Global Scientific and Academic Research Journal of Education and literature.
ISSN: 2583-7966 (Online)
Frequency: Monthly
Published By GSAR Publishers
Journal Homepage Link- https://gsarpublishers.com/gsarjel-home-page/

ASSESSMENT OF THE CONTRIBUTION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON TEACHING AND LEARNING PROCESS. A CASE OF SELECTED SECONDARY SCHOOLS IN MBEYA CITY COUNCIL

By

Salome Mapigano
Department of Education, Teofilo Kisanji University, Tanzania

Article History

Received: 25/08/2025
Accepted: 01/09/2025
Published: 03/09/2025

Vol – 3 Issue – 9

PP: - 1-10

Abstract

The rationale of this study was to significantly explore the contribution of information and communication technology (ICT) on teaching and learning process, a case of selected secondary schools in Mbeya city council. The research was conducted in Mbeya City by selecting four secondary schools to get respondents. Purposive and simple random sampling were applied to obtain a total of 100 respondents under the categories of 20 secondary school teachers and 80 students. The study used mixed research approach where by questionnaires and interview were the method of data collection and adopted a descriptive survey research design.

The key findings of the study revealed that, the integration of ICT in teaching and learning improve students' motivation, develop critical thinking, easy access to study material, makes possible teachers and students to have enjoyable chance to keep anything they have studied. ICT minimizes the burden of maintaining hard copies, serves time of doing work where now through the application of ICT the work which would be done in a number of days is done in only few seconds. Students with special needs get access to simplified screens and instruction menus which are consistently placed, they are able to have graphics that are combined with texts and they get access to audio feedback. However, teachers and students are limited in computer usage a situation which hinders full access to ICT leading to poor access to quality materials for teaching and learning which discourage high achievements in education sector.

The study recommends that, the government should improve the school environment for establishment of ICT Infrastructures in meeting the demands of teachers and students for using ICT regularly. The government should organize training, seminars or workshops for teachers to perform their functions (teaching) effectively. The government should employ experts of ICT so as to improve teaching and learning activities for better students' academic performance, to promote effective implementation of curriculum by integrating ICT and ensure education is well programmed. Teachers should be trained on the changes of curriculum so that they can implement the competence-based curriculum effectively and competence lesson plans during teaching and learning process.

Key words; *ICT, Learning process, Teaching process, constructivism theory, integration, contribution.*

1.0 INTRODUCTION

Globally countries have invested Information Communication Technology (ICT) on education and training sector, although its application is uneven, whereby some countries have high advancement in the usage of ICT compared to other countries. Developed countries like Europe demonstrate appropriate use of ICT in teaching and learning compared to less developed countries (Onyango) & Odhiambo, 2015).

Dei, (2018) from Ghana, in his research titled 'Assessing the use of Information and Communication Technology in teaching and learning in secondary schools' has defined ICT as the use of Technology in managing and Processing Information with the use of Electronic Computer systems and computer software to convert, store, protect, process, transmit

*Corresponding Author: Salome Mapigano

and retrieve Information. Ahmed, Datti, & Abdulkadir, (2021) in their research with the title 'Assessment of the use of Information and Communication Technology (ICT) for teaching and learning in Arabic secondary schools (case study of Keno state, Nigeria; have mentioned the devices applied in ICT to include computers, internet, telephone and broadcasting technologies such as radio and television. Ghavifekr & Rosdy, (2015) in their research titled 'Teaching and Learning with Technology; Effectiveness of ICT integration in schools' argue that the integration of ICT in teaching and learning has enabled the replacement of old-style of teaching methods with technology based teaching and learning tools and facilities. Ghavifekr & Rosdy, (2015) further argue that in Malaysia ICT is considered as one among the elements necessary in transforming the country development of the future.

Although most of developing countries in Africa including Tanzania have computer equipment they lack ICT infrastructure which are necessary for teaching and learning to take place well. The infrastructure includes internet services, projectors, and smart devices which are insufficient with the ratio of students and computers available are not proportional, hindering contented teaching and learning among teachers and students (Ngeze, 2017)

ICT in most developing countries including Tanzania is a new innovation. In Tanzania the policy on ICT was introduced by the government through its educational stakeholders in 2006 (Senzige & Strokes, 2012). The process of implementing ICT in adult education was after the Ministry of Education and Vocation Training (MoEVT) introduced ICT called (Technolojia ya Habari na Mawasiliano-TEHAMA in Kiswahili) into primary school curriculum. Recently many primary schools in Tanzania have introduced ICT (TEHAMA) to foster ICT literacy amongst teachers and students. It is believed that technology is a leading agent of change in development if used and applied appropriately in daily activities. However, until now there are challenges of implementing ICT in teaching and learning process. (URT, 2008)

The development of ICT in Tanzania is included in Education and Training Policy of 2014 and in National ICT policy whereby the policy considers the use of ICT in education as a useful supplement to the development of competence and competitive human capital in line with knowledge economy's needs. The government has taken various initiatives to make sure that teachers are competent in the use of ICT devices including the provision of tablets (vishikwambi) so as to make sure that no any teacher who blame the government on the lack of the ICT devices. Almost all teachers both primary school teachers and secondary school teachers were given the devices (vishikwambi). Although the devices have been provided to the teachers and the students get access to ICT tools still there is little achievement in academic progress to many students and teachers seeming that they face difficulties in the application of the devices. The major task of this study is to assess the contribution of information and communication technology (ICT) on teaching and learning process a case of selected secondary schools in Mbeya city council.

