Kiswahili Grammar in public secondary school in Mumias West Sub County, Kenya

Research question

What is the level of teacher preparedness in using ICT in teaching

Kiswahili Grammar in a public secondary school in Mumias West Sub County, Kenya?

Literature Review

Theoretical framework

The application of the Constructivist Cognitive Learning Theory by Jean Piaget and John Dewey emphasizes the importance of active discovery and experiential learning in education, making it highly relevant to the integration of ICT in teaching. Teachers play a key role in facilitating this process by providing resources and guidance, aligning with the theory's emphasis on learners actively constructing knowledge (Piaget, 1950; Dewey, 1938). ICT integration in teaching Kiswahili language skills exemplifies this, as it enables interactive and inquiry-based learning, where students engage with technology to explore and understand language concepts deeply. However, the level of teacher preparedness in utilizing ICT is critical to this process. Teachers need to be adequately trained and comfortable with ICT tools to effectively act as facilitators, ensuring that technology enhances the learning experience rather than hinders it (Muia, 2021; Ntorukiri et al., 2021). The constructivist approach highlights that for successful ICT integration, teachers must be proficient in using these technologies to support and guide students in their learning journey.

Empirical review

Most teachers globally, and specifically in rural areas, lack pre-service ICT training, which is key for effective technology integration in education (Apeanti, 2016; Mahdum, Hadriana & Safriyanti, 2019). This lack of training is compounded by inadequate in-service training and a general scarcity of ICT resources, making the integration of

technology in teaching more challenging (Bhattacharjee & Deb, 2016; Drossel, Eickelmann & Gerick, 2017). The effectiveness of ICT in teaching is contingent upon teachers having the requisite skills and being prepared to deliver educational content aligned with learning objectives. However, studies consistently indicate a deficiency in ICT skills among teachers, a barrier exacerbated by poor infrastructure and support in many settings, particularly in Sub-Saharan Africa (Yusuf, Maina & Dare, 2013; Dlamini & Mbatha, 2018).

Despite these challenges, there are instances of successful ICT integration where teachers possess a positive perception of ICT's role in education and are motivated by its potential to enhance classroom experiences (Morat, Shaari, & Abidin, 2016; Erkulova, Samandarov & Samandarova, 2020). Additionally, studies show that when teachers are adequately prepared, they can significantly impact student academic performance through ICT (Kumar, Rose, D'Silva, 2008; Boomoh, Jumpakate & Karpklon, 2021). In contrast, inadequate teacher training on ICT usage is often linked to ineffective educational outcomes, particularly in multicultural and multilingual classrooms (Padayachee, 2017; Mwanda et al., 2017). There is a need for improved training and resources to enhance ICT effectiveness in teaching and learning environments. This is particularly critical as education systems increasingly rely on technology to meet contemporary educational demands and to prepare students for a technologically advanced global economy.

Methodology

The study utilized a descriptive survey design favored for its capacity to capture data at a single point in time across diverse populations (Kothari & Garg, 2014). This

approach allowed the researchers to observe and describe the current status of ICT integration, ensuring that the data collected were reflective of real-time practices within the selected public secondary schools. The scope of the study was defined clearly, with a focus on public secondary schools in Mumias West Sub-County, an area characterized by mixed economic activities and a significant number of students and teachers (MOEST, 2022).

The target population included 69 Kiswahili teachers, 5128 form four students and 28 Heads of the Kiswahili department, 28 public schools. The student sample size was determined using the Krejcie and Morgan sampling table of 1970 from a total population of 5,128, which was 361 learners. Stratified sampling and proportionate probability sampling were used to select 9 schools, 9 Kiswahili teachers. Simple random sampling was used to sample 361 students and 9 heads of Kiswahili department were purposively sampled.

Data collection was carried out using dual methodologies. Quantitative data were gathered through questionnaires administered to teachers and students, while qualitative insights were derived from interviews with heads of departments and document analyses (Cooper & Schindler, 2011). These instruments were specifically designed to explore various aspects of ICT usage in educational settings, ensuring that both the breadth and depth of information were covered.

The reliability and validity of the research instruments were tested through a pilot study, which helped refine the tools for final data collection (Pandey & Pandey, 2021). The questionnaires demonstrated high reliability (Cronbach's Alpha > 0.7), confirming their consistency and the dependability of the data collected. Validity was ensured through expert reviews,

confirming that the instruments adequately addressed the research questions and effectively captured the necessary data for analyzing the integration of ICT in teaching Kiswahili grammar. Ethical considerations as guided were adhered to.

Results

The level of teacher preparedness in using ICT in teaching

This study focused on the teachers' acquisition of ICT skills for teaching, pre-service and in-service ICT skills acquisition by teachers, ICT programs and networking preparedness by teachers.

