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Preparedness of Junior Schools for the Implementation of Computer Studies in Rarieda Sub-County, Siaya County, Kenya

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Abstract: *The purpose of this study was to assess teacher preparedness for implementing computer studies in Junior Schools in Rarieda Sub-County, Siaya County, Kenya, within the context of the Competency-Based Curriculum. The study was anchored on Diffusion of Innovations Theory and adopted a mixed methods approach using convergent design whereby quantitative survey design and qualitative phenomenological design were used. Data were collected using questionnaires, interview guides, and observation guides, and were analysed using descriptive statistics and thematic analysis. The study involved 20 computer studies teachers, 1000 learners, and 20 head teachers from 20 sampled junior schools. While the credibility and dependability of qualitative tools were ascertained through member verification and peer review, the reliability of quantitative instruments was evaluated by pilot testing and measured using Cronbach's alpha coefficient of 0.7. The quantitative data obtained was analysed through the use of SPSS version 25. Descriptive statistics were then presented using tables, frequencies, and percentages. Qualitative data were presented using direct quotes. The findings of this study indicated that teachers showed confidence when utilizing digital tools, but their preparedness was constrained by insufficient opportunities for ongoing professional development, inadequate training, and inadequate technical support. This study thus recommended support for teachers with regular, curriculum-aligned, and practical ICT training in order to update their skills and improve integration, and the need for ongoing capacity building since their competencies were inadequate.*

Key Words: *Implement; Computer Studies; Teacher Preparedness; Professional Development*

1.1 Background to the Study

There has been a significant growth in the incorporation of ICT education into schools' curricula. Integration of ICT education has gained significant attention worldwide whereby different countries strive to equip learners with digital literacy skills needed in the 21st century (UNESCO, 2019). The African Union also encourages cross-national collaboration and public-private partnerships to strengthen ICT infrastructure and teacher training across the continent (African Union, 2017).

The integration of Computer Studies in Kenya has been supported by the Digital Literacy Program (DLP) launched by the Ministry of Education in 2016.
Junior school learners according to KICD (2022), are expected to undertake a combination of core subjects, which include Pre-Technical Studies, which covers Computer Studies and Business Studies.

While urban schools in counties like Nairobi and Kiambu have benefited from tablets issued by the government, internet connectivity, and teacher training programs, rural schools especially in regions like Siaya County still struggle with factors like limited infrastructure, insufficient teacher training, and irregular electricity supply (Wambugu,2021).

Data presented by the Ministry of Education (2021) shows that only about 40% of secondary schools in Kenya have sufficient ICT infrastructure to support Computer Studies, while 60% of teachers report only basic ICT proficiency and less than 30% feel confident delivering the subject under the CBC framework. The relevance and significance of trained teachers in effective ICT integration is documented clearly. Mulwa, Lawrenz, and Kiumi (2010) points out that in Borabu Sub-County, even though teachers valued ICT, most of these teachers do not have adequate training hence lack of readiness to teach Computer Studies well and meaningfully. This challenge is strongly evident, especially under the CBC demands where digital literacy is a competency that is highly valued.

1.2 Statement of the Problem

In today's technologically advanced world, digital literacy has become a fundamental skill that students must possess in order to effectively participate in the 21st-century digital economy. As a result, digital literacy must be incorporated at all educational levels. The Digital Literacy Programme (Ministry of Education, 2019), the National ICT Policy (2019), and the Policy on ICT in Education and Training (2021) are government policies that were designed to promote ICT integration through teacher training, curriculum support, and infrastructure development in Kenya. Kenya introduced the Competency-Based Curriculum (CBC), which emphasizes the development of digital literacy through subjects like computer studies. Despite these efforts, there are still serious issues with schools' ability to use computer studies effectively, especially with regard to teacher preparation. Concerns about the fact that many teachers lack the subject-specific ICT competencies and pedagogical skills required by the CBC framework have been raised by education stakeholders, including teachers' unions, school administrators, and civil society organizations. In rural areas like Siaya County, teachers are frequently assigned to teach computer studies despite not having formal training in the subject (Wambugu, 2021). Additionally, existing studies have mostly concentrated on general ICT integration and infrastructure, paying little attention to the particular problem of teacher preparedness for implementing computer studies at the junior secondary school level under CBC. This leaves a crucial gap in our understanding of whether teachers possess the content knowledge, technical skills, and pedagogical competence required for effective implementation. In order to inform targeted interventions in teacher training and curriculum implementation, this study aimed to assess the level of teacher preparedness for the implementation of computer studies in junior secondary schools in Rarieda Sub-County, Siaya County, Kenya.