1.1 General Objective of the research

The general objective of the research was to assess the contribution of Information and Communication Technology (ICT) in teaching and learning process in Mbeya city council.

1.2 Specific Objectives

i. To assess the contribution of ICT in teaching and learning process.
ii. To evaluate the extent to which teachers and students are using ICT tools in the whole process of teaching and learning process.
iii. To assess students' perception on using ICT tools in the whole process of teaching and learning.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

The study adopted constructivism theory which according to Chand (2024), is an important learning theory that emphasize learners to develop their own understanding and knowledge through experience and interaction with the environment. Bada, (2015) claim that human construct meaning from their experiences. Moreover, Bada (2015) explain that learning outcome must base on the construction process of knowledge and should determine learning goals from authentic tasks with specific objectives. Constructivism emphasizes on student centred learning in which learning is viewed as active, reflective, constructed, and collaborative. In addition, constructivism is based on inquiry in the whole process of learning. The teacher acts as a guide in the whole process of teaching and learning. Constructivists include Dewey, Bruner, Vygotsky, and Piaget (Chand, 2024)

Constructivist theory is relevant to the study on assessing the contribution of ICT in teaching and learning process. The application of ICT influence students centred learning, encourage active learning where students engage in the learning process with the application of ICT tools including computers, emails, Microsoft word, Microsoft excel, PowerPoint, laptops, tablets, smartphones, internet, etc. These ICT tools stimulates the development of interactive student centred learning environment which accelerates active learning, collaboration, communication, differentiated learning, etc. ICT fosters deeper understanding by allowing students to apply knowledge to real world context.

2.2 Contribution of ICT on Teaching and Learning Process

Almasi *et al* (2018) in Mroso & Ndibalema (2024 p.121) have defined ICT 'as a wide range of hardware and software technology components such as computers, projectors, internet, radio, television, printing machines, digital audios like wireless speakers, visual devices and teachers resource websites that help teachers in teaching'.

The integration of ICT in teaching and learning enables quick information obtainability, easy access to study material and makes possible teachers and students to have enjoyable

*Corresponding Author: Salome Mapigano

chance to put anything they have studied. The understanding of what they learned and knowledge of important issues is increased. Moreover, Motivation of students' engagement is increased facilitating better teaching and learning outcome. Through the application of ICT, successful teaching process is easy with well-planned collection of lessons. ICT minimizes the burden of maintaining hard copies, serves time of doing work where now through the application of ICT the work which would be done in number of days is done in only few seconds. The integration of ICT in education have helped students to work in a fast changing world which is accompanied with new technological sophisticated vacations (Khan *et al.*, 2024).

The national report of the United Republic of Tanzania on the Development of Education (2008 p.9) states, "the ICT policy aims to empower learners, teachers, education managers and leaders to use ICT judiciously and effectively for expanding learning opportunities and ensuring educational quality and relevance". The effective use of ICT offers more opportunities for learning new knowledge through interaction, sharing knowledge and information with others Students can access internet, use them to search definition of concepts and references; also extract materials relating to their study (Dei, 2018).

Despite the fact that ICT has been introduced to be used in teaching and learning processes, the competence of teachers and learners is a challenge that was observed in order to enhance the efficiency and effectiveness use of ICT in schools. Iintegration of ICT in education have made possible for students with special needs to apply ICT to develop studies basing on their own needs using vital materials and specific ICT tools. Students with special needs get access to simplified screens and instructions menus which are consistently placed, they are able to have graphics that are combined with texts and they get access to audio feedback. All these make students with special needs to have well organised and simplified learning, and helps a number of students with special needs to acquire education making them potential for office work a situation which would be difficult without the application of ICT in teaching and learning process (Ahmed, *et al* 2021).

Mroso & Ndibalema (2024) in their study 'Teachers perceptions on the role and challenges of using ICT in English language classrooms ' assert that ICT is significant pedagogical tool for enhancing grammar, vocabulary and precise pronunciation. Hence, it is very important to integrate ICT with English language both in teaching and learning process. Students learn precisely how to pronounce different words, students learn how and where to use different words such as articles, conjunctions etc. such as on, in, since, for, at, from, and can learn new vocabularies and their meanings on their own or with their teachers.

