E-Learning Training as a Strategy for Teachers' Professional Development in Tanzania: A Study of Selected Primary Schools in Musoma District

ABSTRACT

Aims: The aim of this study was to find out the e-learning training and its contribution towards professional development of teachers. Teachers as key agents towards Sustainable Development Goals are required to be trained in order to acquire ICT skills to cement sustainable development in developing countries.
Study Design: The study used descriptive research design because of its flexibility in the methods of data collection and analysis. The design was used within the framework of mixed methods approach
Place and Duration of Study: The study was conducted in Musoma district in which data were collected between July 2022 and December, 2022.
Methodology: The study used both qualitative and quantitative research approaches with the sample of 54 teachers' respondents from eighteen sampled primary schools selected in each ward of Musoma District. Data collection was conducted through interview guides and questionnaires.
Findings: The study found out that the conducted e-learning training programmes were useful as they provided skills and knowledge to the teachers that assured flexibility in teaching and learning process. In addition, the training contributed to the teachers' professional competence as they assisted teachers towards new pedagogical model where there is a shift from teacher-centred approach towards learner-centred approach. In addition, teachers suggested a need to develop new curricula designed for an e-learning setting, availability of ICT teaching facilities in schools and frequent follow-ups and assessment after training in order to improve teaching and learning process.
Conclusion: The study concludes that e-learning training programmes positively assist towards teachers' professional development as well as improving their knowledge and skills that facilitate the quality teaching and learning process.

Keywords: E-Learning, Pedagogy, Teachers' Training, Sustainable Development Goals (SDGs)

1. INTRODUCTION

Sustainable Development Goals (SDGs) are crucial in education as they enhance sustainable education as well as global sustainable targets to develop the economy of the society [1]. Given the central importance that education has in any society, teachers are expected to be competent in the subject matter of their related fields for the better implementation of SDGs. The teacher is the one in charge of facilitating students to learn and benefit or suffer from the quality of his teaching. Recently e-learning has changed ways of teaching in schools and in other educational institutions. Therefore, teachers' professional training and professional development is a necessary ingredient to support innovative and quality teaching [2]. Since teachers are considered to be the core of any living society, without proper knowledge of Information and Communication Technology (ICT) teachers cannot perform well in the teaching and learning process in the 21st Century. Currently, knowledge and information can be accessed through radio, TV, internet and social media such as Facebook, Twitter, Whatsapp, Linkedinn, Google scholar to mention a few.

Due to immense potential of e-learning, the Ministry of Education and Vocational Training (MoEVT) adopted several e-learning training programmes aiming to prepare teachers to integrate e-learning effectively across the curriculum [3]. In 2009, Global eSchools and Communities Initiative (GESCI) developed the framework for ICT use in teacher professional development in Tanzania that would integrate ICT into the teacher education system using the existing ICT infrastructure at Government Teacher Training Colleges. The framework outlines the visions, goals, resource requirements, and expected outcomes for ICT integration in teacher training and development, while focusing on policy,

curriculum content, pedagogy, ICT infrastructure, organization and management, and teacher professional development [4]. Various studies have shown that ICT can contribute to this conversation and have great potential for transforming the teacher education process and changing the ways teachers access knowledge, information, and curriculum [5,6,7]. However, given the scarcity of studies in the area of e-learning teachers' training, the current study aims to contribute by finding out the e-learning training and its contribution towards teachers' professional competence.

1.1 Statement of the Problem

According to Awouters [8] there are three dimensions of the teachers' ICT-competencies: ICT awareness, ICT readiness, and ICT drill and practice. Teachers need to have knowledge of pedagogy that is applicable to the specific content; knowledge of how subject matter is transformed by the application of technology and knowledge of how technology can support pedagogical goals [9]. Therefore, e-learning training programmes have to be introduced, mentored and evaluated, on a regular basis, by experts in the field for sound professional development.

