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Original Article

School infrastructure for effective implementation of the Tanzania Education and Training Policy 2014 (2023) Edition in secondary schools: A case study of Mpimbwe District Council

Paulo Mafuru Karogi[1] *& Edgar Leonard Haule*[1]

[1] Tumaini University Makumira, P. O. Box 55, Arusha, Tanzania.
[*] Author for Correspondence Email: mulingapaulo@gmail.com

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ABSTRACT

The purpose of this study was to investigate the availability of school infrastructures for effective implementation of the Tanzania Education and Training Policy (ETP) 2014 (2023) Edition in secondary schools at the Mpimbwe District Council. The study research questioned how adequate the current school infrastructure is for the effective implementation of the Tanzania ETP 2014 (2023) Edition in three secondary schools. The study used a qualitative research approach with a case study design. The data were collected from 36 participants by using a questionnaire for teachers and an interview for the head of school. The participants were selected through purposive sampling for heads of school and random sampling for teachers. Thematic analysis and descriptive statistics were used to analyse the data. The implementation theory in public policy (Pressman & Wildavsky, 1973) was used in the study. The findings highlighted that the current inadequate school infrastructure includes inadequate classrooms, limited science laboratories, and unreliable electricity, all of which hinder policy implementation. The study concluded that despite some progress in classroom availability in the Mpimbwe District, significant infrastructure gaps persist. Critical shortages of science labs, libraries, ICT facilities, and electricity hinder the effective implementation of the ETP 2014 (2023) Edition. The study recommended that to enhance the quality of education, the district, in collaboration with stakeholders, needs to focus on proper maintenance and repair of infrastructure, which must be backed by dependable electricity, and furniture in educational institutions.

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INTRODUCTION

School infrastructure includes essential physical and environmental components of educational facilities such as classrooms, libraries, laboratories, and recreational areas, which significantly impact student learning outcomes. Elements like classroom size, lighting, air quality, and overall school design directly influence academic performance (Barrett et al., 2019). Education policy represents a set of values and decisions about what education should entail, including who learns what, how it is taught, and how it is governed. It outlines goals and the strategies required to achieve them while also emphasising the importance of the policy-making process and stakeholder involvement (Reimers, 2019). Effective implementation of educational policies depends heavily on the availability of supportive infrastructure. This includes classrooms, ICT labs, libraries, and essential services like electricity and water, all of which align with the goals of improving student learning and ensuring quality education. Education policies are dynamic, continuously evaluated to remain relevant to current social and economic needs (Dye, 2017; Heck & Hallinger, 2023). Aligning infrastructure development with educational policy creates learning environments that promote academic success and teacher effectiveness. The Education and Training Policy (ETP) 2014 (2023) Edition is the principles and regulations that guide the development and evaluation of education and training systems. It brought about major reforms in the education sector, like changing school curricula to suit Sustainable Development Goal 4 (MoEST, 2023).

The report from the World Bank by Teixeira et al. (2017) emphasises the vital importance of educational infrastructure in improving learning results. The authors point out that well-constructed school buildings, featuring natural light, good air quality, and adaptable learning spaces, can greatly enhance student achievement. However, many countries, including Romania, face challenges due to fragmented and unplanned approaches to infrastructure investment, resulting in issues such as overcrowded classrooms and insufficient facilities, especially in rural regions. The report promotes a comprehensive, data-informed approach to guide infrastructure spending, stressing the necessity for coordinated planning and clear criteria to guarantee fair and effective resource utilisation.

According to OECD (2020), France acknowledges that although education reforms typically set ambitious objectives, their effectiveness relies on successful implementation at the school level. It highlights that for implementation to be successful, there must be clear objectives, sufficient resources, including infrastructure, continuous support for educators, and systems for monitoring and feedback. The report outlines four essential drivers for effective implementation: intelligent policy

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design, inclusive engagement with stakeholders, robust institutional capacity, and ongoing political and financial commitment. A key takeaway is that school infrastructure should align with these reforms, not just in physical space but by fostering environments that support modern teaching, innovation, and inclusivity. The report encourages policymakers to view infrastructure not merely as a supporting element but as a crucial facilitator of educational transformation.

Carr-Hill (2023) provides a comprehensive evaluation of how contextual, infrastructural, and policy-driven factors influence the success of education sector plans across 27 developing nations. The emphasis is made on the availability of potable water, sanitary facilities, and accommodations for students with disabilities. These are just a few of the characteristics of education compared in the book using actual data. The ability of schools to accept and implement reforms is as crucial to the effectiveness of policy implementation as the content of the policy. This includes assessing contextual support, teacher capability, and infrastructure preparedness.

