Student Perceptions on ICT Use in Teaching and Learning in Public Secondary Schools in Mbeya District, Tanzania

1.0 Abstract:

Global teaching and learning process modernization heavily depends on the use of information and communication technology (ICT) in the classroom. For educational methods to be implemented and improved in Tanzania, particularly in the Mbeya District, it is critical to comprehend how students view the incorporation of ICT in their education. This study explores how students in public secondary schools feel about using ICT for teaching and learning, as well as their experiences and preferences in this area.

Theobjectivesofthestudy wereto assess students' attitudes towards the integration of ICT in teaching and learning to examine students' experiences with ICT use in their educational environment, to identify the challenges students face in utilizing ICT for academic purposes and to explore the suggestions for improving the integration of ICT in education.

Several tools wereusedinthedatacollectionnamelyquestionnaire,interviewandsecondarydata. In this study, a sample of a total 60 respondents were drawn from two secondary schools found in the Mbeya district. In this study 40 filled the questionnaires and 20 teachers were interviewed. The combination of these techniques provides a thorough comprehension of the viewpoints of students and teachers on ICT integration in the teaching and learning processes.

The study foundthat most of the students hada positive attitude towards ICT integration in in the teaching and learning process as it facilitates better access to learning materials, increased involvement via interactive learning environments, and the possibility of customised learning experiences.

The study recommended to hold interactive training sessions, put in place a strong feedback mechanism, and highlight effective case studies of ICT integration in education to boost student involvement and favourable perception on ICT use in teaching and learning process to secondary school students found in Mbeya district Tanzania.

Keywords: *Perception, ICT Use, Public Secondary Schools*

1.1Introduction:

Information and Communication Technology (ICT) refers to the convergence of telecommunications and computing technologies, including those used in telecommunications, broadcast media, intelligent building management systems, audiovisual processing, and transmission systems such as the Internet and satellites[1].

Like many other developing countries, Tanzania has seen a rise in efforts recently to incorporate information and communication technology (ICT) into its educational framework[2]. This trend indicates a global understanding of ICT's revolutionary power to improve teaching and learning procedures and give students the critical digital skills they need to succeed in the modern world[3].

ICT integration in education has the potential to provide dynamic and interesting learning settings, accommodate a range of learning preferences, and increase access to educational resources outside of conventional limits[4]. Tanzania is committed to closing the digital divide and giving pupils the resources they need to succeed in the increasingly digitalized global environment, which is why they are placing such a high priority on ICT adoption[5].

However, the effectiveness of ICT integration in education depends not only on the application of technology but also on the comprehension and consideration of the views and experiences of the main participants, namely the students[6]. Their viewpoints provide priceless insights into both the difficulties involved in using ICT tools and resources and their efficacy in promoting learning.

Examining how students view ICT in the classroom can provide insight into a variety of experiences and viewpoints. ICT may be welcomed with enthusiasm by certain students who see it as a means of achieving improved learning outcomes, increased interactivity, and easy access to a multitude of educational resources[7]. For them, ICT is a chance to work with classmates, interact with the material in new and interesting ways, and acquire digital literacy skills that will be useful in their future undertakings.

On the other hand, some students could be hesitant or face difficulties when utilising ICT in their academic pursuits[8]. ICT resources can be effectively utilised, but enthusiasm can be dampened by problems including restricted access to technology infrastructure, poor training or assistance, digital divide discrepancies between urban and rural areas, and worries about the relevancy and quality of digital material[9].

Comprehending these diverse viewpoints is imperative to guarantee the fair and efficient incorporation of ICT in Tanzanian education[10]. It calls for focused approaches to remove obstacles to usage and access, improve teachers' and students' digital literacy, and modify ICT programmes to fit regional settings and curricula[11].

Additionally, encouraging a participatory strategy that incorporates students in ICT adoption decision-making processes can enhance ownership, empowerment, as well as a feeling of autonomy in their schoolwork[12]. Tanzania may develop an active feedback loop, modify ICT interventions in response to student feedback, and promote a culture of experimentation and innovation to create a flexible and responsive educational ecosystem that is ready to use ICT to its fullest potential for the good of all students[13].

Generally, the incorporation of ICT into Tanzanian education has great potential to improve student learning outcomes and equip them for success in the digital era. Tanzania can guarantee that ICT programmes are customised to fit students' requirements, successfully solve obstacles, and open the door for a more inclusive, equitable, and powerful educational landscape by placing a high priority on understanding students' perspectives and experiences.

1.2Objectives:

i. To assess students' attitudes towards the integration of ICT in teaching and learning.
ii. To examine students' experiences with ICT use in their educational environment.
iii. To identify the challenges that students face in utilising ICT for academic purposes.