1.3 Research Question

The study was guided by one research question What is the level of teacher preparedness for effective teaching of Computer Studies in junior schools in Rarieda Sub-County, Siaya County, Kenya?

1.7 Theoretical Framework

Diffusion of Innovations theory was the anchor of this study, and it informed the study's approach and interpretation of findings. Everett M. Rogers in 1962, developed the diffusion of innovations theory, which was revised later in 2003 in the fifth edition of his ground-breaking book, "Diffusion of Innovations." Rogers' diffusion of innovations theory provides a lens through which different ideas,

technologies, or practices can be accepted and thereafter spread among different groups of individuals, focusing on five elements which includes innovation, communication, time, adoption, and implementation.

Rogers (2003) distinguished five types of adopters. Among these are innovators, who are seen as the first to adopt an innovation and the ones who take risks. The second category, known as opinion leaders, are early adopters. The third group who deliberately embrace it is known as the early majority. The fourth group consists of the late majority. These are individuals who are very sceptical, doubting every step until they see the benefits of the innovation and thereafter, they would go ahead to adopt the innovation (Sahin, 2006). The last group are laggards. Laggards are considered to be backward in every circumstance where new changes are brought in. Laggards are always resistant to change and it really takes a lot of time for them to adopt change or even fail to adopt change at all.

Looking at relative advantage under the diffusion of innovations theory by Rogers (2003), teachers understand that incorporating ICT into the classroom can help students think critically, solve problems together, and interact with real-world applications. However, the perceived benefit is diminished by the lack of subject-specific training and the limited exposure to useful tools. Adoption obstacles can also be explained by complexity, an attribute within the diffusion of innovations theory by Rogers (2003). When teachers lack specific knowledge, mentorship, or supervision, even with willingness, teachers frequently view incorporating technology into their lessons as complex.

1.5 Review of Related Studies

There are a number of empirical research studies that were conducted by different researchers globally, regionally and locally on teacher preparedness for implementing computer studies. Globally, Bingimlas (2018) conducted a qualitative study on ICT integration barriers among secondary school science teachers in Saudi Arabia. Purposive sampling was utilized to choose 40 teachers for in-depth interviews. The research looked at training opportunities, teacher confidence, and access to ICT resources. The study's conclusions showed that instructors' concerns, a lack of continual professional growth, and a lack of technical assistance all hindered their ability to use ICT effectively. The focus of this study was on science rather than Computer Studies but still, it provided insight into the psychological and infrastructural barriers that affected teacher readiness. The study by Bingimlas however, lacked quantitative validation and had a narrow subject focus. The current study sought to focus on CBC-related training for Computer Studies teacher in a rural Kenyan context. The study emphasized that teachers' anxieties, such as concerns about their technological proficiency or fear of failing in front of students, frequently result in a lack of enthusiasm for integrating ICT tools. This emphasizes how crucial it is to address teachers' psychological preparedness in addition to their technical proficiency. In order to allay these fears and foster confidence, training models that incorporate hands-on practice, peer support, and mentoring may therefore be essential.