According to the African Union and UNESCO (2023), their book "Education in Africa: Placing Equity at the Heart of Policy" highlights the necessity of making equity a central principle in designing and implementing education policies across the continent. It discusses how structural inequalities, particularly those related to school infrastructure, impede access to high-quality education, especially for disadvantaged populations, including girls, children with disabilities, and students in rural areas. The book emphasises that addressing inequalities in infrastructure, such as classrooms, labs, energy, sanitation, and internet connectivity, is essential for promoting equitable education. Both the evaluation and the book call on governments to align policy implementation with infrastructure equity and resource allocation, stressing that only when learning conditions support every student equally can education reform be effectively sustained.

In Tanzania, the Education and Training Policy of 2014 (2023) edition gives a description of how infrastructure is very important in the process of delivering education and training. Section 3.7 of the ETP 2014 (2023) edition indicates that the goal of the policy is to have adequate infrastructure and furniture in all education and training institutions. With these goals, the policy stated that the government, in collaboration with stakeholders, will ensure the presence of high-quality, adequate, and friendly infrastructure, equipment, and furniture in education and training institutions, and the government will ensure the establishment of a proper system for the maintenance and repair of infrastructure, equipment, and furniture in education and training institutions.

Nevertheless, the Educational Circular No. 5 of 2023 indicates that the implementation of the new policy for pre-primary, primary, and secondary schools started in January 2024, whereby 28 secondary schools were government-owned and 68 secondary schools were privately owned. In January 2025, all Tanzania secondary schools had a year of experiencing the implementation of the Education and Training Policy of 2014 (2023) Edition. Mayala (2023), in the analysis "Hopes for New Education Policy as the Academic Calendar is Released", highlights widespread optimism surrounding Tanzania's updated 2023 edition of the Education and Training Policy, particularly its revised academic calendar aligning with policy goals. Teachers, parents, and policymakers view the policy as a chance to improve the quality and relevance of secondary education, contingent on significant improvements in school infrastructure. However, many secondary schools, especially in rural areas, lack essential facilities like classrooms, science labs, libraries, ICT labs, and sanitation, which hampers effective implementation. The study emphasises that without strategic investment in infrastructure, realising the policy's vision of

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inclusive, equitable, and skills-based education will remain difficult.

Statement of the Problem

The Education and Training Policy (ETP), established in 2014 and updated in 2023 in Tanzania, seeks to prepare students for active participation in national development through competency-based education. However, the effectiveness of this policy is contingent on the presence and quality of school infrastructure. Despite advancements, issues such as inadequate classrooms, a lack of laboratories, poorly stocked libraries, and unstable electricity supply remain prevalent, especially in rural regions. The Mpimbwe District Council illustrates both the initiatives taken and the persistent difficulties faced in implementing the Education and Training Policy 2014 (2023) edition. Despite having a surplus of classrooms, the lack of crucial elements such as science labs, libraries, student desks and chairs, and ICT facilities reveals a notable infrastructure shortfall. For instance, although there was a need for 30 science laboratories, only 12 were in place, and just 4 out of 10 schools had access to electricity (BEST 2023). If secondary schools are not adequately prepared to implement the ETP, it will pose a threat to the quality of education that the policy aims to achieve. Hence, the researcher's hypothetical question is, how are secondary schools prepared to implement the policy regarding school infrastructure to achieve the intended goals and get 21st-century skills? Thus, this study intended to investigate the availability of school infrastructure for effective implementation of the Tanzania Education and Training Policy 2014 (2023) Edition in secondary schools.

Research Purpose

The purpose of this article is to investigate how adequate the current school infrastructure is for the effective implementation of the Tanzania ETP 2014 (2023) Edition in secondary schools.

Research Question

How adequate are the current school infrastructures for the effective implementation of the Tanzania Education and Training Policy 2014 (2023) Edition in secondary schools?

Scope of the Study

The study focused on assessing the preparedness of secondary schools in the implementation of the Education and Training Policy 2014 (2023) Edition. It focuses on three main aspects: the availability and qualifications of school infrastructure, which includes classrooms, laboratories, and sanitation facilities. The study is limited to the Mpimbwe District Council in the Katavi Region of Tanzania, a rural area selected to showcase the difficulties often encountered in rural regions during the implementation of policies. Conducted over a nine-month timeframe, from November 2024 to July 2025, the research allows ample opportunity for thorough data gathering and evaluation. The sample consists of three public secondary schools, including three school heads and 33 teachers. These constraints, influenced by time and resource availability, may limit the generalizability of the results but enable an in-depth and contextually relevant investigation that can provide valuable insights for local educational planning and future studies.