2.2 Extent to which Teachers and Students are Using ICT Tools

Ahmed *et al.*, (2021) have found out that in Keno states Nigeria about 26% of teachers are applying ICT in teaching and learning process while 74% are not applying ICT tools in the whole process of teaching, and 34% of students are using ICT in learning while 66% are not applying ICT in learning. Some of the teachers lack some expertise of integrating technology into their lessons in an efficient manner making teaching and learning resulting to low outcome.

Ningsih, Sihombing, Silalahi & Purba (2021) asserted that, both teachers and students can master and use ICT well in the whole process of teaching and learning basing on the educational needs. Onyango & Odhiambo (2021) noted that, some teachers are able to use ICT in teaching while some have limited usage of ICT tools in teaching. Moreover, most student in Kenya secondary schools are limited in computer usage a situation which hinders full access to ICT leading to poor access to quality materials for teaching and learning discouraging high achievements in education sector.

Ngeze (2017) in his study 'ICT Integration in teaching and learning in Tanzania, readiness and way forward' contends that, most teachers in Tanzania have limited ICT competence a situation which discourage full application of ICT in teaching and learning. Kiwonde (2018) in her research titled 'Effectiveness of ICT Teachers' Training Programmes in enhancing Teaching and Learning of Environmental Education in selected primary schools in Musoma District' in Tanzania asserts that teachers are not confident about pedagogical use of ICT, in addition, the use of ICT in instructional practice is limited especially in developing countries like Tanzania. Lubuva *et al* (2022) with their study on assessing tutors level of ICT competence in teaching in teachers education in Tanzania revealed that teachers are not competent enough hence, they need more hands on training in applying ICT pedagogical competences in their classroom practice.

Gebremedhin & Fenta (2015) in their article 'Assessing teachers' perceptions on integrating ICT in teaching learning process; A case of Adwa College' in Ethiopia, have revealed that majority of teachers in the college are not able to use ICT in teaching learning process where they have indicated that 55.6% cannot apply ICT.

2.3 Students Perception on Using ICT Tools in the Process of Learning

Ningsih, Sihombing, Silalahi & Purba, (2021) in their study with the title 'Students Perception towards the use of ICT in EFL learning at eleventh Grade SMA Negeri 1 Dolok Batu Nanggar' which was done in Indonesia, assert that students perceive the application of ICT as attractive, effective, and relevant to current digital world where digital literacy is crucial. Moreover, they have explained that both teachers and students can master ICT thorough well according to educational needs.

*Corresponding Author: Salome Mapigano

In addition, Ningsih *et al* (2021) have defined digital literacy as the ability to utilize digital technology as wise as possible and not easily influenced by bad things, able to utilize existing technology for personal and common interest. According to Ngeze (2017) students have positive perception on the integration of ICT in teaching and learning claiming that the application of ICT helps them to study for a long time compared to when students are studying without the application of ICT. Kiwonde (2018) adds that the application of ICT during the learning process increases motivation, commitment and students engagement in studies. In addition, independent learning, students' collaboration and communication, critical thinking and problem solving skills are stimulated by using ICT in learning and teaching process.

Gebremedhin, & Fenta (2015, p.115) say 'the animations, simulations, software packages to teach various subjects create realities and experience for learners, which in turn, help in making learning a more direct, useful and joyful.' Therefore the integration of ICT in teaching and learning is more advantageous and increases students' engagements.

3.0 METHODOLOGY

The study used mixed method of data analysis approach and descriptive survey design. The sample size selected are four government secondary schools in Mbeya city council. The schools were selected purposively, whereby the study selected two secondary schools which performs better in National form four examination and two secondary schools which their performance are not better compared to the other two schools selected. The purpose of the study was to assess the contribution of ICT in teaching and learning process in four selected secondary schools in Mbeya city council.

Data collection method included questionnaire to twenty teachers, and eighty students making a total of one hundred respondents. This means that five teachers and twenty students filled the questionnaires in each school. Another method of data collection was observation method where the researcher observed the application of ICT in the whole process of teaching and learning. The researcher was eager to observe the extent to which teachers and students are using ICT in the whole process of teaching and learning. Moreover, the researcher observed the availability of ICT equipment in the school and the competence of both teachers and students in the use of ICT in teaching and learning process. In addition, the study involved interview to respondents in order to get qualitative information necessary for more clarification.

4.0 FINDINGS, ANALYSIS AND DISCUSSIONS

4.1 Introduction

This chapter presents, analyzes and discusses the contribution of information and communication technology (ICT) on teaching and learning process, a case of selected secondary schools in Mbeya City Council. The presentation and discussion of the findings is guided by the three key study objectives, namely: To assess the contribution of ICT in teaching and learning process, to evaluate the extent to which teachers and students are using ICT tools in the whole process of teaching and learning process and to assess students' perception on using ICT tools in the whole process of teaching and learning.