Adeyemi and Olaoye (2020) investigated teacher readiness for ICT-based instruction in secondary schools in Nigeria. Using a mixed-method approach, the researchers polled 150 teachers from ten different schools. Purposive and random sampling methods were used to select the participants. In this study, questionnaires, interviews, and classroom observations were used to gather data. Only 35% of teachers had received ICT training, according to the data, and a significant obstacle remains the absence of ongoing professional development opportunities. The prior study was conducted in Nigeria and

concentrated on secondary school students' readiness for ICT-based instruction, which limited its contextual applicability to Kenya. The current study assessed teacher preparedness for Computer Studies teaching in junior schools in Rarieda sub-county, Siaya county, in Kenya. The findings in the previous study have far-reaching implications since they show that teachers' knowledge rapidly lags behind rapid technological advancements if there is no culture of continuous learning. This is made much more crucial by systems like CBC, which demand that pedagogical approaches be updated on a regular basis.

Wambugu and Otieno (2022) conducted a study in Kisumu County, Kenya, to assess teachers' readiness for CBC implementation in STEM courses that include computer studies. One hundred computer studies teachers were the target of the study, which employed the descriptive survey approach. The study employed a stratified random sampling technique to choose its participants. Data was gathered through structured questionnaires, interviews, and lesson plan analysis. The study's conclusions showed that while 25% of instructors had received in-service training on CBC-aligned digital teaching approaches, 60% of teachers only had rudimentary ICT training. The Previous study looked at STEM broadly, and never focused narrowly on Computer studies. The current research narrowed the scope to specifically assess the preparedness of teachers to integrate the teaching of Computer Studies in Rarieda Sub-County. The previous study showed that teachers of computer studies encounter certain difficulties that were not fully comprehended by general STEM research. Targeted training is essential since computer studies requires both technical proficiency and the capacity to navigate a rapidly changing field.

In Siaya County, Otieno and Achieng (2022) evaluated the proficiency of computer studies instructors in CBC implementation. A mixed-methods design was used, with 60 instructors from 20 different schools participating. Document analysis, key informant interviews, and questionnaires were used in the process of collecting data. The results showed that just 35% of teachers felt completely equipped to teach computer studies under CBC, with the most common reasons given being inadequate administrative support, a lack of resources, and training deficiencies. Despite being pertinent to the study's geographic focus, sub-county differences like those in Rarieda were not particularly isolated. This was expanded upon in the current study, which focused on Rarieda Sub-County and provided a more thorough analysis of teacher readiness utilizing the CBC framework. This demonstrates that teacher preparedness varies, even within a single county. Therefore, to design interventions that address specific gaps at the sub-county level, localized studies like this one are required.

1.5 Research Methodology

A mixed-methods research paradigm, specifically convergent design, was used in this study. Quantitative and qualitative data were gathered simultaneously and analysed independently in this design. To create a comprehensive understanding of the research problem, the data were compared, contrasted, and integrated after analysis. The study increased the validity and depth of the findings by achieving data triangulation by combining the two types of data. Cross-sectional survey procedure was adopted for the quantitative approach, while for the qualitative approach, a phenomenology design was used through in-depth interviews and open-ended questions to get insights into the contextual realities that may not have been represented using quantitative measures alone. The study targeted all 106 junior schools in Rarieda Sub-County, all the 106 head teachers, all the 9, 968 junior school learners, and all the 131 junior school teachers. 20 schools were sampled out of which 20 computer studies teachers, and 1,000 learners were sampled. Open and closed-ended questionnaires were used to collect the teachers' and learners' quantitative and qualitative data as well as interview guide to collect information from the head teachers.

The study tested reliability and validity of research instrument to determine the quality of the information obtained. Through expert review, the face and content validity of the research instruments (questionnaires, interview guides, and observation guides) were established in this study. To test the internal consistency, Cronbach's alpha was used for the questionnaire of 38 items that had a Cronbach's alpha coefficient of 0.913. The researcher employed triangulation to increase credibility by gathering information from several sources (head teachers and observations) and member checking, which involved returning data acquired from head teachers to them for verification of accuracy and resonance. While conducting the research, the researcher avoided asking leading questions during the interview. The respondents were as well given enough time to respond to the questions that were asked. Pilot study was carried in one school that was not sampled for the study. As part of data collection procedure, the researcher obtained the relevant permission to carry out the study including and introduction from the department of Post Graduate Studies in Catholic University of Eastern Africa, NACOSTI permit, permit from the County Education office as well as the Sub County office. The researcher did self-administration of the questionnaires for teachers and learners and carried out face to face interview with the head teachers. After the data collection, the data was cleaned, clearly checked and sorted. The quantitative data was edited, coded and entered in SPSS version 25, analysed and presented using statistical analysis such as frequency tables, and percentages. The qualitative data obtained from the open-ended questions and the interview guide was presented using narratives and direct quotes.