Teachers' acquisition of ICT skills for teaching

The acquisition of ICT skills among teachers demonstrated a diverse landscape. A significant portion of the respondents (38.2%) reported being self-taught, highlighting a proactive approach

to skill acquisition in the absence of formal training. Workshops and seminars also played an essential role, with 20.4% of teachers acquiring skills through these channels, suggesting the effectiveness of structured professional development programmes. Additionally, peer learning within the workplace was noteworthy, with 29.6% of teachers learning from colleagues at their respective schools, emphasising the importance of collaborative learning environments. Less commonly, formal education settings such as computer colleges contributed to skill development for 11.8% of the respondents. These findings were visually summarised in Figure 4.1, which displayed the distribution of affirmative responses concerning the various modes of ICT skill acquisition among the teachers surveyed. These findings are summarised in Figure 4.1, which displays the distribution of affirmative responses concerning the various modes of ICT skill acquisition among the teachers surveyed. The figure presents the details.

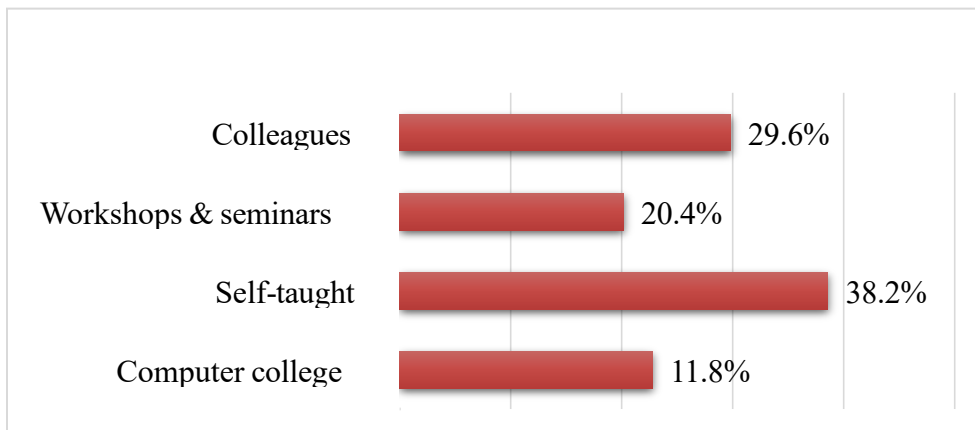


Figure 1: Teachers' acquisition of ICT skills for teaching

From the key informant interview, it was stated that teachers actively participated in workshops and seminars specifically designed for ICT induction; the ICT session aimed at enhancing teachers' ICT skills and preparing them for effective

integration of technology in teaching. Moreover, Key informant interviews indicated that some of the teachers acquired basic ICT skills by attending computer colleges. To some, they were taken through tailored training in ICT use for instructional purposes.

“... Teachers are taken to workshops and seminars to sharpen their practical skills in ICT as an instructional tool.”

“... There are teachers with an interest in ICT and computing who ask for in-service training and go for these short courses.”

proportion of teachers acquired their ICT skills through different training phases in Figure 2. In-service training was responsible for 42.9% of the skill acquisition among the teachers, indicating the value of ongoing professional development. Conversely, pre-service training accounted for 57.1% of the skill development, suggesting that foundational training before entering the profession was the predominant mode of ICT skill acquisition. Figure 2 illustrates these findings, highlighting the distribution of ICT skill acquisition sources among the teachers surveyed.

Pre-service and in-service ICT skill acquisition by teachers

It was observed that a significant

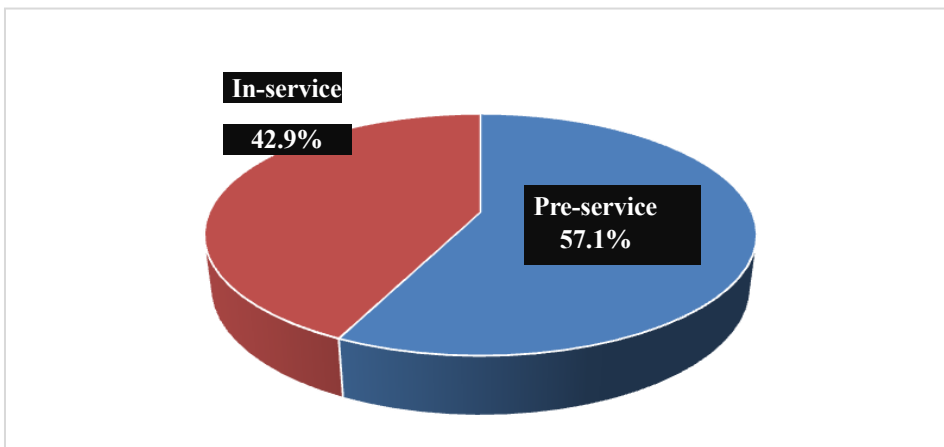


Figure 2: ICT skills acquisition time

ICT programs and networking preparedness for teaching

The study on teachers' readiness in ICT and

networking for teaching found that majority of teachers were prepared to use specific tools. Table 1 presents the findings.

Table 1: ICT programs and networking preparedness for teaching

ICT programs and networking preparedness for teaching	Frequency (n)	Percent (%)
Word		
Not prepared	6	68.2
Prepared	3	31.8
PowerPoint		
Not prepared	7	72.7
Prepared	2	27.3
Internet		
Not prepared	4	45.5
Prepared	5	54.5

Majority of teachers (31.8%) felt ready to use Word for teaching grammar, showing significant readiness. Also, 27.3% were prepared to use PowerPoint, indicating proficiency in multimedia presentations. Furthermore, the majority (54.5%) felt adequately prepared to use the Internet for teaching. This indicates that improving teaching methods and accessing

educational materials are key.