4.2 Assessment of the contribution of ICT in Teaching and Learning Process

The first objective was to assess the contribution of ICT in teaching and learning process. Students from four selected schools were asked to fill the questionnaires and their responses were as indicated in tables below;

Students were asked on whether ICT influence the application of competence based curriculum (CBC) or not, and students' responses are as indicated in table 4.2.1

Table 4.2.1 Students' Responses on whether ICT influence the use of CBC

Question	Responses	Frequency	Percentage%
Does ICT influence the use of CBC?	Yes	70	88
	No	10	12
	Total	80	100

Source: Field Work, June, 2025

Table 4.2.1 indicates that the majority (88%) of students agree that ICT influence the use of CBC in teaching and learning process. While 12% did not agree that ICT influence the use of CBC in teaching and learning process.

Students through interview explained that application of Competence Based Curriculum (CBC) is easy by integrating ICT in teaching and learning process. Students explained that they can search materials online including graphics and different practical processes and they can present on their own in front of others.

Teachers were also asked on whether ICT influence the use of CBC. The responses of teachers are as indicated in table 4.2.2

Table 4.2.2 Teachers' Responses on whether ICT influence the use of CBC

Question	Responses	Frequency	Percentage%
Does ICT influence the use of CBC?	Yes	18	90
	No	02	10
	Total	20	100

Source: Field Work, June, 2025

Table 4.2.2 indicates that the majority of teachers (90%) said that ICT influence the use of CBC. While 10% of the teachers said NO, ICT does not influence the use of CBC.

Teachers through interview argued that it is simple to apply CBC by integrating ICT in teaching and learning process. Students can be asked to search online materials on relevant topics, then study and present what they have searched, then

*Corresponding Author: Salome Mapigano

discuss the presentation with their teacher. Gebremedhin & Fenta (2015 p. 115) have written 'The animations, software packages to teach various subjects create virtual realities and experience for learners. Which in turn help in making learning a more direct, useful and joyful.'

One male teacher in an interview argued;

> *'I usually give my students tasks of searching materials online study them and come to present during my lesson. Sometimes I use the projector when teaching showing different procedures and diagrams and ask the students to explain what they have understood. I usually make sure every student understand the lesson, if I see that some have not understood I give them tasks to discuss with others by the application of ICT'(10th May, 2025 at 10:40am)*

Moreover, teachers asserted that the application of ICT has minimized the problem of inadequate books and other learning materials. This is due to the fact that before the wide use of ICT only hardcopies existed which were very difficult to keep without being lost.

Students were asked on whether ICT improve students' motivation. Students' responses are as indicated in Table 4.2.3

Table 4.2.3 Students' Responses on whether ICT improve students' motivation

Question	Responses	Frequency	Percentage%
Does ICT improve students' motivation?	Yes	50	63
	No	30	37
	Total	80	100

Source: Field Work, June, 2025

Table 4.2.3 indicates that 63% of the students said that ICT improve students' motivation. While 37% said that ICT does not improve students' motivation.

In an interview with one female student, who complained;

> *There is no way I can say that ICT improve students' motivation since students' access to ICT tools like computers, tablets, smartphones, and internet are limited. There is no commitment of teaching and learning ICT lessons to make sure that students are competent enough in the application of ICT tools' (19th May, 2025 at 02:40pm)*

Another female student said ICT improve students' motivation arguing;

> *'Through accessing online materials students learn many things in advance making them understand the lesson easily and being aware of different topics in advance. Moreover, on channels like YouTube students get access in classes which make them motivated more in learning compared to when students depend only in their teachers' (14th may, 2025 at 10:50am)*

Teachers were asked on whether ICT improves students' motivation, teachers responses were as indicated in table 4.2.4

Table 4.2.4 Teachers' Responses on whether ICT improve students' motivation

Question	Responses	Frequency	Percentage%
Does ICT improve students' motivation?	Yes	14	70
	No	06	30
	Total	20	100

Source: Field Work, June, 2025

Table 4.2.4 indicates that 70% of teachers agreed that ICT improves students' motivation while 30% disagreed that ICT improve students' motivation.

Findings through interview to teachers, most of teachers said that students are more motivated learning by integrating ICT compared to when they do not integrate ICT when learning. One among the teachers in an interview argued;

> *'Students have high concentration when teachers uses projectors when teaching, or any other ICT equipment compared to when they do not integrate ICT in teaching and learning. Every student becomes busy following steps or explanations from other devices, it is like they are justifying what is written in the books' (male teacher 12th May, 2025 at 12:10pm)*

Thus, the integration of ICT according to the study improves students motivation compared to when teaching and learning do not involve integration of ICT. The study concur with the findings of Gebremedhin & Fenta (2015) who revealed that the integration of ICT in teaching and learning improves students' motivation increasing students' engagement into studies.