2.0 Literature Review:

This section focuses on the theoretical and empirical literature review.

2.1 Theoretical framework

This study applied constructivist theory**.**Constructivism is an educational and psychological paradigm that proposes that learners build their understanding of the world via experiences and reflections. It draws on the work of psychologists including Jean Piaget, Lev Vygotsky, Jerome Bruner, and Seymour Papert[14]. Piaget's theory of cognitive development emphasises the learner's active role in comprehending the world[15]. Vygotsky's social constructivism focuses on the social and cultural dimensions of learning.

Bruner's "spiral curriculum" focuses on active learning and discovery. Papert's constructionism extends constructivist principles into technology, proposing that learners construct knowledge through concrete artefacts[16]. Constructivist pedagogy is frequently used in educational settings through approaches such as inquiry-based learning, problem-based learning, and project-based learning[17].

2.2 Empirical literature review

To offer a thorough grasp of the subject, empirical literature reviews examine, assess, and summarise research findings as well as working papers on the perception of students on ICT use in teaching and learning.

2.2.1 Students' attitudes towards the integration of ICT in teaching and learning

The factors influencing Tanzanian students' views towards ICT integration in education include the availability of technology, competence with ICT tools, cultural attitudes, and the quality of ICT integration in educational institutions[18]. Students in cities have greater access to technology, but those in rural regions may have little or no access[19].According to a Tanzanian survey, although students acknowledged limitations on computer programmes and personal devices, they largely supported ICT integration in public secondary schools. The paper recommends changing these limitations and offering instruction to ICT users [20]. A study conducted in Kuala Lumpur, Malaysia, discovered that professional development training programmes and teachers with the necessary preparation greatly increase the efficacy of technology-based teaching and learning. Managing difficulties should be the main focus of future research [21]. Tanzanian students' perspectives on ICT integration in education are largely shaped by a lack of understanding of rural vs. urban disparities in access, cultural attitudes, effective and effective strategies for overcoming limitations, and teacher training and professional development. While urban students have better access to technology, there has been little research into the specific challenges that rural students face[19].Understanding those distinctions can aid in developing culturally sensitive ICT integration policies and programmes. More research is needed to determine specific training requirements and effective professional development strategies for Tanzanian teachers.

2.2.2 Students' experiences with ICT use in their educational environment

The study of secondary school students' experiences with ICT revealed several gaps and challenges. These include the ongoing digital divide, inconsistent training quality, teacher preparedness, and integration into the curriculum. In addition, there is a dislocation of ICT tools and educational content, as well as inadequate teacher support. Longitudinal studies are required to assess the long-term effects of ICT integration on student outcomes[22]. Addressing students' diverse needs and implementing holistic approaches are critical to ensuring that all students get the most out of ICT in their education[23].

2.2.3 The challenges students face in utilizing ICT for academic purposes

Tanzanian students confront several problems while using information and communication technology (ICT) for academic purposes[24]. These include limited access to ICT infrastructure, high device and service costs, digital literacy gaps, language barriers, limited ICT integration into the education curriculum, power outages and infrastructure issues, digital content relevance, unreliable internet connectivity, security and privacy concerns, and cultural and socioeconomic factors[25],[26]. These

difficulties may impede students' ability to access online resources, participate in virtual classrooms, and engage in collaborative online activities. Furthermore, students may be hesitant to fully utilise ICT resources due to fears about online security and privacy. Addressing these difficulties is critical to encouraging effective ICT use in Tanzanian education.

3. Methods

3.1 Research design and context

The study used a descriptive design method. The descriptive surveyis an efficient way to acquire information about students' perceptions of ICT use in Tanzanian education[27]. This survey is appropriate for a broad audience, as access to technology and internet connectivity vary by geography and demographic. Itprovides quantifiable information about students' perceptions of ICT resources, including frequency of use, preferred tools, and perceived benefits and obstacles. Descriptive surveysare both cost-effective and time-efficient, making them appropriate for resource-constrained environments such as Tanzania. It also provides anonymity, promoting open replies on delicate themes. Data collection andstandardisationensure uniformity, making it easier to analyse and compare data across student groups. Descriptive survey results can be generalised to a larger population, providing insights into broader educational policies and activities. It also provides opportunities for follow-up research.

3.2 Sampling and Sample Size

Sampling is a technique used by researchers to pick a subset of a predefined population as subjects for observation or investigation. For example, if 100 undergraduates are chosen from 1000 college rolls for physical fitness testing, they represent a group's desired sample[28]. Selecting a sample allowed the researcher to get data from a smaller group that was more relevant to the study. The study used purposive and stratified sampling methods to describe purposeful sampling as selecting educated and instructive persons about the topic being studied.