Significance of the Study

The findings of this study offer valuable insights into the effectiveness of the Education and Training Policy 2014 (2023) Edition in Mpimbwe District's secondary schools by assessing their readiness to implement the policy and highlighting critical challenges such as insufficient resources, inadequately prepared teachers, and misalignment between policy goals and local realities. Serving as a foundation for policy refinement, the study presents actionable recommendations to help tailor the policy to the specific needs of underserved areas. Additionally, it enhances theoretical

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understanding of policy implementation by linking practical challenges with established theories of educational change, capacity building, and systemic reform. The evidence-based strategies outlined aim to improve the quality and equity of education, ensuring students develop essential 21st-century skills. Ultimately, the study informs educators, policymakers, and stakeholders, supporting efforts to build a more inclusive and effective education system that contributes to broader social and economic development.

LITERATURE REVIEW

The study was guided by the implementation theory in public policy, established in the early 1970s by Pressman and Wildavsky, particularly through their 1973 publication, "Implementation: How Great Expectations in Washington Are Dashed in Oakland". Their theory underscores the challenges and intricacies involved in transforming policy decisions into effective actions. They contend that the success of implementation relies not only on the precision of policy objectives but also on the collaboration of various stakeholders across different levels of government. Achieving successful implementation necessitates the active participation of policymakers, implementers, and communities impacted, along with sufficient resources, financial, human, and physical. Competent staff, effective communication, coordination among agencies, and ongoing monitoring and evaluation are crucial for harmonising efforts, adapting to obstacles, and ensuring that policies achieve their intended outcomes.

Several studies on the availability of school infrastructure for implementation of the education policies demonstrate that the successful implementation of policy not only depends on the quality of the policies themselves but also on robust support systems, which include infrastructure, stakeholder involvement, and institutional preparedness (Lavonen, 2020; Seema & Khushboo, 2024). For instance, Finland illustrated how coordinated stakeholder engagement and thoughtful infrastructure planning facilitated the meaningful incorporation of 21st-century skills. The emphasis was made that collaborative curriculum design, significant teacher autonomy, and coordinated support from stakeholders, including government bodies, unions, and educational institutions, permitted the seamless integration of 21st-century skills into both teaching practices and learning environments. In contrast, the research conducted in India indicates that while teachers are optimistic about the New Education Policy (NEP) 2020, obstacles such as inadequate training, poor infrastructure, and a lack of awareness hinder its full realisation.

Similar issues have arisen in Nigeria, where Ibrahim (2023) emphasised the essential role of adequate school facilities in the successful implementation of educational policies and the overall quality of educational outcomes. His research revealed that a deficiency in essential infrastructure, such as classrooms, laboratories, furniture, and educational materials, detrimentally affects teaching efficiency and student learning, ultimately resulting in the graduation of underqualified students, particularly in public schools throughout Sokoto State. The findings highlight that infrastructure is a fundamental issue rather than a secondary concern, significantly impacting schools' ability to effectively deliver the curriculum and achieve policy goals. Ibrahim strongly suggested that governments, in collaboration with educational stakeholders, should prioritise focused investments in infrastructure and ensure its effective utilisation to foster an inviting learning environment. Furthermore, Khumalo et al. (2023) and Yele and Specioza (2024) in Liberia and Lesotho, inadequate infrastructure and poor resource distribution were prominent challenges to education reform. Research pointed out problems such as overcrowded classrooms, a lack of inclusive facilities, and insufficient teacher preparedness. These situations illustrate that policy aspirations often struggle in

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resource-deprived settings, a sentiment shared across various African education systems.

Another study conducted in Kenya by Oduor (2023) and Chepkilot (2024) highlights that the lack of basic infrastructure significantly obstructs the effective implementation of the competency-based curriculum (CBC) in public educational institutions. Their study indicated that most primary schools were lacking vital ICT resources, such as computers and internet access, which are essential for providing technology-integrated education. Also, in secondary schools found that science laboratories were either lacking or inadequately equipped, limiting hands-on instruction in critical subjects like physics, chemistry, and biology. Both studies observed that teachers faced challenges in effectively integrating the CBC due to a shortage of teaching resources and insufficient physical learning environments. Although the curriculum is theoretically well-structured, it requires a resource-intensive approach that is unsustainable in underfunded settings. Furthermore, inadequate infrastructure hindered assessment processes, complicating the tracking of student progress by the CBC requirements. Teachers expressed dissatisfaction with overcrowded classrooms, where personalised and group-based learning techniques essential for competency-based education were nearly unfeasible. The studies indicate that gaps in infrastructure undermine not only the logistical implementation of the curriculum but also the fundamental philosophy of practical, student-centred education. Despite teachers' generally positive attitudes toward the CBC, the reality in practice was far from optimal, revealing differences between policy objectives and implementation capabilities. In-service training initiatives were hindered by poor facilities, limiting their effectiveness. The research highlights the critical need to align curriculum reforms with realistic assessments of schools' preparedness, particularly concerning infrastructure.