Students were asked on whether ICT develop critical thinking or not, through questionnaire students' responses are as indicated in table 4.2.5

Table 4.2.5 Students' Responses on whether ICT develop critical thinking

Question	Responses	Frequency	Percentage%
Does ICT develop critical thinking?	Yes	60	75
	No	20	25
	Total	80	100

Source: Field Work, June, 2025

Table 4.2.5 indicates that 75% of the students agree that ICT develops critical thinking while 25% of the students did not agree that ICT develop critical thinking.
One female student in an interview argued that;

> *'Students when integrating ICT in their learning process their reasoning skills and problem solving skills become more active. When there is no integration of ICT in teaching and learning process*

*Corresponding Author: Salome Mapigano

most of the students act as tabula rasa they depend only to what their teachers teaches them' (17th May, 2025 at 1:20pm)

Teachers were also asked on whether ICT develop critical thinking, their responses are as indicated in table 4.2.6

Table 4.2.6 Teachers' Responses on whether ICT develops critical thinking

Question	Responses	Frequency	Percentage%
Does ICT develop critical thinking?	Yes	16	80
	No	04	20
	Total	20	100

Source: Field Work, June, 2025

Table 4.2.6 indicates that 80% of the teachers asserted that ICT develop critical thinking while 20% of the teachers indicated that ICT does not develop critical thinking.

In an interview with teachers, most of the teachers agreed that ICT develop students' critical thinking arguing that most of the students depends on teachers notes when teachers do not integrate ICT in teaching and learning process. They further argued that the act of not applying ICT discourages the development of critical thinking to students but when teachers integrate ICT in teaching and learning process students becomes more active, and more curious encouraging the development of students' critical thinking.

Gebremedhin & Fenta (2015 p. 115) argue that 'it is said, I see I remember, I do I understand.' This implies that, by seeing it is easy for learners to remember and through learning by doing, learners become more critical and understand the lessons much better compared to when they learn without the integration of ICT. Moreover, Parveen & Yousuf (2024) add that the integration of ICT influence teachers to become more facilitators giving room for learners to participate fully in the whole process of teaching and learning.

Interview with the students revealed that, the schools which have greatly invested in ICT infrastructure have great academic performance compared to the schools which have invested poorly in ICT. The schools which teach computer as a subject thoroughly well and have great number of computers, internet services, great opportunities for their students in accessing ICT tools and services including access to online materials, ICT graphics and images, e-learning etc. performs well academically. The results concur with the findings because the integration of ICT makes possible the implementation of competence based curriculum and increases students' motivation.

Students through questionnaire were asked to fill and answer on whether ICT influence collaboration among students or not, their responses are indicated in Table 4.2.7

Table 4.2.7 Students' Responses on whether ICT influence collaboration among students

Question	Responses	Frequency	Percentage%
Does ICT influence collaboration among students?	Yes	65	81
	No	15	19
	Total	80	100

Source: Field Work, June, 2025

Table 4.2.7 indicates that 65 (81%) of students said ICT influence collaboration among the students while 15 (19%) students said ICT do not influence collaboration among students.

Through interview students explained that it is easy for them to cooperate while searching materials and then discuss the results/answers compared to when they do not integrate ICT in their studying process. One of the students said,

'We usually collaborate when searching materials on the ICT devices like computers, tablets, and smartphones then we discuss together the findings, and if some of us have not understood the answers anyone among us can make clarification.'(Male student 13th May, 2025 at 10:45 am)

Teachers were also asked on whether ICT influence students collaboration, their responses are as indicated in Table 4.2.8

Table 4.2.8 Teachers' Responses on whether ICT influence collaboration among students

Question	Responses	Frequency	Percentage%
Does ICT influence collaboration among students?	Yes	19	95
	No	01	05
	Total	20	100

Source: Field Work, June, 2025

Table 4.2.8 indicates that majority of the teachers 19 (95%) said ICT influence students' collaboration while one teacher (05%) said ICT does not influence students' collaboration.

Teachers on an interview asserted that the integration of ICT when teaching and learning influence collaboration among the students. One female teacher in an interview argued;

'Students like much applying ICT when learning and they usually cooperate together to search materials and find answers. You can give them the topic in advance, they can cooperate searching relevant materials and present the topic making easy learning and teaching process. The weakness is that, they need great supervision because they can start doing other things instead of studying.'(Female teacher, 14th May, 2025 at 12:30pm)

*Corresponding Author: Salome Mapigano

Therefore, the study has revealed that the application of ICT in teaching and learning process is very important as it improves students' motivation, develop students' critical thinking, and maintains the teacher's role as a facilitator. Moreover, the use of ICT influence the use of CBC, and influence collaboration among students.

4.3 The extent of Teachers and Students in using ICT in Teaching and learning Process

The second objective was to evaluate the extent to which teachers and students are using ICT tools in the whole process of teaching and learning.