Tanzania has consistently demonstrated a commitment to improving education over the past 25 years. In making progress, it has bolted ahead in access and new facilities, leaving an issue with teacher training that begs for a solution. The potential of ICT as a tool for improving education was recognised in Tanzania whereas MoEVT developed ICT policy for Basic Education in 2027 with the main aim of improving the quality of pre-service and in-service teachers' education by using ICT [3]. The Tanzania Vision 2025, recognizes the role of education as a strategic change agent for transformation of the economy to a knowledge economy, and identifies the potential of ICT to address most of the development challenges including those presented by education. The National ICT Policy recognizes that ICT can enhance education opportunities and advocates for the introduction of an education system [10]. An important development came in 2005 through the partnership of MoEVT and the Swedish International Development and Cooperation Agency (SIDA). Under this partnership, teacher training colleges were equipped with computers and internet connectivity, with a further goal to equip schools with ICT through the eSchools program. For the MDG, Tanzania Development Vision 2025, and National Strategy for Growth and Reduction of Poverty goals to have the effect intended, teacher training must be an emphasis of national governments and international initiatives. The aim of this study is therefore to investigate the effectiveness of the e-learning training programmes to enhance teachers' professional development in order to improve teaching and learning process in primary schools.

1.2 Objectives of the Study

The purpose of this study is to investigate the effectiveness of e-learning training programmes in enhancing teachers' professional competence towards improving e-learning in primary schools.

The following are the specific objectives of the study

I) To identify the in-service and pre-service e-learning training that teachers have undergone

II)To examine the effectiveness of the e-learning training in enhancing the teaching and learning process.

III)To find out how teachers integrate ICT in the teaching and learning process in the classroom situation

1.3 Summary of Reviewed Literature

Education is at the heart of the global development agenda. The SDG4 targets for quality education for all in order to improve education through greater access and equity for all learners as well as improved learning process and expanded number of qualified teachers [11]. In Tanzania, the national government has made an effort to develop the framework for ICT use in teacher development that outlines the goals and resource requirements for ICT integration in teacher training and development. To implement this framework, Tanzania rolled out the Teacher Development for 21st Century (TDev21) pilot program January to June 2011. The pilot project was under ASANTE Africa with the aim of initiating e-learning teacher training that identifies best practices for using ICTs in order to improve the country's education system [12]. The current project that is being implemented in Tanzania is the Tanzania Beyond Tomorrow (TBT) new program under the MoEVT that will define an e-Education Program for Basic Education for 2011-2020. The program is expected to improve access, equity, and quality in the delivery of basic education through integration and harmonization of ICT in teaching and learning process. Specifically, TBT will enhance the use of appropriate ICT in education, provide and improve ICT infrastructure to support teaching and learning, develop guidelines for e-education programmes, and enhance ICT research and development [4] among other tasks.

E-learning is integrated in real-life, so it also has to be implemented in primary education schools which is considered the basic education with the right of access to every citizen [13]. The learner - centred theory is considered in this study since the main task in achieving sustainable education for all by 2030 has been converting the education system into more learner-centred environment [14]. The education institutions are experiencing essential changes that have been derived from sustainable and technological trends towards digitization. It is envisaged that technology as well as sustainable education will enable learners to be more decisive planners and thinkers [15].

There is a great literature on the subject, yet most research to date focuses on how teachers can and should be trained in the use of ICTs, versus how ICTs can be used to deliver and enhance quality teaching and learning process. Without a solid understanding of ICTs, any teacher training solutions delivered by them become ineffective because teachers will not have the skills to properly implement them. In a Tanzanian environment increasingly interested in ICT training, the time has come to explore how ICTs can be used to facilitate teaching and learning process Ghavifekr et al. [16] as a vital contribution towards SDGs. The study therefore filled the gap by discussing the contribution of e-learning training programmes towards teachers' professional development as a way of improving e-learning in primary schools.

2. METHODOLOGY

This study employed both qualitative and quantitative research approaches. Qualitative research is the type of research which uses natural settings to explore the people's experiences and report by narrating the process of the phenomenon [17,18]. This study adopted the descriptive research design because of its flexibility in the methods of data collection and analysis. Cooper & Schidler [19] commented that descriptive surveys are good and economical than any other design. Quantitative research approach was employed in descriptive data analysis where frequencies, percentages, tables and graphs were used for statistical clarifications. An integrated approach has been selected because it is believed that a study that contains only qualitative data will miss the rich texture of interpretation that an integrated approach makes possible.