In addition, the study done by Meney (2024) “assesses the preparedness of public primary schools in Mbulu Town Council, Tanzania, for the implementation of educational reforms.” Employed a convergent design within a mixed-methods approach, utilising questionnaires administered to teachers and interviews conducted with head teachers and ward education officers. Findings indicate that teachers are somewhat prepared for reform implementation, with engagement in self-directed learning and awareness of educational reforms. However, challenges such as inadequate teaching and learning resources were highlighted, including shortages of classrooms and books. Overall, while there is moderate preparedness, addressing resource inadequacies and providing comprehensive training are essential for successful reform implementation in public primary schools. The study recommends consistent provision of resources and comprehensive training programs to enhance readiness and ensure uniform implementation of reforms.

METHODS

Research Approach

In this study, the researchers used a qualitative research approach to collect data, integrate findings, and draw conclusions. Based on the research objectives and questions, the qualitative approach was chosen to explore the inner experiences of research participants and frame questions best answered qualitatively. This approach helped the researcher collect comprehensive data and gain a deeper understanding of the implementation of the Education and Training Policy of 2014 (2023) Edition in secondary schools. This framework guided the researchers in collecting, analysing, and interpreting data, ensuring coherence and alignment throughout the research process (Creswell & Creswell, 2022).

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Research Design

The research design used for this study was a case study design, which was appropriate for gaining concrete, contextual, and in-depth knowledge of the issue being studied (Creswell & Creswell, 2022). The design structured the research and helped ensure all major components worked together to address the central research questions.

Area of the Study

The study was conducted in the Mpimbwe District, located in the southern part of Tanzania within the Katavi Region. The district is known for both pastoral and agricultural activities, as well as tourism, due to its proximity to Katavi National Park. Given its rural location, Mpimbwe often encounters substantial challenges related to educational infrastructure. As a newly formed and rapidly developing district, Mpimbwe serves as an important case for examining inequalities in access to vital facilities such as classrooms, laboratories, libraries, and sanitation services, key elements highlighted in the 2023 policy revision intended to enhance learning environments. Furthermore, the District's socio-economic landscape reveals systemic challenges that may obstruct the implementation of these policies, making it an essential area for assessing how effectively national education reforms are realised in practical terms at the local level.

Population

According to BEST (2023), the Mpimbwe District Council has 10 secondary schools with 123 teachers. The study focused on three secondary schools along with their respective heads of school and teachers.

Sampling Techniques and Procedures

In this study, the researcher utilised non-probability and probability sampling, specifically purposive and simple random sampling.

Purposive Sampling Technique

Purposive sampling involves selecting participants expected to contribute valuable insights to the study (Creswell & Creswell, 2022). Also, Mugyenyi and Mokoro (2022) indicate that the researcher selects respondents with some purpose in mind; it is up to the researcher to judge whom to select, based on his or her judgement. The researcher used this technique to select participants because they provided the information needed for the study.

Simple Random Sampling Technique

This technique was used to select teachers. The researcher prepared slips of paper marked "yes" or "no" for teachers to pick. Those who picked "yes" were included in the sample. Simple random sampling ensures each individual in the population has an equal chance of being selected (Creswell & Creswell, 2022).

Sample Size

From the selected schools, the researcher intended to use 12 participants from each school, including 1 head of school and 11 teachers. Therefore, a total of thirty-six (36) respondents participated in the study, consisting of three (3) heads of school and thirty-three (33) teachers. In this study, the researcher calculated the sample size as 30% of the total population of 123 to get the sample size of 36 respondents.

Data Collection Procedures

The researchers obtained an introductory letter from Tumaini University Makumira and submitted it to the District Executive Director (DED) of the Mpimbwe District Council. The DED introduced the researcher to the district education officers, who then issued permission to conduct the study in selected secondary schools.

Data Collection Tools

In this study, the researchers employed both tools, questionnaires and interviews, to ensure

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comprehensive data collection. This approach, common in qualitative research, aims to obtain in-depth, open-ended responses that reflect participants' detailed perspectives (Creswell & Creswell, 2022). Interviews were conducted in face-to-face format with heads of schools, allowing for both structured and unstructured questions that encouraged participants to elaborate on their experiences and viewpoints. Questionnaires, on the other hand, were used to collect data from teachers. These included both closed-ended and open-ended questions to capture richer qualitative insights. Together, these tools provided a triangulated approach to data collection, enhancing the reliability and depth of the study's findings.