During Kiswahili lessons, various gadgets were used in class: 27.1% of teachers utilized radio broadcasts, 15.3% of teachers played recorded sounds from CDs and DVDs and 57.6% of teachers incorporated video clips during Kiswahili lessons. Figure 3 illustrates the findings.

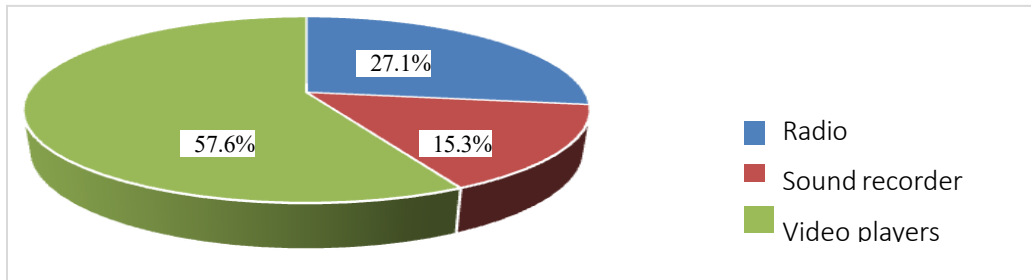


Figure 3: Teachers' preparedness level on the use of ICT gadgets in teaching

Pearson correlation

The study determined if there were any significant relationship between teacher preparedness and Integration of ICT in

teaching and learning Kiswahili Grammar, a Pearson correlation analysis was used. The results are presented in 2 below.

Table 2: Pearson Correlation

		Level of teacher preparedness
	Pearson Correlation	.796**
Integration of ICT in teaching and learning Kiswahili Grammar	Sig. (2-tailed)	.000
	N	85

***.* Correlation is significant at the 0.01 level (2-tailed).

The findings indicated a positive strong significant relationship between teacher preparedness and integration of ICT in teaching and learning Kiswahili Grammar ($r=0.796, p<0.01$).

Document analysis

The document analysis on teacher preparedness in utilizing ICT for teaching Kiswahili grammar highlights some key findings. Approximately half of the teachers incorporated ICT programs in preparing schemes of work, while about

one-third utilized ICT for lesson planning. Interestingly, all teachers predominantly relied on manual systems, such as physical files, to store classwork records. However, there was a notable shift when it came to exam-related records, with all teachers opting to store them on computers for privacy and safekeeping. This indicates a potential willingness among educators to embrace digital tools for specific tasks, especially those involving sensitive information.

Discussions

The study on teacher preparedness in integrating ICT into teaching Kiswahili grammar in Mumias West Sub County unveiled a different landscape of ICT adoption among educators, echoing broader concerns about the inadequacy of pre-service training in equipping teachers for ICT integration (Chege, 2014; Mahdum, Hadriana & Safriyanti, 2019; Cuhadar, 2018). While it portrayed a level of preparedness among teachers, particularly the younger cohort with a proactive approach towards technology, the study also highlighted the necessity for ongoing professional development to bridge the gap between ICT skills acquisition and their effective utilization in educational practices. Notably, it illuminated discrepancies in ICT integration, prompting critical reflection on underlying challenges such as infrastructure limitations in teacher training, which may have impeded the full realization of ICT's potential in the classroom (Ngavana, 2018; Muia, 2021).

Moreover, the study emphasizes the importance of context-specific considerations in ICT integration, particularly within the realm of language teaching. Kiswahili grammar instruction presented unique challenges and opportunities that required tailored approaches to ICT adoption (Ndwiki & Thinguri, 2017). Therefore, further investigation into the specific pedagogical strategies and resources needed for effective ICT integration in Kiswahili grammar teaching was necessary. Moreover, the study's implications extended beyond individual teacher preparedness to encompass broader systemic considerations in education policy and practice. It highlighted the imperative for policymakers and curriculum developers to prioritize ongoing professional development initiatives that

addressed the evolving demands of ICT integration (Morat, Shaari, & Abidin, 2016). Aligning policy efforts with the evolving landscape of ICT integration in education and making targeted investments in ICT infrastructure and resources, stakeholders could create an enabling environment that empowers teachers to effectively harness the potential of ICT in advancing student learning outcomes and preparing them for success in the digital age.

Conclusion and Recommendation

The study revealed varied levels of ICT adoption among Kiswahili educators, emphasizing the need for ongoing professional development to bridge skill acquisition gaps. Context-specific approaches and systemic policy alignment are key for maximizing ICT's potential in Kiswahili grammar teaching, and fostering student success in the digital era. Based on the findings, the study made the following recommendation;

- Prioritize continuous professional development for Kiswahili educators strengthen ICT skills, supported by tailored resources and contextualized support.
- Align policies, invest in infrastructure and promote collaborative partnerships to empower teachers and maximize ICT's potential in Kiswahili grammar teaching.

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