2.1 Area of Study, Target Population and Sampling Techniques

Musoma district was selected as an area of study because the district is enriched with numerous teachers who have attended e-learning training. The training was facilitated by Tanzania Education Authority (TEA). In this study, eighteen (18) primary schools were selected in each ward of Musoma District. The aim was to cover at least one school in each ward. However, in two wards with more schools as compared to other wards, two schools were selected. The target population in this study included primary school teachers from Musoma district. The sample included 54 teachers (3 teachers from each of the 18 sampled schools). In order to obtain a sample size, purposive sampling techniques were utilized whereas teachers who attended any of the e-learning training were purposively selected. In addition, the schools with ICT labs supported by Tanzania Education Authority (TEA) programme were also considered.

2.2 Data Collection Instruments

The techniques used in this study included structured questionnaires as well as interviews guides for teachers. The structured questionnaires were administered first followed by interviews. Triangulation was used because there is a contention that if two or more different data collection instruments are used, then the validity of the research results is not only increased but also assured [20]. Pilot study was conducted in one of the primary schools in Musoma district to ascertain the reliability of the instrument.

2.3 Data Analysis

The data obtained in this study was scored, coded and analysed to include frequencies of responses, percentages and wherever necessary tabulation and graphics were employed for easy interpretation and analysis. The information from structured questionnaires were subjected to Statistical Package for the Social Sciences (SPSS). SPSS Statistics is a software package used for statistical data analysis hence suitable for this study. The researcher was aware of ethical considerations which was taken into account by involving the informed consent of the respondents, assurance of anonymity, individuals' freedom to decline from participation, the assurance of maximum confidentiality and protection from physical and mental discomfort, and on what should be disclosed out of the collected data.

3. FINDINGS AND DISCUSSION

The first part of this section presents the background information of the respondents and the second part presents the findings based on the specific objectives of the study.

3.1 Demographic Information of the Respondents

The researcher asked the respondents to respond on their personal information including gender, age, and teaching experience. Table 1 indicates the demographic information of the respondents.

Table 1. Demographic Information of the Respondents (Teachers) (n=54)

Demographic	Category	Frequency	Percentages (%)
Gender	Male	18	33.3
	Female	36	66.7
	Total	54	100
Age	18-30 years	12	22.2
	31-40 years	32	59.3
	41-50	10	18.5
	51 years and above	-	-
	Total	54	100
Teaching experience	< 3 years	-	-
	Between 3-5 years	22	40.7
	More than 5years	32	59.3
	Total	54	100

Source: Field Data, 2022

Table 1 indicates various attributes such as gender, age, and teaching experience of the respondents. The gender attribute assisted the researcher to understand the gender distribution in the selected sample. Findings indicated that 66.7% (36) of the respondents were females whereas 33.3% (18) were males. The findings imply that both males and females participated in the study although females were more than males. The participation of both males and females reveals that the study desired to see the outcome of e-learning in both genders.

Also, the respondents' age depicted numerous respondents to be in the age between 31-40 years with 59.3% (32) respondents followed by 18-30 years with 22.2% (12) respondents and 41-50 years with 18.5% (10) respondents. The findings imply that numerous respondents were in the working-age group of between 31-40 years. This age group of teachers also reveals that they can easily cope with the current technologies to be used in teaching and learning process as compared to an older group of age. Young teachers are becoming more accustomed to using ICT and may learn faster. Therefore, as most of the respondents who participated in this study were in the working-age group, the study is expected to get a relevant response from the respondents.

On the other hand, the findings indicate that 59.3% (32) of the respondents had more than five years of teaching experience 40.7% (22) of respondents claimed that they had 3-5 years of experience in teaching. The findings imply that majority of the teachers in a study had more than five years of experience in teaching. The experience of the teacher in teaching is very important in this study as it is easy for the experienced teachers to trace differences before and after commencement of the ICT in teaching and learning process. Experienced teachers can have much to talk about the effectiveness of ICT in their teaching activities.

3.2 In-service and Pre-service E-learning Training to Teachers

The first objective of the study sought to know whether there is in-service and pre-service e-learning training that teachers have undergone to ensure the use of e-learning in teaching and learning. Findings are indicated in Figure 1.