Data Analysis Methods

In this study, data were analysed using thematic analysis and simple descriptive statistics. Thematic analysis was a flexible and powerful method used for analysing qualitative data. It helped identify patterns and themes in data collected from various sources, including interviews and questionnaires (Creswell & Creswell, 2022).

Trustworthiness

Ensuring trustworthiness is crucial because it enhances the validity and reliability of qualitative studies (McSweeney, 2021). Trustworthiness ensured the accuracy, consistency, and credibility of the research findings. It was assessed using four criteria: credibility, transferability, dependability, and confirmability (Nowell et al., 2022). Credibility was ensured through prolonged engagement, member checking, and triangulation (Creswell & Poth, 2018). In this study, the researcher used credibility by member checking through giving the supervisor the tools to check; also, the researcher used multiple methods (i.e., triangulation), like interviews, questionnaires, and document reviews from multiple stakeholders to validate findings. In addition, the researcher used conformability, supported by direct quotes or data from the findings, and also dependability was used through the use of a coding scheme. Raw data and analysis procedures were available for audit, ensuring that conclusions were grounded in participant input.

Research Ethics

Ethical considerations were upheld throughout the study (Creswell & Creswell, 2022). The researcher obtained official permissions through institutional channels and ensured informed consent from all participants. Participants were made aware of their rights, including the right to withdraw at any time. Confidentiality and anonymity were strictly maintained. The researcher reported findings honestly and avoided plagiarism, falsification, and fabrication. Furthermore, the researchers used a consent form to get the consent of participants during data collection.

RESULTS

The study was to investigate the availability of school infrastructure for effective implementation of the Tanzania Education and Training Policy 2014 (2023) Edition. The researcher used a questionnaire with 33 teachers and an interview guide with 3 heads of schools. A thematic analysis and descriptive statistics procedures revealed one theme, namely, school infrastructure, and five sub-themes: classrooms to accommodate all students, availability of science laboratories in the school, the condition of the school library, adequate ICT labs, and electricity for digital learning. ICT integration. This is shown in Table 1

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Table 1: School Infrastructure

School Infrastructure	Response items	Frequency	Percent
Availability of classrooms	Yes	25	75.8
	No	8	24.2
	Total	33	100.0
The condition of science laboratories	Excellent	4	12.1
	Good	17	51.5
	Fair	11	33.3
	Poor	1	3.0
	Total	33	100.0
The condition of the school library	Moderately equipped	14	42.4
	Poor equipped	11	33.3
	No library	8	24.2
	Total	33	100.0
Adequate ICT labs	Strong Agree	1	3
	Agree	2	6.1
	Neutral	8	24.2
	Disagree	14	42.4
	Strong Disagree	8	24.2
	Total	33	100
Electricity for digital learning ICT integration	Always available	4	12.1
	Occasionally available	12	36.4
	Rare available	12	36.4
	Not available	5	15.2
	Total	33	100

Source: *Field Data, (March 2025)*

Classrooms to Accommodate all Students

The data from the questionnaire presented in Table 1 shows that a large majority of 25 (75.8%) report having sufficient classrooms, suggesting that most institutions can fulfil their infrastructural requirements. Nevertheless, 8 (24.2%) of participants said no, that schools lack enough classrooms. This matter was examined in greater depth by one of the heads of school, who remarked, *"The school is well prepared because there are many classes, but needs repair to accommodate the number of students"* (Interview with HoS 3 on March 13, 2025).

The data imply that although classroom numbers may be adequate in some cases, the condition and usability of these places remain a concern. From the viewpoint of the researcher, this diverse feedback highlights the necessity of not only adding physical seats but also evaluating their effectiveness and preparedness for use. It indicates a requirement for ongoing investment in the upkeep and improvement of school facilities to guarantee that existing classrooms honestly fulfil their intended function.

Science Laboratories in the Schools

The data from the questionnaire presented in Table 1 shows how participants perceive the availability of science laboratories in a school, with the largest group of 17 (51.5%) rating it as good, followed by 11 (33.3%) rating it as fair, and 4 (12.1%) giving it an excellent rating. A very small number of participants, 1 (3%), considered the availability to be poor. To explore this further, the researcher conducted interviews with one of the heads. *"There are enough classrooms and three laboratories (physics, chemistry, and biology), but they are not fully equipped with the necessary resources"* (Interview with HoS 2 on March 04, 2025).