1.7 Findings and Discussions

Quantitative data was analysed using statistical techniques with the help of SPSS version 25, used to evaluate the quantitative data from the teachers from the field, and used tables and figures to illustrate the research findings. This information was compared and combined with the qualitative data from the teachers, and head teachers and reported in direct quotes and narratives, where all gave their insights on teacher preparedness for implementing Computer Studies in junior schools.

Table1: ***Distribution of Teachers' Views on Teacher Preparedness***

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total
Proper Training	3 (15%)	8 (40%)	1 (5%)	7 (35%)	1 (5%)	20 (100%)
Confidence using digital tools	9 (45%)	9 (45%)	1 (5%)	0	1(5%)	20 (100%)
Schemes of work and lesson plan alignment with CBC	6 (30%)	10 (50%)	4 (20%)	0	0	20 (100%)
Continuous Professional Development	2 (10%)	7 (35%)	1 (5%)	7 (35%)	3 (15%)	20 (100%)
Access to Support	2 (10%)	9 (45%)	2 (10%)	4 (20%)	3 (15%)	20 (100%)
Lesson Design	7 (35%)	11 (55%)	0	1 (5%)	1 (5%)	20 (100%)
Difficulty in alignment with CBC	1 (5%)	5 (25%)	1 (5%)	9 (45%)	4 (20%)	20 (100%)

Practical Integration	4 (20%)	7 (35%)	0	4 (20%)	5 (25%)	20 (100%)

Source: *Field Data, 2025*

According to the distribution of frequencies of the responses given by teachers on preparedness as indicated in Table 1, it is clear that there were both strengths and gaps that required intervention.

In terms of formal training there were notable gaps whereby while 55% of the respondents felt they had received adequate training, 45% felt otherwise, suggesting a variability in training opportunities or effectiveness, which was possibly because of the differences in school location, access to government programs, or even participation in workshops for capacity building. These inconsistencies in teacher preparedness may compromise the steady or consistent implementation of Computer Studies across Rarieda Sub-County. Also, a total of 90% of the teachers expressed confidence in their ability to use digital tools and similarly, the ability to design Computer Studies lessons. These results show that most teachers were digitally up to date and felt competent in developing structured content suitable for delivery in classroom set up. This contradiction between high confidence and inadequate training reflects a likely inflation of self-reported competence by teachers, which may not be matched by practical skills

There were also inconsistencies noted when it came to support systems whether technical or pedagogical. In this case 55% indicated receiving support while the remaining population indicated otherwise. This reflects the disparities in the availability or even the effectiveness of such kinds of support across junior schools in Rarieda Sub-County. There was a major challenge also noted in relation to professional development where by 45% of the teachers believed that they had sufficient opportunity for growth, while half of the sampled population, 50%, said otherwise, one teacher being undecided.

Apart from that, most teachers believed that the content of Computer Studies aligned well with CBC objectives, reflecting the 80% of those who agreed that the subject reflected the goals of CBC, while none expressing otherwise meaning, there was a general acceptance of the fact that Computer Studies as a subject has relevance in the current CBC. Despite this acceptance, some teachers remained undecided, which was an indication that possibly, there was a need for more orientation on how CBC principles are made operational in Computer Studies. Regarding the practical integration of Computer Studies 55% of teachers felt capable of applying Computer Studies in the classroom while 45% did not. This is a division that pointed to contextual challenges like inadequate infrastructure, lack of devices, or poor internet connectivity which affected the translation of the theoretical preparedness into actual practice.