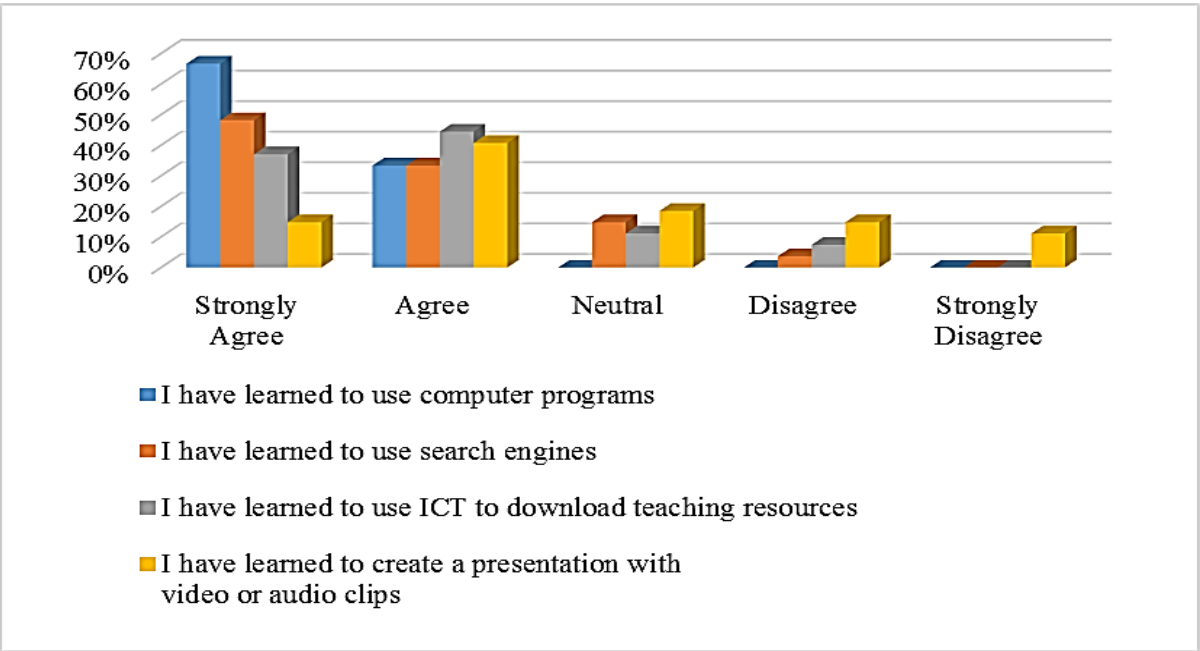

Figure 1: In-service and Pre-service E-learning Training
Source: Field Data, 2022

3.2.1 Uses of Computer Programmes

As indicated in figure 1, 66.7% (36) of the respondents strongly agreed whereas 33.3% (18) of the respondents agreed that they have learned to use computer programs in e-learning training. Based on the findings, majority of respondents in the research indicated that they have learned to use computer programmes in e-learning training. Teachers learned to use computer programs such as Microsoft word, excel, and PowerPoint, and some computer software to assist them in teaching. The data obtained implied that indeed ICT is a true instrument for promoting sustainable education in the study area as it has helped to improve the level of professional development to the teachers. The knowledge from the training also assisted teachers in the facilitation of access to information. The findings are similar to the study conducted by Major [21] about the role of ICT in enhancing quality assurance procedures in Nigerian universities and reported that ICT devices like computers and the internet are useful tools in ensuring basic quality assurance procedures if properly implemented. The data obtained from the field further imply that there is an increasing awareness among the teachers about the importance of ICT in promoting sustainable economic development.

3.2.2 Uses of Search Engines

As indicated in figure 1, 48.1% (26) of the respondents strongly agreed, 33.3% (18) respondents agreed, 14.8% (8) respondents neither agreed nor disagreed, and 3.7% (2) respondents disagreed that they have learned to use search engines in e-learning training. Based on the findings, majority of the respondents in the research indicated that they have learned to use search engines such as Google scholar, Mozilla Firefox, and Opera minute search engines to assist teachers to search for the necessary materials to assist them in teaching and learning process. The findings are similar to Bravo [22] who found that recently ICT has enhanced learning to greater heights.

3.2.3 Uses of ICT to Download Teaching Resources

As indicated in figure 1, 40.7% (22) of the respondents agreed, 29.6% (16) respondents strongly agreed, 18.5% (10) respondents disagreed, and 11.1% (6) respondents neither agreed nor disagreed that they have learned to use ICT to download teaching resources in e-learning training. Based on the findings, majority of the respondents in the research indicated that they have learned to use ICT to download teaching resources. The training contained some software skills, and internet skills that not only helped teachers to search materials, and study online but also to download teaching materials relevant to the study. The findings from this study are in line with the findings by Anyasi [23] who observed the powerful role of ICT in access to teaching resources as well as the contribution of ICT in sustainable economic development.