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This implies that numerous schools seem to have the fundamental infrastructure established; the insufficiency of appropriate equipment and instructional materials in these laboratories raises questions about their ability to effectively facilitate practical science education. This reveals an important disparity between the physical presence of facilities and their practical use, indicating that additional investment is required not only for building laboratories but also for ensuring they are adequately furnished to improve learning results.

The Condition of the School Library

The data from the questionnaire presented in Table 1 show that a large number of participants, 14 (42.4%), view the school library as moderately equipped, with 11 (33.3%) viewing it as poorly equipped, closely following Meanwhile, 8 (24.2%) participants indicated that there was no library available. This suggests that while some participants perceive the library as having certain resources, a significant number feel it is either inadequate or entirely unavailable. The results emphasise a pressing need to enhance both the availability and quality of educational resources in the school library, as the majority of participants consider it either under-resourced or completely lacking. One of the heads of the school during the interview said, *"…There is no library, although we have a few books kept in the classroom. Here, there is reliable electricity, but it is not fully available* (Interview with HoS 3 on March 13, 2025).

Another HoS said, *"…there are no libraries but a few books which are kept in the class but are moderately equipped"* (Interview with HoS 2 on March 04, 2025).

This implies that what some respondents describe as a moderate library might pertain to limited book collections in classrooms rather than an actual library space. Additionally, while the sporadic availability of electricity could be beneficial for digital learning tools, it is currently not being utilised effectively due to inadequate infrastructure.

Adequate ICT Labs

The data from the questionnaire presented in Table 1 shows that a mere 1 (3%) strongly agree, while 2 (6.1%) agree that the ICT labs are sufficient, suggesting a limited positive view. A significant portion, 8 (24.2%), remains neutral, indicating either uncertainty or apathy regarding the labs' effectiveness. On the other hand, the majority, 14 (42.4%), disagree, and 8 (24.2%) strongly disagree with the notion that the ICT labs are adequate for policy implementation. This interpretation was reinforced during interviews with one of the heads of school, who remarked, "*The school has few computers for ICT resources, which are kept in the classroom because there are no computer labs. Also, no teacher teaches ICT subjects"* (Interview with HoS 1 on March 13, 2025).

Another HoS 2 said:

…there are a few computers that are used for searching teaching and learning materials, but labs; there are no libraries, but a few books which are kept in the class, but are moderately equipped. Also, there is electricity, which is not fully reliable (Interview with HoS 2 on March 04, 2025).

The data imply that a lack of specialised ICT laboratories and qualified staff greatly restricts the ability of technology to enhance teaching and learning experiences. Upon considering these results, the researcher observes that unless there are considerable advancements in both facilities and personnel, schools will persist in facing challenges with the effective integration of ICT. This poses a considerable obstacle to the successful implementation of national educational policies that prioritise digital literacy and technological skills.

Electricity Access for Digital Learning and ICT Integration

The data from the questionnaire presented in Table 1 shows that 4 (12.1%) of participants indicate that electricity is always available, which points to a very small number of schools enjoying regular

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access to power for digital education. A larger number of 12 (36.4%) report that electricity is occasionally available, while another 12 (36.4%) claim it is rarely available. This indicates that more than two-thirds of participants face inconsistent electricity access, potentially disrupting digital learning initiatives. Furthermore, 5 (15.2%) state that electricity is not available at all, suggesting that some schools may not have the foundational infrastructure necessary for digital learning activities. This challenge was further illustrated during an interview with one head of school, who noted, *"The school has reliable electricity for digital learning facilities, although it is occasionally available; no teacher teaches"* (Interview with HoS 1 on March 13, 2025).

Another HoS 2 said:

…there are a few computers that are used for searching, teaching, and learning materials, but labs; there are no libraries, but a few books which are kept in the class, but are moderately equipped. Also, there is electricity, which is not fully reliable (Interview with HoS 2 on March 04, 2025).

The data emphasises that unreliable electricity supply can lead to a lack of trained staff or insufficient support systems. It is essential to prioritise electricity reliability in any strategy focused on improving digital learning. If this fundamental issue is not tackled, attempts to incorporate ICT into education will mostly remain just aspirations, and this will hinder the successful implementation of the policy.

Challenges the School Faces in Implementing the Policy

The data from the open-ended questionnaire, as shown in the coding scheme during the data analysis, teachers identified various challenges related to infrastructure availability, such as inadequate. Dormitories for boarding students, insufficient funding, lack of a proper school library, absence of a computer lab, inadequate availability of housing for teachers, and inadequate essential classroom furniture, such as desks, tables, and chairs. During the interview, the head of the school said,*"…the challenges are such as insufficient funding, inadequate infrastructures like dormitories and ICT room* (Interview with HoS 1 on March 13, 2025).