Students through a questionnaire were asked whether they apply ICT in their learning process. Students' responses are as indicted in Table 4.3.1

Table 4.3.1 Students' Responses on the application of ICT in Teaching and Learning Process

Question	Responses	Frequency	Percentage%
Do you apply ICT in Teaching and Learning Process?	Yes	65	81
	No	15	19
	Total	80	100

Source: Field Work, June, 2025

Table 4.3.1 indicates that 65 (81%) of the students are applying ICT in their learning process while 15 (19%) are not applying ICT in their learning process.

During interview students explained that they are applying ICT during their learning process. Nevertheless, most of them have argued that they only use mobile phones at home to search answers of homework provided by teachers. Few students said in their school they get access to computers and internets during Information and computer studies (ICS) lessons, therefore they use the time to learn some lessons and search online materials.

Furthermore, after an interview with the students, it has been revealed that, among the four schools selected only two schools have got computer lessons and students get access to computer room at school during option lessons. The rest schools, students access computers rarely only when the students asks the teacher who is responsible for ICT supervision and only when he/she agrees is when they get access to the computer rooms.

Teachers were asked the extent to which they are using ICT in teaching and learning process. Teachers' responses are as indicated in table 4.3.2

Table 4.3.2 Teachers' Responses on the application of ICT in Teaching and Learning Process

Question	Responses	Frequency	Percentage%
Do you apply ICT in Teaching and Learning Process?	Yes	15	75
	No	05	25
	Total	20	100

Source: Field Work, June, 2025

Table 4.2.2 indicates that 75% of teachers are applying ICT in teaching and Learning Process while 25% do not apply ICT in teaching and learning process.

Teachers through interview have argued that sometimes they fail to apply ICT due to lack of internet services around the school and buying internet through their mobile phones is very expensive, hence sometimes they fail to access internet services.

Some teachers said they do not have skills on how to use some ICT equipment such as computers, and projectors leading to failure to apply ICT in their teaching and learning process. Most of teachers said that the only ICT tool used by many teachers and students are smartphones and tablets.

One female teacher during interview argued

> '*I like to integrate ICT in my teaching and learning process but the problem is that I do not have skills on how to search materials online and on how to use some of the ICT equipment such as computers, projectors, smartphones, and tablets.' (Field study, 15th may, 2025 at 11.00 am)*

Another female teacher added;

> '*Most of us aged teachers we do not know how to apply ICT in teaching and learning since during our studies at college we did not had ICT subject and we did not learn how to integrate ICT in teaching and learning process. Therefore only few aged teachers particularly who have interest on ICT can apply ICT in their teaching and learning process. However, young teachers are very competent in ICT technology and to them applying ICT in teaching and learning is not a problem.' (Field study, 20th May, 2025 at 11:00 am)*

According to respondents' responses, it needs seminars, classes and workshops to teachers in order to make sure all teachers can master the integration of ICT in teaching and learning process. Teachers need to know how to use different computer programme such as PowerPoint, Microsoft word, Microsoft excel, and how to apply projectors during different presentations and during teaching. This is due to the fact that they do not only improve students' performance but also they simplify teachers work of teaching, preparing lessons plans, schemes of work, and preparation of students' reports.

Therefore, there are some teachers who do not apply ICT in their teaching and learning process because they do not have knowledge on how to use them, but some of them lack ICT equipment including internet services, interactive white boards, and projectors.

*Corresponding Author: Salome Mapigano

4.4 Students Perception on Using ICT Tools in the whole Process of Learning

The third objective of the study was to assess students' perception on using ICT tools in the whole process of teaching and learning.

The study found that most of students perceive positive the uses of ICT in teaching and learning process, they are motivated when using ICT tools in their lesson, helps them improve in their academic performance. ICT makes the subject or lesson engaged, interesting, provide easy access to information and resources, improving their understanding of the difficult concepts, develop critical thinking and facilitate collaboration among students. However, there are challenges facing students in ICT use as indicated in table 4.4.1

Table 4.4.1 Students' responses on challenges facing Students in the use of ICT in teaching and learning process

	Students Responses	
Challenges	**Frequency**	**Percentage %**
Poverty	40	50
Source of bad behaviour	10	12.5
Lack of enough expertise	10	12.5
Inadequate ICT equipment	20	25
TOTAL	80	100

Source: Field Data, June, 2025

Table 4.4.1 indicated that, 40% said poverty is seen as the big obstacle to the students in using ICT, 10% said ICT is source of bad behaviour, 10% said the application of ICT in learning is hindered by lack of expertise while 20% said inadequate of ICT equipment especially computers and internet at school is a challenge to the students.