3.2.4 Uses of ICT to Create Presentations with Video or Audio Clips

As indicated in Figure 1, 40.7% (22) of the respondents agreed, 11.8% (10) respondents neither agreed nor disagreed, 14.8% (8) respondents agreed, 14.8% (8) respondents disagreed, and 11.1% (6) respondents strongly disagreed that they have learned to use ICT to create presentations with video or audio clips. Based on the findings, majority of the respondents in the research indicated that they have learned to use ICT to create a presentation with video or audio clips. Thus, the ICT training to create a presentation with video or audio, as well as teaching through televisions or radio helps to facilitate teaching in classrooms. Teachers use online educational videos for students, which help to improve students' ability to learn language skills such as reading, writing, listening, and speaking. It is good for students to watch videos and learn from it so that they gain the confidence they need when faced with contentious issues in class. However, the use of ICT facilities is to the minimal due to insufficient ICT facilities. The findings are similar to the findings of Abdelwahed [24] who found out that the use of ICT in primary schools is still shaky due to insufficient ICT facilities. However, in this study it was impressing finding out that some of the teachers were using their own initiatives to get radio, computers and televisions that were used to facilitate teaching and learning process.

3.3 Effectiveness of Training in Enhancing the use of e-Learning Facilities

The second objective of the study sought to know whether the training was effective in enhancing the use of e-learning facilities in the teaching and learning process. The findings are indicated in figure 2.

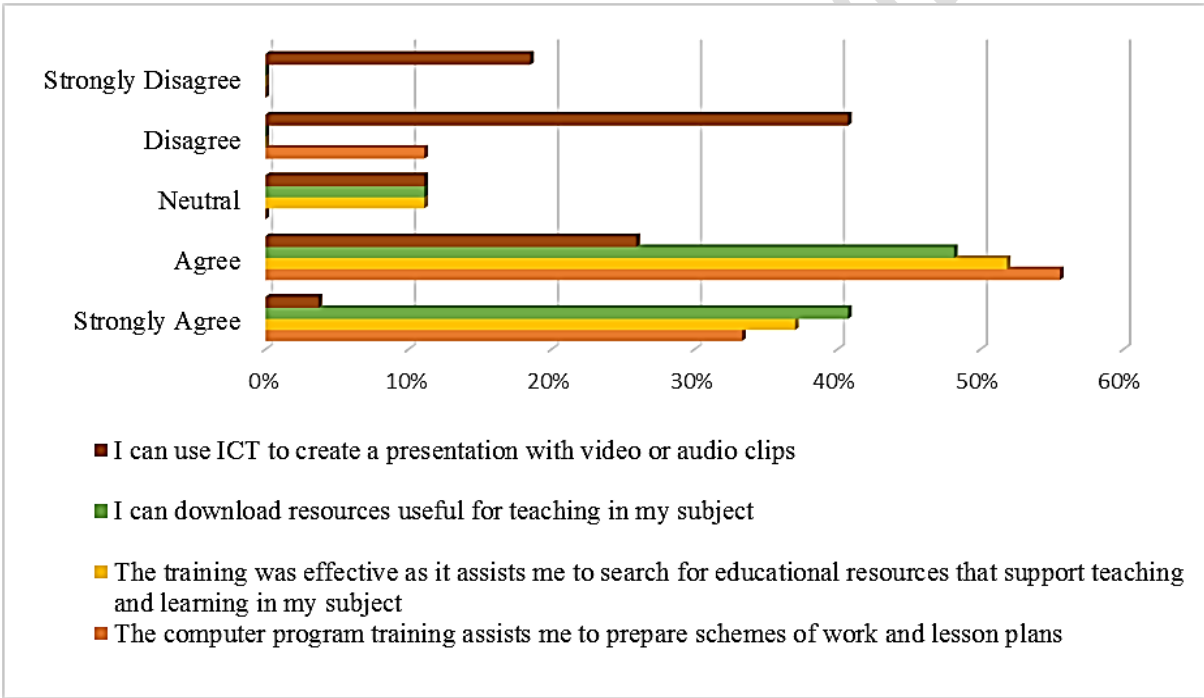

Figure 2: Effectiveness of Training in Enhancing the Use of E-learning Facilities
Source: Field Data, 2022