These challenges highlight the necessity for improving infrastructure and community involvement to ensure the effective implementation of the 2014 policy (2023 edition). This shortage hinders effective teaching and learning processes, making it difficult for schools to fully align with the goals and requirements of the policy.

Suggestions to Improve the Successful Implementation of the Policy

The data from the open-ended questionnaire, as shown in the coding scheme during the data analysis, teachers commented on several suggestions related to infrastructures. They suggested that the government should build standardised classrooms, establish a modern ICT lab, increase the number of laboratories, libraries, and dormitories, and increase classroom furniture such as desks, tables, and chairs. During the interviews with the heads, they suggested that: "… *to ensure the availability of all resources required for the successful implementation of the policy, like infrastructures and teaching and learning materials"* (Interview with HoS 3 on March 13, 2025).

These suggestions illustrate the need for a strong infrastructure of physical resources, fully equipped classrooms, and adequate financial support to support daily processes. In the absence of these essential elements, schools may find it difficult to achieve the goals outlined in the policy.

DISCUSSION

The findings indicated that differences among teachers and heads of the schools were having their perceptions of infrastructures, which consisted of

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conditions in classrooms, access to science laboratories, the condition of school libraries, ICT infrastructures, and electricity access. The perception of teachers and heads of the school infrastructure for the effective implementation of the studied policy is that:

There are enough classrooms, but many of these rooms require maintenance. Although there are enough classrooms, many are in poor condition, with broken windows, inadequate lighting, and damaged furniture. These physical issues negatively impact both student learning and teacher performance. According to the Tanzania Education and Training Policy 2014 (2023) edition, section 3.7, schools must have adequate infrastructure and furniture. However, this standard is not being fully met. The poor state of classrooms contradicts the policy's intentions and creates barriers to effective education. Studies by Lavonen (2020) and Seema and Khushboo (2024) support the idea that infrastructure planning and stakeholder collaboration are vital for integrating 21st-century skills. When infrastructure is lacking, such educational innovations become difficult to achieve. Similar challenges are seen in Lesotho and Liberia, where Khumalo et al. (2023) and Yele and Specioza (2024) noted problems like poor infrastructure and unequal resource distribution. These issues often result in overcrowded classrooms and a lack of inclusive facilities. In such settings, teachers may also be unprepared due to limited support. This reflects a broader trend across African education systems where resource constraints limit reform. According to Pressman and Wildavsky's (1973) implementation theory, achieving policy goals requires more than planning; it demands effective implementation at every stage. Even when classroom numbers meet targets, maintenance failures undermine progress. Thus, policy success depends on managing both initial goals and practical realities. Without addressing these operational gaps, desired outcomes remain unfulfilled. Maintenance, resource allocation, and coordination are crucial to turning policy into practice.

Access to science laboratories, while access to science laboratories in schools was generally labelled as good, further findings revealed that there is a shortage of essential equipment. The Tanzania Education and Training Policy 2014 (2023) Edition (MoEST, 2023) Section 3.6.3.1 states that the government will strengthen the structure and methodology of teaching mathematics, science, and technology at all levels of education and training. This cannot fulfil its objectives without the essential tools for practical education in science lessons. This finding aligns with the study of Ibrahim (2023), particularly in public schools throughout Sokoto State in Nigeria. Emphasised the essential role of adequate school facilities in the successful implementation of educational policies and the overall quality of educational outcomes. His study revealed that a deficiency in essential infrastructure, such as classrooms, laboratories, furniture, and educational materials, detrimentally affects teaching efficiency and student learning, ultimately resulting in the graduation of underqualified students. He strongly suggested that governments, in collaboration with educational stakeholders, should prioritise focused investments in infrastructure and ensure its effective utilisation to foster an inviting learning environment. This directly relates to the Implementation Theory in public policy (Pressman & Wildavsky, 1973), which asserts that for a policy to be successful, its elements, resources, training, and infrastructure must be in harmony with the requirements of implementation. Insufficient tools and resources undermine the capacity to provide practical and experiential education, critical for developing analytical and problem-solving abilities.