Overall, the results of the analysis in Table 1 (Teachers' Preparedness for ICT Integration) revealed mixed findings. The capacity to use computers for administrative activities and create digital content was stated by a considerable number of teachers as part of their basic ICT expertise. However, a significant percentage of respondents expressed difficulties in integrating digital platforms into project-based learning and other more complicated ICT applications. The responses from teachers showed that whereas the majority could use simple technologies like word processors and presentation software, fewer could integrate more complex apps into their classes. Only a small portion of teachers had recently participated in in-service training tailored to ICT pedagogy under CBC, according to the data. There continues to be gaps between basic computer literacy and pedagogical application in classroom settings, indicating that teachers' preparedness is still uneven.

For the open-ended questions in the questionnaires, teachers were asked to give their suggestions on the kind of support they felt was necessary to enhance their preparedness, and the responses revealed a variety of needs that pointed to systemic gaps in the current implementation framework. Teachers gave their opinion stating that there was need for fully equipped computer laboratories, which was a requirement. Other opinions given indicated that there was need to increase the number of computers, ensure power installation and provision of reliable internet connectivity to facilitate both teaching and learning of Computer Studies. There was also a strong emphasis on teacher training whereby most teachers expressed the need for in-service training, exposure to broader computer areas, and digital literacy development. There was a clear desire for ongoing capacity building, with specific references to training in basic computer applications, assessment strategies, and interpretation of curriculum guidelines. Other teachers expressed the need for workshops, mentorship programmes, and regular seminars that could enhance pedagogical skills and technological proficiency.

An observation guide was also used to conduct first-hand observations on the level of preparedness of teachers in terms of using ICT tools in the sampled schools in order to triangulate these findings from teachers. This assisted in confirming the level of preparedness of teachers. The observation recorded teachers observed using ICT tools, teachers' confidence in using the ICT tools, and evidence of teacher training and professional development. Table 2 displays the findings from these observations.

Table 2: ***Observation Table for Teacher Preparedness in the 20 Junior schools***

Variable (Teacher Preparedness)	Observation Criteria	Number of Schools (n=20)	Percentage (%)
Teachers observed using ICT tools	Majority of teachers actively using ICT tools (e.g., laptops, projectors, digital content)	1	5.0
	No evidence of ICT use in teaching	19	95.0
Teachers' confidence in using computers and digital tools	High confidence (navigating tools without difficulty)	1	5%
Evidence of Teacher training/professional development	Visible certificates or evidence of recent ICT/Computer Studies Training	None (All did not have a visible certificate at the time of data collection	

Source: *Field Data, 2025*

Disparities in teachers' preparedness were further highlighted by the observational data in Table 2. Despite their expressed confidence, teachers were not seen utilizing ICT tools in the classroom in 95% of the schools surveyed, and even in schools that had computer labs, there were no ICT tools that were used so teachers preferable resorted to theoretical teaching methods. Similarly, majority of teachers in the sampled schools lacked evidence of continuous professional development or teacher training credentials thus supporting the claims by teachers that professional training opportunities were not regular and, in some cases, lacking entirely. Confidence did not translate into classroom integration, despite the fact that some teachers were comfortable using computers for administrative tasks. This evident mismatch demonstrates how self-perception and real-world application differ.

Overall, the responses from teachers showed that while teachers were willing and very much eager to implement Computer Studies effectively, they were limited by inadequate training opportunities and insufficient ICT infrastructure hence the need for structured institutional and government support, both in terms of professional development and the provisions of ICT resources. On the other hand, also, even though teachers showed notable confidence in using ICT tool and developing lesson contents, they still faced a lot of challenges related to access to professional development, support systems, and understanding CBC-related instructional demands. The findings therefore, presented the need for targeted efforts in policy, training, and resource allocation in order to bridge these gaps and ensure a consistent and effective integration of Computer Studies in junior schools.