In research, methods such as purposeful and stratified sampling are employed to choose participants according to particular attributes[29]. While stratified sampling separates the population into subgroups based on shared characteristics, purposeful sampling involves choosing schools based on predetermined criteria. Out of 36 public secondary found schools in the Mbeya district, Ilembo and Isuto Secondary Schools were selected for this study. Stratified sampling was used in the selection of teachers to guarantee that a range of qualifications was sufficiently represented. Stratified sampling was used to select students who represented a range of academic levels. While stratified sampling improves representativeness, lowers sampling bias, and yields more accurate results, purposeful sampling guarantees the selection of particular characteristics. A representative and balanced sample is guaranteed when these techniques are combined.

The study selecteda sample size by using Sharma's formula (2020) suggestion of 30%. According to the authors, a 30% research sample is frequently sufficient to offer a suitably representative sample of the community[30]. While it does not cover every unit, it may capture a wide range of features, providing useful insights and generalisations. The reasons for choosingthis approach is toensure that the sample accurately represents the larger population, allowing researchers to draw more confident conclusions. The 30% figure is based on empirical evidence and practical considerations, striking a balance between data collection and study management. In this scenario, the sample of students and students was included in the research sample and was distributed as described in Table 1

Table 1. Sample size of the respondents

Division	Target Population	Sample Size
Students	120	40
Teachers	60	20
Total	117	60

Source: Research 2024

3.3Tools and Techniques

This study utilised two data collection tools: questionnaires and interviews. Using a combination of these methods prevents over-reliance on a single instrument, assuring the authenticity and dependability of the data acquired. The use of more than one instrument of procedures is required to assure the authenticity and dependability of the obtained data. Questionnaires are useful for gathering quantitative primary data, although they have limitations such as low response rates, potential bias, and inflexibility. To address these difficulties, a pilot research was conducted to test the questionnaires, which werethen sent to 40studentsto collect data for all threestudy objectives. The pilot research provided useful feedback, which was used to improve the questionnaire. The questionnaire was revised to improve clarity, order, length, time required to complete, response options, technical issues, bias, and sensitivity. The questionnaire included 25 questions about demographics, academic performance, student satisfaction, study habits and attitudes, plans and goals, and response rate.

The pilot study discovered that some questions were rephrased for easier comprehension and simplified terminology. The order of the questions was changed to create a more logical flow, and the length and time to complete were assessed. Response options were modified based on feedback, and technical issues were resolved. Questions identified as potentially leading or biassed were revised, and sensitive questions were rewritten to ensure respect and consideration for the respondents' privacy and comfort.

The final questionnaire, after pilot study adjustments, had a 75% response rate. This was accomplished through strategies such as follow-up reminders, maintaining anonymity, and emphasising the value of student input in improving educational outcomes. The detailed questionnaire items helped readers understand how variables were operationalized and provided clarity in interpreting the reported findings. The high response rate indicates that participants were actively engaged, laying the groundwork for reliable and valid data analysis.

The interview is a research approach in which two or more persons converse verbally about a topic of mutual interest. It can be utilised in both personal and telephone interviews. Personal interviews use structured questions and recording techniques, whereas telephone interviews are more flexible, faster, and cheaper. The study used interviews with 20 teachersfrom 2 public secondary schools in Mbeya district. Restricted interviews allow researchers to ask follow-up questions and clarify obscure ones, whereas unrestricted interviews explain the study's objective and subject area. Teachers were interviewed in groups basing on their levels of education. Likewise, 40 questionnaires were distributed to advanced and junior secondary school students in selected schools found in Mbeya district, Tanzania.

3.4 Data Analysis

This study employed both quantitative and qualitative approaches, with quantitative analysis conducted using the IBM Statistical Package for Social Science (SPSS). The researcher used NVivo software for qualitative data analysis, transcribed precise responses from students and teachers, and analysed them using open coding. The data was securely stored to ensure confidentiality. The initial coding was an open process, with codes assigned to different sections of the text. NVivo was used to create and iteratively refine a codebook, which allowed for efficient data organisation. An inductive approach revealed patterns and themes, and thematic analysis was used to identify recurring themes relevant to the research questions. Themes were refined through constant comparison and discussion with other researchers.