3.3.1 Effectiveness of Computer Program Training

As indicated in figure 3, 55.6% (30) of the respondents agreed, 33.3% (18) respondents strongly agreed, 11.1% (6) respondents disagreed that the computer program training assist them in preparation of their lessons for example the preparations of schemes of work and lesson plans. Based on the findings, majority of the respondents in the study indicated that the computer program training assists them to prepare schemes of work and lesson plans. These findings imply that majority of teachers after training acquired well computer programs such as Microsoft word, excel, and PowerPoint. ICT has been seen as a critical factor that expands access to education because, with it, education can occur at anytime and anywhere. It is argued that most education material is available online at any time [1].

3.3.2 Effectiveness of the Training to Enable Searching of Educational Resources

The study aimed to know whether the training was effective to assist teachers in searching educational resources that support teaching and learning in their subject. As indicated in figure 3, 51.9% (28) respondents agreed, 37% (20) respondents strongly agreed, 11.1% (6) respondents neither agreed nor disagreed that the training effectively assisted them to search for educational

resources that support teaching and learning in their subject. Based on the findings, majority of the respondents in the research indicated that the training was effective to assist them to search for educational resources that support teaching and learning in their subject. The training involved the use of search engines, therefore, majority of the respondents were trained to use search engines, such as Mozilla Firefox, google chromosome, and Opera mini. These search engines assist teachers to update their knowledge as well as finding materials to help them in their teaching process. It is also clear that we cannot achieve anything sustainable if we disconnect technology from learning, and this relates particularly to SDG 4 on quality education for all [1].

3.3.3 Effectiveness of the Training to Download Resources Useful for Teaching

The study aimed to know whether the training was effective to assist teachers who attended the training to download resources useful for teaching in their subjects. As indicated in figure 3, 48.1% (26) respondents agreed, 40.7% (22) respondents strongly agreed, 11.1% (6) respondents neither agreed nor disagreed that the training was effective to assist them to download resources useful for teaching in their subjects. Based on the findings, majority of the respondents in the research indicated that the training was effective to assist them to acquire knowledge on how to download resources useful for teaching in their subjects. Similarly, Bravo [21] found that technology-enhanced learning in educational institutions serves as a supportive education tool to propagate learners' knowledge and skills.

3.3.4 Effectiveness of the Training to Enable the Use of ICT to Create Presentations

The study aimed to know whether the training was effective to assist teachers to use ICT to create classrooms presentations with video or audio clips. As indicated in figure 3, 40.7% (22) respondents strongly disagreed, 25.9% (14) respondents agreed, 18.5% (10) respondents strongly disagreed, 11.1% (6) respondents neither agreed nor disagreed, and 3.7% (2) respondents strongly agreed that the training was effective to assist them to download resources useful for teaching in their subjects. The findings imply that majority of respondents in the research indicated that the training was not effective to assist them to use ICT to create presentations with video or audio clips. The findings revealed that even after the ICT training most of the primary school teachers are still not competent in creating presentations with video or audio clips. During the interview, teachers suggested that they needed more practice on how to create slides and make a presentation.

''…*The practice that we learned during the training was not satisfactory hence more practice is required in our schools in order to convey the ICT knowledge we obtained from the training in the teaching and learning process…. '' (Respondent no.9)*

It is good for teachers to use video or audio clips as a part of teaching because through videos and audio students can easily learn from them and gather the confidence needed when it comes to argumentative issues in the classroom where they can provide clear clarification and judgments on certain issues.

3.4 Teachers' ICT Integration in the Teaching and Learning Process to Enhance SDGs

The third objective of the study sought to know whether the ICT integration in the teaching and learning process has managed to enhance SDGs. Findings are indicated in Figure 3.