The condition of school libraries, the assessment also pointed out significant shortcomings in school library facilities across those schools, with some schools lacking a library altogether and others having poorly provided ones. In the Tanzania

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Education and Training Policy 2014 (2023) Edition, section 3.6.4.6 states that the government, in collaboration with stakeholders, will ensure the availability and enhancement of library services and alternative knowledge acquisition methods in schools to promote a culture of reading (MoEST, 2023). Poorly equipped libraries limit independent learning and study, particularly in rural areas where students may lack access to books or the internet outside of school hours. This thought aligns with Mayala (2023), in a study "Hopes for New Education Policy as the Academic Calendar is Released", captured the general optimism surrounding the launch of Tanzania's updated Education and Training Policy 2014 (2023) Edition, especially with the introduction of a revised academic calendar aimed at coordinating educational timelines with policy goals. The study said the success of this policy heavily relies on the presence of vital facilities such as classrooms, science labs, libraries, ICT labs, and sanitation facilities. Numerous secondary schools, especially in rural areas, still function with insufficient physical resources, which considerably undermines the aims of the new policy. For instance, overcrowded classrooms and inadequate furnishings hinder student participation, while the lack of laboratories limits practical science teaching, an essential element of competency-based education. Without such funding, achieving the vision embodied in the 2023 edition, which promotes inclusive, equitable, and skills-oriented education, will be challenging. According to the implementation theory in public policy (Pressman & Wildavsky, 1973), successful policy requires a harmony between intentions, actions, and local contexts. If libraries were included in educational infrastructure policies but were neglected or not updated, it points to a failure in follow-through and accountability. The policy may have presumed local authorities would take care of these libraries without ensuring they possessed the capacity to do so. This illustrates "implementation drift," where outcomes diverge from original intentions due to inadequate institutional support, lack of training, or oversight. In the absence of this integration, learning becomes disjointed and less impactful.

ICT infrastructure appeared as one of the most deficient areas in schools, with only a few respondents reporting sufficient facilities. This technological gap severely restricts students' ability to acquire critical digital literacy skills. This deficiency is reflected in Yele and Specioza's (2024) findings from Liberia, which indicated that limited digital infrastructure significantly hinders policy implementation and educational outcomes. From the perspective of the implementation theory in public policy (Pressman & Wildavsky, 1973), if both students and teachers do not have access to contemporary tools and skills, policies aimed at 21st-century learning are likely to fail. According to the Tanzania Education and Training Policy 2014 (2023) Edition, Section 3.3.2 states that the government, in collaboration with stakeholders, will establish conducive environments for the delivery of education and training using information and communication technology at all levels. Upon considering these results, the researcher observes that unless there are considerable advancements in both facilities and personnel, schools will continue to face challenges with the effective integration of ICT. This poses a considerable obstacle to the successful implementation of national educational policies that prioritise digital literacy and technological skills.

Inconsistent access to electricity hinders the utilisation of existing technologies and overall learning settings. The absence of reliable power also restricts the use of lighting, impacting the comfort and productivity within classrooms. Khumalo et al. (2023) also observed in Lesotho that basic utilities, including electricity, were among the elements restricting teachers' preparedness and their capacity to implement inclusive education policies. According to the implementation theory in public policy (Pressman & Wildavsky, 1973), the successful implementation of policy often relies on

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coordination among various agencies. In this instance, the inability to align educational objectives with national or local energy provision reveals a fragmentation among agencies, a typical barrier to implementation. This misalignment undermines the effectiveness of broader educational investments, including ICT and laboratory facilities. The lack of reliable electricity not only hinders technological engagement but also affects fundamental aspects like classroom lighting and student comfort.

To tackle these issues, respondents suggested a comprehensive strategy that entails government investment in standardised and modernised school infrastructure, such as ICT labs, libraries, and dormitories. They also emphasised the necessity of community participation in school development, a strategy that resonates across all cited studies. The emphasis of Implementation Theory in public policy (Pressman & Wildavsky, 1973) and the call for policy implementation for inclusive, practical approaches to close the gap between policy formulation and implementation. Common themes observed across global studies from India to Liberia to Lesotho demonstrate that infrastructure, often viewed as a secondary element, is essential for the success of educational reforms like Tanzania's ETP 2014 (2023) Edition. A strong educational system must be grounded in a solid, functional, and inclusive infrastructure foundation (MoEST, 2023). The presence and quality of infrastructure are crucial to the effective implementation of educational policies. Community engagement, adequate funding, and strong political will are vital to bridging the gaps between policy intent and practical awareness.

CONCLUSIONS AND RECOMMENDATIONS

Despite some progress in classroom availability in the Mpimbwe District, significant infrastructure gaps persist. Critical shortages of science labs, libraries, ICT facilities, and electricity hinder the effective implementation of the ETP 2014 (2023) Edition. To achieve equitable and quality education, policymakers must align reforms with targeted infrastructure investments, particularly in rural areas.

The study recommended that to enhance the quality of education, the district, in collaboration with stakeholders, needs to focus on proper maintenance and repair of infrastructure such as classrooms, laboratories, libraries, and staff facilities, which must be backed by dependable electricity, and furniture in educational and training institutions. Enhancing ICT integration through resources, internet connectivity, and training is vital.

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