Results were displayed using descriptive statistics, charts, and tables, and information was gathered from students and teachers at two Mbeya district schools using closed and open-ended questions.To gain a better understanding of the data collection strategy, the researcher identified research questions which were addressed with closed-ended questions and open-ended questions.

i. Evaluate students' attitudes towards the use of ICT in teaching and learning.
Closed-ended Questions:
Do you think the integration of ICT improves your learning experience? (Yes/No)
On a scale of 1 to 5, how comfortable do you feel using ICT for learning purposes? (Not at all comfortable, slightly comfortable, moderately comfortable,comfortable,very comfortable
Do you believe ICT tools are essential in modern education? (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree):
Have you received any formal training on how to use ICT tools for educational purposes? (Yes/No)
Open-ended Questions:
What are your general feelings about the use of ICT in education?
Can you describe a specific instance in which ICT improved your learning experience?
What do you see as the primary advantages of incorporating ICT into teaching and learning?
Are there any aspects of ICT in education that you find frustrating or ineffective? Please explain.
ii. Investigate students' experiences with ICT use in their educational setting.
Closed-ended Questions:
How frequently do you use ICT tools (such as computers, tablets, and software) in your coursework? Do you have reliable internet access for academic work? (Daily, weekly, monthly, rarely, never)? (rarely used, occasionally used, frequently used and always used)

Have you ever received formal training on how to use ICT tools for educational purposes? (Yes/No)
On a scale of 1 to 5, how user-friendly are your institution's ICT resources?

Open-ended Questions:
Can you describe your typical experience with ICT in your studies?
Which ICT tools do you most frequently use for academic work, and why?
Have you encountered any difficulties when using ICT in your educational setting? If so, could you please elaborate?
How do you think your institution could improve its ICT resources or support?
iii. Identify the challenges that students face when using ICT for academic purposes.
Closed-ended Questions:

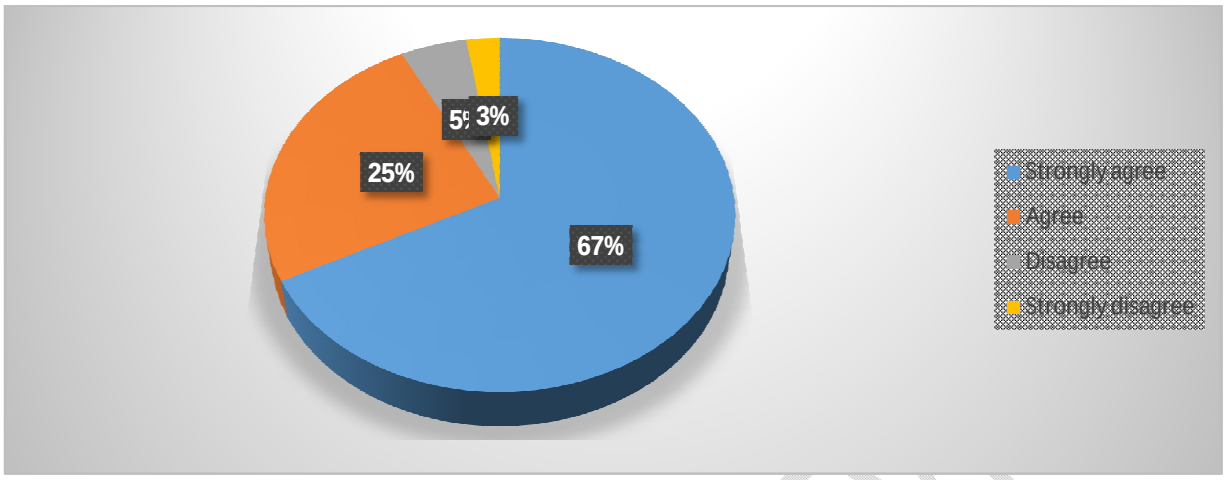
Have you encountered any technical problems (e.g., hardware/software malfunctions) while using ICT for your studies? (Yes/No)
Do you feel your institution provides adequate technical support when you encounter ICT-related issues? (Yes/No)
On a scale of 1 to 5, how difficult do you find it to maintain focus while using ICT for academic purposes due to distractions (e.g., social media, games)?
Do you have consistent access to the ICT devices you need for your coursework (such as computers and tablets)? (Always, Often, Sometimes, Rarely, Never):
Open-ended questions.
What are the main challenges you encounter when using ICT for academic purposes?
Can you describe an instance in which you struggled with ICT and how it impacted your studies?
How do you usually resolve any ICT-related issues that arise while studying?
What suggestions do you have for addressing the challenges that students face when using ICT in education?

4.0 Results of the study

4.1 Students' attitudes towards the integration of ICT in teaching and learning

The respondents (students and teachers had different views when they were asked about how positivethey were towards the integration of ICT in teaching and learning. Using four Likertscales to measure respondents' level of agreement, four indicates astrong level of agreement, three indicates agreement, two indicatesdisagreement, and one strongly disagrees.The questionnaires contained statements about the usefulness, ease of use, impact on academic performance, support and resources, attitude towards ICT, frequency of use, and teacher role.