Many students failed to use ICT because of the family financial problem. One sampled student in an interview had this to tell:

> *"it is impossible for my family to give me money to buy voucher for internet while there is no food at home, I use to borrow smart phones from my friends whenever I need to search some of the school materials" Many students fail to use ICT because may be they lack experience of using it or they lack funds to buy smart phones, laptops and vouchers or to go to the internet services. (Students, May 18th 2025 at 2:00pm).*

The study also through interview found that, when students visit to the internet the kind of materials they search and website they search have no educational value to the students learning. Students are interested to watch pornographic movies, listening music, playing games, charting to their friends, and following life of different celebrities. Students are interested on using internet but the kinds of materials they search are not of academic importance. Student's interest is to be exposed to luxury things like music especially western style, watching movies made in the developed countries.

Furthermore, the study has revealed that students need to get instruction on how to use ICT, the good mastery of Information Communication Technology is essential to students so as they can be able to access different materials. Moreover, application for jobs and application for high learning institution studies need ICT knowledge because most of the process take place online. For example, Tanzania University Commission (TCU) requires students who are seeking admission for high learning to apply through filling the special form in the internet. Hence this requires students to have skills of using ICT so as to accommodate the learning easily.

During an interview with the students, most of the students mentioned lack of projectors to their teachers as one of the hindering challenge in the application of ICT in teaching and learning process. Students have explained that most of school do not have projectors, hence teachers fail to apply ICT in their teaching process. Other ICT tools mentioned which are missing in these schools are routers, and blowers. Besides, some of the students have complained that they lack competent teachers for teaching computer as a subject and as an in charge of all ICT programme.

The study through interview has revealed that, schools which have access to ICT have been using it for official purpose like printing school examinations, writing official letters and communicating with the Ministry of Education and vocational training in various levels and to some schools for teaching and learning in the classroom. Most of schools' ICT tools are found in few offices like Headmaster's office, secretary's office while it is rarely to find it in teachers' offices or in the staff room. The inadequate of ICT infrastructure and competent personnel in schools are major constraints to the application of ICT in teaching and learning process.

The findings concurs with the study of Mroso & Ndibalema (2024) who have asserted that the application of ICT is being limited by poor ICT infrastructure, insufficient teachers training, unclear ICT policies and teachers readiness in integrating ICT in teaching and learning in secondary schools. The findings correlates with the study findings where respondents on an interview have complained on poor internet connectivity, and teachers lack knowledge and skills on how to apply ICT hardware to perform different programs.

Moreover, the study by Ahmed *et al* (2021) concur with the findings, whereby they have asserted that lack of access to ICT, insufficient power supply, lack of training, inadequate infrastructures and inadequate of well trained personnel are among the factors which hinder teachers and students integration of ICT in teaching and learning process.

Lastly, the researcher observed that, among the schools involved in the study the two schools with better academic performance are well equipped with ICT tools and have much integration of ICT in teaching and learning compared to the

*Corresponding Author: Salome Mapigano

two schools whose academic performance are not better. Therefore, the integration of ICT in teaching and learning process influence better academic performance.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

From the findings, it was concluded that, the uses of ICT in teaching and learning enhancing students' engagement in the classrooms, increase students' motivation, influence the use of competence based curriculum, facilitate student's collaboration, decrease students' dependence to teachers, and increase students' understanding of the complex topics. ICT enhances better academic performance as well as enables students to impinge into digital world, the world where digital literacy is a crucial asset. The ministry of education need to make sure that all teachers are able to use ICT in teaching through conducting ICT seminars and workshops, students should get ICT lessons to make sure are competent in the application of ICT tools and get access to online materials. Moreover, there should be great supervision and counselling to students by both teachers and parents/guardians to make sure that students use ICT in learning instead of accessing ICT to engage to non-educational programme.

5.2 Recommendations

It is recommended that:

i. The government should set aside enough funds for ICT infrastructure to enable the teachers to work comfortable and the students to apply ICT well. By improving ICT environment for meeting the demands of students of using ICT regularly, could enable the understanding of the lesson for better academic improvement. ICT infrastructures must be improved to enable both teachers and students to integrate lesson with ICT for better academic performance and better engagement to the digital world.

ii. The government should organize training, seminars or workshops for teachers to perform their functions (teaching) effectively. Some of the teachers do not apply ICT in their teaching process due to lack of expertise in ICT. Therefore, by organizing seminars, trainings and workshops every individual will have skills on how to integrate ICT during teaching, and in the whole process of preparing lessons. Furthermore, the students too will have many competent teachers who will teach them how to apply ICT in the whole process of learning. These include how to search materials online, how to access to different learning platforms, and to be competent in computer subject.

iii. The government should employ experts of ICT in schools so as to improve teaching and learning activities for better students' academic performance and to promote effective implementation of curriculum by using ICT and ensure education is well programmed. ICT experts will be the overall in charges of making sure that in each secondary school computer subjects are taught thoroughly well and teachers and students apply ICT in the whole process of teaching and learning.