To add to these claims, Omondi (2021) reported that teachers in Western Kenya had adequate basic ICT knowledge but never had the practical skills to implement CBC's project-based approach. This study specifically highlighted a gap between the theoretical knowledge of ICT and its practical use, focusing on the implementation challenges of CBC in secondary schools. This directly relates to the findings of the current study, which showed that teachers in Rarieda Sub-County have fundamental digital skills but found it difficult to translate these into effective teaching strategies that include students in problem-solving and project-based learning. The convergence of these results suggests that the diffusion of innovations theory (Rogers, 2003) is particularly relevant since it explains why teachers with basic skills may stay at the "knowledge" or "persuasion" stages without fully adopting or implementing innovations like ICT-enabled pedagogy.

In a similar manner, Masuku and Mhlanga (2020) observed that limited access to in-service training hindered teachers' ability to use ICT for innovative lessons, which resonates with the present study's findings where teachers showed that there was need for regular professional development. Their study, which was carried out in Zimbabwe, examined the obstacles to the integration of technology in secondary education and found that most teachers relied on traditional teaching methods due to a lack of adequate training in hands-on ICT pedagogy. This supports the findings of the current study, which showed that even in cases when teachers in Rarieda Sub-County had access to computers, their lack of training and support resulted in low confidence and little use in the classroom. In other words, teachers may possess both content and pedagogical knowledge, but they are unable to successfully integrate technology with these dimensions because of inadequate training.

However, according to OECD (2021), up to 78% of instructors in high-income nations receive training in ICT pedagogy, while less than 40% do so in low-income nations. This highlights a disparity in the degree of digital literacy and student performance related to ICT. Using a comparative survey of more than 40 countries, the OECD report on "TEACHING IN A DIGITAL WORLD" examined teacher training levels and discovered that teacher preparedness was a key component in navigating the digital divide. This not only confirms the current study's findings but also highlights the structural disadvantage faced by teachers in low-income areas like Rarieda Sub-County. The findings show that if policy changes are not made to provide regular training and resources, the gap between teachers in high- and low-income contexts would keep widening. The current study's call for targeted government assistance in offering in-service training and professional development is directly strengthened by this.

Additionally, the World Bank (2022) warned that short-term workshops have limited impact unless supported by monitoring and peer-learning communities, while UNESCO (2022) emphasized that

training must be continuous and practical, with follow-up support, to enhance teacher performance. The World Bank's report on "African Education and Technology" Based on extensive case studies conducted in Kenya, Uganda, and Tanzania, the study found that governments frequently implement brief, one-time trainings that don't translate into long-term classroom practices. Teachers in the current study also noted this, stating that government-sponsored training initiatives lacked follow-up mechanisms and were irregular. The teachers' request for regular and consistent training that goes beyond token efforts in Rarieda Sub-County is directly related to UNESCO's recommendation for continuous professional development with follow-up support.

These related studies provide insights from various contexts and economic development levels, which not only validates the current study's findings but also expands upon them. When combined, they show that teacher readiness for classroom use of ICT is a worldwide issue that is more severe in low-income areas like Rarieda Sub-County. More significantly, the consistency among studies supports the use of Everett Rogers' diffusion of innovations theory, which serves as the foundation for the current investigation. According to the theory, innovations must go through several stages, including knowledge, persuasion, decision-making, implementation, and confirmation, before they can be successfully incorporated into education. Teachers in Rarieda are at the knowledge and early implementation stages, according to the study's findings and related literature, but they struggle to fully adopt and sustain ICT instruction in the absence of proper training, monitoring, and government follow-up. Therefore, by illustrating how inadequate infrastructure, inconsistent training, and inadequate government support impede the spread of ICT as an educational innovation, the current study validates and expands theoretical expectations.