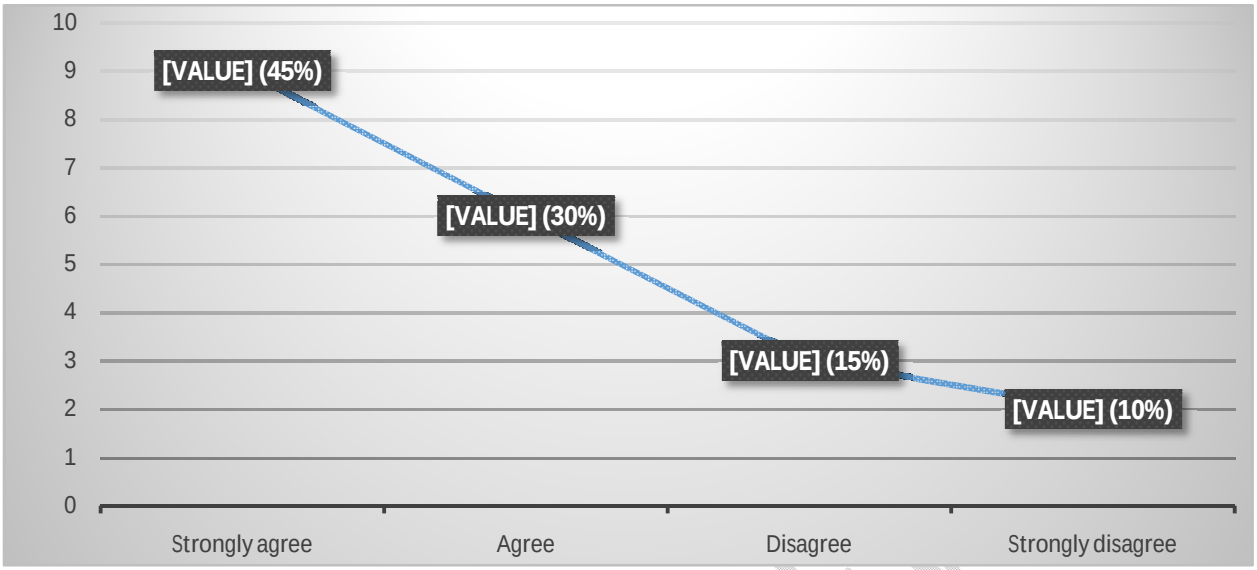
Figure1. Students' positive perception towards ICT uses identified by the students



Source: Research 2024

Response Breakdown: Strongly agree: 27 respondents; 67%; Agree: 10 respondents; 25%; Disagree: 2 respondents; 5%; Strongly Disagree: 1 respondents; 3%; Summary: Total Positive Responses (Strongly Agree + Agree): 37 out of 40 respondents; 92%; Total Negative Responses (Disagree + Strongly Disagree): 3 out of 40 respondents; 8%; Interpretation: The data indicates a strong positive response from the majority of respondents. Specifically, 92% of respondents either strongly agreed or agreed with the statement, while only 8% disagreed or strongly disagreed. This suggests that most respondents have a positive opinion regarding the subject at hand(See figure 1).

Figure 2. Teachers views on ICT use for teaching and learning to students



Source: Research 2024

The results as shown in Figure 1 revealed that 45% of the 20 teachers who were interviewedmentioned strongly agree,30% of the 20 respondents listed 30%,15% of the 20 respondents outlined disagree and 10% of the 20 respondents strongly disagreed. The data revealed that very few respondents (teachers) hada negative attitude towards the integration of ICT in teaching and learning (see Figure 2).ThePositive Attitude: Combining the percentages of those who strongly agree and agree, are 45 % + 30 % = 75 % 45%+30%=75% or 15 out of 20 teachers who have a positive attitude towards the integration of ICT in teaching and learning. Negative Attitude: Combining the percentages of those who disagree and strongly disagree, are 15 % + 10 % = 25 % 15%+10%=25% or 5 out of 20 teachers who have a negative attitude towards the integration of ICT. Generallythe data suggests that the majority of the teachers (75%) have a positive attitude towards the integration of ICT in teaching and learning, while a minority (25%) have a negative attitude. This indicates that most teachers are supportive of using technology in education, with only a few showing resistance or concerns.