iv. Teachers should be trained on the changes of curriculum so that they can implement the competence-based curriculum effectively and competence lesson plan during teaching and learning process. With the implementation of competent based curriculum and the integration of ICT in teaching process, students will be competent enough in the labour market and in this digital world.

v. The school administration should make sure that there is availability of internet service in the school to enable access to teaching and learning materials. This is due to the fact that most of the respondents in the interview have complained much on lack of internet service and slow internet as the most hindering challenge to the application of ICT in the teaching and learning process.

vi. Higher learning institutions should make sure that ICT is a compulsory course for all the students in order to make sure that when they finish their studies they can apply ICT in their daily activities. Besides, in teaching colleges there must be the integration of ICT in every subject to make teachers very competent in integrating ICT in their teaching and learning process.

vii. The teaching of ICT must be more practical than theory where the students will be able to practice on how to apply all the ICT tools rather being listening to the teachers. Moreover, the lessons must be much more interactive to make sure that all the students are participating and understand the lessons.

6.0 REFERENCES

1. Ahmed, M. A. Datti, A. A. & Abdulkadir. Z. Y. (2021). Assessment of the use of information and
2. Communication Technology (ICT) for teaching and learning in Arabic secondary schools case study, Kano state, Nigeria. *Dutse Journal of Pure and Applied Sciences. 7(3a), 137-145.*
3. Bada, S. O. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research and Method in Education. 5(6), 66-70*
4. Chand, S. P. (2024). Constructivism in education: Exploring the contribution of Piaget, Vygotsky, and Bruner. *International Journal of Science and Research. 12(7), 274-278*
5. Dei, D. J. (2018). Assessing the use of information and communication technology in teaching and learning in secondary schools. *Library Philosophy and Practice (e-journal). 2003. http://digitalcommons. Unl. Edu /libphip rac/2003*
6. Ghavifekr, S. & Rosdy, W. A. M. (2015). Teaching and learning with technology; effectiveness of ICT

*Corresponding Author: Salome Mapigano

integration in schools. *International Journal of Research in Education and Science (IJRES), 1(2), 175-191*

7. Gebremedhin, M. A. & Fenta, A. A. (2015). Assessing Teachers' Perceptions on Integrating ICT in Teaching Learning Process. The case of Adwa College. *Journal of Education and Practice. 6(4), 114-125*
8. Khan, T. Parveen, Q. & Yousuf, M. I. (2024). Evaluation of ICT use teaching learning process at secondary level. *Global Regional Review. 7(2), 276-282. https:// doi. Org/10.31703.grr.2022 (VII-II). 26.*
9. Kiwonde, F. M. (2018). Effectiveness of ICT teachers' training programmes in enhancing teaching and learning of environmental education in selected primary schools in Musoma District (Phd Thesis). The Open University of Tanzania.
10. Kiwonde, F. M. (2024). The use of ICT in Tanzanian secondary schools; experienced obstacles in teaching and learning process. *Journal of issues and practices in education. 16(1), 59-75.*
11. Lubuva, E. E. Ndibalema, P. & Mbwambo, E. (2022). Assessment of tutors' level of ICT competences in teaching in teachers' education in Tanzania. *Journal of Learning for Development.*
12. Senzige, J. & Strokes, K. (2012). *An Approach to 1CT Based School Education in Tanzania.* University of Dar es Salaam.
13. Mafang'ha, M. (2016). Teachers' experience on the use of ICT to facilitate teaching. A case of Ilala Secondary schools. (Master's Dissertation). Open University of Tanzania. University of Dar es Salaam.
14. Mroso, V. & Ndibalema, P. (2024). Teachers Perceptions on the role and challenges of using ICT in English language classrooms. *International Journal of Technology in Education and Science (IJTES) 8(1), 121-137. https://doi. Org/10.46328/ijtes.527*
15. Ngeze, L. (2017). ICT Integration in Teaching and Learning in Secondary schools in Tanzania. Readiness and way forward. *International Journal of Information and Education Technology. 7(6), 424-427.*
16. Ningsih, A. W. Sihombing, P.S. Silalahi, D.E. & Purba, L. (2021). Students' perception towards the use of ICT in EFL Learning at Eleventh Grade SMA Negeri 1 Dolok Batu Nanggar. *Educational and Human Development Journal. 6(2), 24-36*
17. Onyango, Y. J. M. & Odhiambo, O. S. (2015). Examining availability of ICT tools for use in enhancing teaching and learning in secondary schools in Rachuonyo South Sub- County, Homa-Bay County, Kenya. *Journal of Social Science Research 7(2), 1325-1331*
18. URT (2008). The Development of Education. National Report of United Republic of Tanzania. Ministry of Education and Vocational Training Mainland and Ministry of Education and Training Zanzibar.

*Corresponding Author: Salome Mapigano