To add onto the quantitative findings of this research on teacher preparedness, the qualitative responses from head teachers were also gathered and it was noted that teacher preparedness was a major concern in the process of implementing Computer Studies. One of the common responses given by head teachers was that the teachers assigned to teach Computer Studies were not originally trained for the subject and that most had qualifications in areas such as History/CRE, Kiswahili, or other humanities. In most cases, schools improvised by assigning teachers with limited ICT knowledge due to the lack of specialized personnel. One head teacher said,

> *Since there isn't a teacher at our school who has received specialized training in teaching computer studies, I had to assign the math teacher since he is somewhat knowledgeable about computers. This is insufficient, though, as teaching the subject calls for both technical proficiency and knowledge of how to incorporate it into the Competency-Based Curriculum (interview, 12th January, 2026)*

Some teachers even taught Computer Studies because they loved it being that the government had not posted teachers specifically meant to teach Computer Studies in junior schools in Rarieda Sub-County. According to the head teachers' responses, although some teachers had received basic ICT training under the Digital Literacy Program, this was not subject-specific, nor was it aligned to the CBC framework. This made teachers lack both technical competence and instructional strategies to teach Computer Studies effectively. Instead, many teachers resorted to theoretical teaching using textbooks, with very minimal learner engagement in practical digital tasks.

Another headteacher further highlighted the challenge of inadequate training by stating;

During the Digital Literacy Program, some of our teachers received ICT training, but it was very general and did not qualify them to teach computer studies as a subject. Because they lack confidence and the necessary skills, teachers find it difficult to offer practical lessons and frequently rely on theoretical teaching approaches (Interview, 16th January, 2026).

Head teachers also emphasized the need for intensive, subject-specific in-service training for Computer Studies, particularly to address gaps in digital confidence and CBC integration. For instance, one head teacher said, "the current Computer Studies teacher does not fully know how to turn digital resources into classroom tools for learning, so he has to use theory-based approaches." Head teachers also lamented that truly their teachers were very much interested in teaching Computer Studies but they were demoralized by lack of training and poor access to devices.

All findings on teachers' preparedness suggested that teacher preparedness in Rarieda Sub-County was below the level needed for effective implementation of Computer Studies under the CBC framework. Most teachers had basic ICT skills but lacked advanced content knowledge and CBC-aligned pedagogical competence. This, under preparedness was consistent with patterns observed in other rural parts of Kenya and across sub-Saharan Africa. To bridge these gaps, targeted, ongoing training programs with adequate resource support are very essential.

The findings on teacher preparedness for computer studies implementation can also be interpreted in light of the diffusion of innovations theory. Technical competence, educational expertise, CBC-aligned lesson planning, self-assurance with digital technologies, and professional development opportunities are all components of teacher preparedness. A paradigm for understanding why adoption in classroom practice does not necessarily follow readiness is provided by diffusion of innovation theory.

When it comes to relative advantage, teachers understand that incorporating ICT into the classroom can help students think critically, solve problems together, and interact with real-world applications. However, the perceived benefit is diminished by the lack of subject-specific training and the limited exposure to useful tools. There was a disparity between perceived advantage and practical adoption, since teachers in 95% of schools did not use ICT in practice, despite quantitative data showing high self-reported confidence (up to 90%) in using digital technologies.

Since CBC mandates project-based, learner-centred instruction, compatibility is especially important. However, the majority of teachers had formal qualifications in unrelated disciplines like the social sciences or humanities. The needs of Computer Studies under CBC and teachers' previous training were incompatible, which made it more difficult for teachers to incorporate curriculum advances into their everyday work. Head teachers' qualitative research verified that teachers' lack of training and familiarity with ICT-based pedagogy led them to rely more on theoretical instruction than on hands-on practice.

Adoption obstacles can also be explained by complexity, an attribute within the diffusion of innovations theory. When teachers lack specific knowledge, mentorship, or supervision, even with willingness, teachers frequently view incorporating technology into their lessons as complex. The need for structured workshops, mentorship, and in-service training was brought to light by open-ended comments. The observed reluctance among teachers to realistically implement Computer Studies is consistent with diffusion of innovations' findings that innovations that are viewed as complicated are

adopted more slowly, especially when support mechanisms are insufficient. Trialability is also hindered in that, teachers are unable to test pedagogical approaches or experiment with digital lesson plans prior to full-scale implementation due to limited access to functional ICT equipment. Although teachers were enthusiastic, the absence of trialability in Rarieda Sub-County schools contributed to low levels of effective practice, according to diffusion of innovations theory, which holds that the ability to experiment boosts adoption rates. Additionally, observability is constrained. When teachers aren't given the chance to demonstrate effective ICT lessons, they have few examples to follow. The diffusion process is slowed and peer learning is diminished as a result. Although they were inspired, head teachers observed that the lack of obvious instances of achievement discouraged creativity.