4.2The students' experiences with ICT use in their educational environment

The respondents (students and teachers) had different responses when they were asked about studentsexperiences with ICT use in the education environment. Understanding teachers' experiences with information and communication technology (ICT) is critical for gaining a comprehensive understanding, identifying challenges and successes in implementing ICT in educational settings, and improving professional development[31]. Teachers' experiences can reveal gaps between intended use and actual application, and their skills can be developed to improve integration. Teachers' experiences can also have an impact on student-teacher interactions, influencing engagement and learning outcomes. Teachers' insights can help with policy and curriculum development, as well as the identification of barriers and facilitators. Comparing teachers' experiences with students can provide an expanded view of ICT use in education, allowing for targeted interventions. Researchers can optimise ICT use to improve learning outcomes by incorporating teachers' experiences into their research.

There were four main options given to the respondents.Number one was rarely used, two occasionally used, three frequently used and four always used.

Table 2.Experiences with ICT use as identified by the students

Experience with ICT Use (N=40)	Frequency	Percent (%)
Rarely	9	22
Occasionally	11	28
Frequently	2	5
Always	18	45
Total	40	100

Source: Research 2024

The study surveyed 40 students to learn about their use of information and communication technology (ICT). The results show varying levels of usage.1. Always Use: 18 out of 40 respondents (45%) said they always use ICT.Many students use ICT in their studies and daily activities.2. Occasionally Use: 11 out of 40 respondents (28%) reported using ICT occasionally. This group uses ICT, but not as regularly as those in the "always" category.3. Rare Use: o 22% of respondents (9 out of 40) reported rarely using ICT.These students may have limited access to ICT or rely less on it for their tasks.4. Frequent Use: 5% of respondents (2 out of 40) reported frequent ICT use.

Although the percentage is small, it highlights a group that uses ICT occasionally but not always.

Interpretation of Results

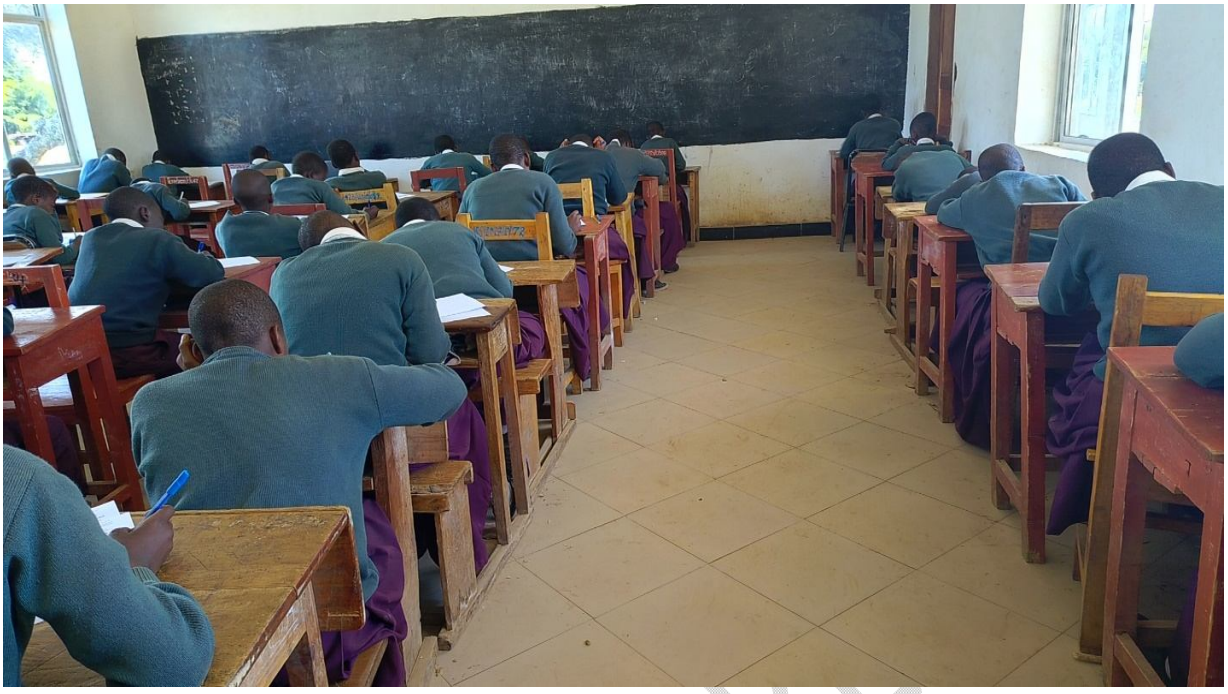
• The majority (45%) use ICT on a consistent basis. This indicates a significant reliance or preference for ICT among nearly half of the respondents.

• Occasional users (28%) and rare users (22%) account for a significant portion of ICT usage among students.

• Frequent users (5%) represent a diverse range of ICT engagement among respondents, despite their small proportion.

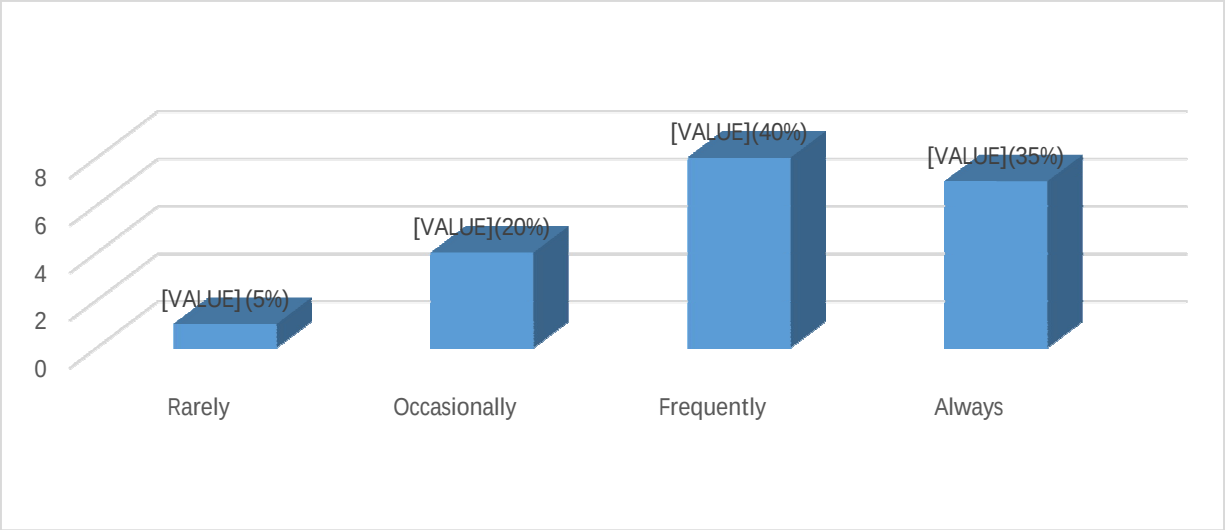
Insights• The high percentage of students who use ICT consistently indicates a strong and growing reliance on technology.
• Findings suggest that ICT plays a significant role in students' educational experiences, potentially influencing future policies and resource allocations (see table 2).

Picture: 1 Students filling questionnaires in the classroom



Source: Field data 2024

Figure 3 Experiences with ICT use as identified by the teachers



Source: Research 2024

The results of the study on the use of ICT as presented by the respondents (teachers) revealed that 40% of the 20 respondents mentioned frequently followed by 35% of the 20 respondents who listed always, 20% of the 20 respondents identified occasionally and finally 5% of the 20 respondents equivalent to one respondent mentioned rarely use. This signifies that the use of ICT in teaching and learning in the study area is very high.To ensure the reliability and validity of data collected using frequency-based response categories, the researcher took a few steps. These include providing clear definitions for each term, conducting pilot testing with a small sample size, and performing consistency checks. Expert review was also required to ensure that the questions and response categories were appropriate and clear. Pre-testing is another step that involves cognitive interviewing techniques to investigate respondents' interpretations of the terms. Triangulation is another approach that uses multiple methods to collect data on the same topic to cross-check results. Providing examples to illustrate each frequency term helped respondents choose the most accurate category. By implementing these strategies, a researcher increased the reliability and validity of their data, ensuring that frequency-based response categories accurately capture respondents' use of IT.

4.3 The challenges students face in utilising ICT for academic purposes

The respondents (students and teachers) had varying viewpoints on the challenges that pupils experience when using ICT for academic reasons. Slow internet connections, a lack of access to appropriate hardware/software, and insufficient ICT and technical skills were among the most common issues.

Table 3. Challenges as identified by students

Challenges of using ICT (N=40)	**Frequency**	**Percent (%)**
Slow internet connection	20	50
Insufficient ICT skills/Knowledge	10	25
Lack of access to necessary hardware/software	6	15
Technical issues with ICT tools	4	10
Total	40	100

Source: Research 2024

The respondents (students) presented various challenges faced by students when using ICT for academic purposes. The results revealed that 50% of the 40 respondents mentioned slow internet connection, 25% of the 40 respondents listed insufficient ICT skills/knowledge, 15% of the 40 respondents identified a lack of access to necessary hardware/software and 10% of the 40 respondents pointed out technical issues with ICT tools.