All things considered; the diffusion of innovations theory offers a thorough framework for interpreting data on teacher preparedness. Despite the fact that many teachers were confident and had the fundamental abilities necessary to teach computer studies, systemic barriers such a lack of observable examples, poor infrastructure, and inadequate training prevented the innovation from being effectively adopted. It is therefore evident that professional development and structural support are both required to translate preparedness into classroom practice when teacher readiness is framed through the diffusion of innovations. It also becomes evident that innovation adoption is a complex process impacted by both systemic and individual factors.

Regarding teachers' professional ability to execute Computer Studies under the CBC, the teacher preparedness findings have important policy contributions. The current study found that teachers in Rarieda Sub-County had insufficient ICT proficiency, and had not received adequate and continuous teacher training. These results imply that infrastructure-focused policy initiatives will fail unless teacher preparedness is also addressed.

A significant addition of this research to the policy discourse is the focus on ongoing professional development. Short-term ICT training programs have periodically been provided by the Ministry of Education and the Teachers Service Commission (TSC). However, findings in Rarieda sub-county indicated that these attempts were inadequate and dispersed. These findings can be used to support the inclusion of structured and ongoing programs in the frameworks for teachers' career advancement. This will guarantee that teachers are able to adjust to evolving technological advancements rather than merely being exposed to ICT tools.

The incorporation of ICT training into teacher education curricula is another contribution. The study emphasizes that the majority of teachers who were trained before the CBC changes weren't proficient in integrating ICT. Therefore, policies must mandate colleges and universities to incorporate real-world ICT pedagogy into their pre-service training. This would lessen the need for subsequent, expensive in-service upskilling and bring teacher training institutions into compliance with CBC requirements. The study also adds to the discussion of policy support systems for teachers' confidence and motivation. The results show that some teachers felt overburdened by ICT requirements, which reflects policy shortcomings in offering sufficient incentives and technical assistance. Therefore, policymakers must consider considering strategies including offering incentives for ICT certification, recognizing ICT proficiency in promotion standards, and designating school-level ICT promoters who can offer peer support.

At the national level, the study makes a stronger case for coordinating ICT teacher training regulations with Kenya's objectives for the digital economy. Through the integration of ICT skills development into teacher preparation, Kenya guarantees that students will not only be technology consumers but also future innovators capable of thriving in a digital economy. Overall, research question two's findings significantly impact policy by emphasizing that teacher proficiency is just as important to the success of CBC's Computer Studies curriculum as infrastructure accessibility. Therefore, policies must place a high priority on preparing teachers to be adept at using technology and provide them with ongoing assistance and organized career paths. This makes teacher preparation a key component of ICT strategy in education rather than an afterthought.

1.8 Conclusion

Based on the findings, the study concludes that teachers' preparedness was constrained by insufficient opportunities for ongoing professional development, inadequate training, inadequate technical support even though they showed confidence when utilizing digital tools and strong pedagogical preparedness.

1.9 Recommendations

The study recommended that The Ministry of Education, the Teachers Service Commission (TSC), and training organizations like colleges and universities should support teachers with regular, curriculum-aligned, and practical ICT training in order to update their skills and improve integration. Teachers' support should be institution-based and should target both pre-service and in-service teachers. Training ought to be implemented into the Continuous Professional Development (CPD) framework and conducted on a term-by-term basis. Workshops, online modules, and hands-on school-based training that emphasizes the CBC curriculum requirements, practical classroom application, and emerging digital tools should be used to implement it.

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