Table 4. Challengesas identified by the teachers

Challenges of using ICT (N=20)	**Frequency**	**Percent (%)**
Slow internet connection	8	40
Insufficient ICT skills/Knowledge	6	30
Lack of access to necessary hardware/software	4	20
Technical issues with ICT tools	2	10
Total	20	100

Source: Research 2024

The respondents, who were the teachers, addressed the several difficulties they have when utilising ICT for educational purposes. The findings showed that among the 20 respondents, 40% mentioned having a slow internet connection, 30% mentioned having insufficient ICT knowledge or skills, 20% mentioned not having access to the required hardware or software, and 10% mentioned having technical problems with ICT tools.

5.0 Discussion of Findings

Students and teachers have differing perspectives on the use of Information and Communication Technology (ICT) in teaching and learning. While the majority of respondents believe ICT facilitates effective teaching and learning, a minority believe it is difficult to implement due to the challenges it presents. A study on the effectiveness of teaching aids in improving student engagement and learning outcomes discovered that students respond positively to ICT use in the classroom because of its accessibility, availability, and adaptability. However, students face difficulties such as poor internet connections, a lack of access to appropriate hardware/software, insufficient ICT and technical skills, and frequent technical faults and maintenance. To improve the integration of ICT in education, the study suggests initiatives like teacher professional development programmes, workshops, seminars, peer learning, and certification programmes, as well as investing in high-quality educational software that complements the curriculum and improves learning outcomes.

A study looking into the effectiveness of teaching aids in improving student engagement and learning outcomes interviewed people from various educational institutions. One teacher discussed their experiences incorporating multimedia tools into lessons, emphasising the positive response from students. The study sought qualitative insights into using modern technological tools in classroom settings.

"The discussion with one of the respondents (teachers) in the study area revealedthat technology is good as it makes easy setting and moderation of the examinations, in this way there is no way you can get rid of the modern technology in this contemporary world"

According to the teacher, visual aids such as projectors can improve students' learning experiences by capturing their attention and creating an engaging and interactive educational environment.

The findings presented above correlate with the study done by [31] who argued that Teachers' attitudes and ideas have a major role in the integration of information and communication technology (ICT) in the classroom. According to a 2013 IEA survey, different nations' instructors have different opinions about the educational benefits of ICT. Italso relatesto the study done by [32] who viewed that students react favourably to the use of ICT in the classroom, mostly because of the materials' accessibility and availability as well as the opportunity to adapt the curriculum to fit their schedules. When the study was compared to classroom instruction, most of the students did not report feeling less motivated, and there is less evidence that the use of ICT affects comprehensionor the efficiency of learning and further similarwith the study done by [33] conceiving that teachers may not receive the technical help they need, which can result in a lack of happiness with using technology and a fear of equipment failure.

6.0 Conclusions

6.1 **Students' attitudes towards the integration of ICT in teaching and learning**

The study investigates students' attitudes towards the integration of Information and Communication Technology (ICT) into teaching and learning. The majority of respondents supported the integration, with the majority using ICT on occasion and fluently. However, students face difficulties such as slow internet connections, a lack of appropriate hardware/software, and insufficient ICT and technical skills. Teachers and students proposed strategies to improve ICT integration in education, including more training for using ICT tools, incorporating ICT into more courses/subjects, improving the reliability and speed of ICT infrastructure, and providing better access to ICT resources. Overall, the study emphasises the need for effective strategies to improve ICT integration in education.

7.0 Recommendation

7.1 **Students' attitudes towards the integration of ICT in teaching and learning**

It is advised to hold interactive training sessions, put in place a strong feedback mechanism, and highlight effective case studies of ICT integration in education to boost student involvement and favourable perception. These techniques will enable students to voice their concerns, show them the possible advantages of adopting technology, and assist them in understanding the advantages and useful applications of ICT in their studies.

7.2The students' experiences with ICT use in their educational environment

It is suggested to enhance accessibility and user experience by supplying clear and easy-to-use ICT platforms and tools, offering documentation and other support materials, and routinely updating the ICT infrastructure. Additionally, providing a variety of learning resources helps accommodate various learning preferences and styles, guaranteeing a smooth learning experience for students. Some examples of these resources are interactive simulations, multimedia, and collaborative platforms.

7.3 The challenges students face in utilizing ICT for academic purposes

It is recommended that students be provided with focused technical support and resources, such as a helpdesk specifically for technical problems, access to required hardware and software via school resources or collaborations with neighbourhood organisations, and all-encompassing digital literacy initiatives to give them the know-how to use ICT for learning.

8.1 Future Scope

This studyseeks to investigate student perceptions on ICT use in teaching and learning in public secondary schools. The study also investigates students'attitudes towards the integration of ICT in teaching and learning, students' experiences with ICT use in their educational environment and the challenges that students face in utilising ICT for academic purposes.

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1.

2.

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