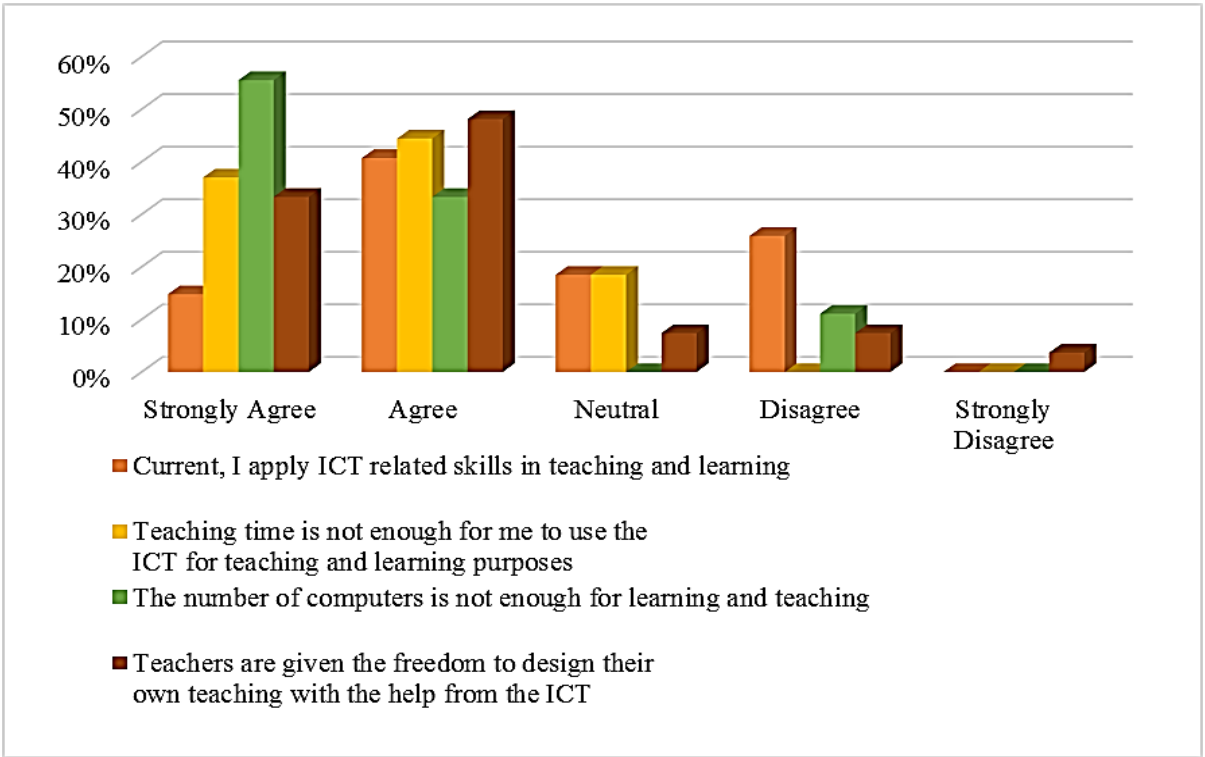

Figure 3: The Teachers' ICT Integration in the Teaching and Learning Process
Source: Field Data, 2022

3.4.1 Application of ICT Related Skills in Teaching and Learning Process

As indicated in figure 3, 40.7% (22) of the respondents agreed, 25.9% (14) respondents disagreed, 18.5% (10) respondents neither agreed nor disagreed, and 14.8% (8) respondents strongly agreed that they apply ICT related skills in teaching and learning process. Based on the findings, majority of the respondents in the research indicated that they apply ICT-related skills in the teaching and learning process to assist changes and transformation in society towards SDGs. These findings imply that to some extent there is an integration of ICT-related skills in the teaching and learning process, and this reveals the achievement of e-learning training in the schools that practice ICT skills. However, during the interview, teachers revealed that they don't use ICT facilities in the classroom due to insufficient facilities to integrate e-learning in the teaching and learning process. These findings also imply that majority of the primary school teachers after training are still relying on traditional methods of teaching. This is in line with the study done by Bravo [21] who found out that if students are taught using ICT, they can be agents of change and transformation in society to enhance SDGs.

3.4.2 Teaching Time for Teachers

The study aimed to know whether teaching time is enough for teachers to use the ICT for teaching and learning purposes. As indicated in figure 3, 44.4% (24) respondents agreed, 37% (20) respondents strongly agreed, 18.5% (10) respondents neither agreed nor disagreed that teaching time is not enough for them to use the ICT for teaching and learning purposes. Based on the findings, majority of the respondents in the study indicated that teaching time is not enough for them to prepare the ICT tools to be used in the teaching and learning process. The teachers' ICT integration in the teaching and learning process in the classroom is limited with the time factor, thus, the implementation of learned skills from the training are not well utilized because in most primary schools there is no special session to engage the teachers to prepare ICT skills for teaching and learning process. However, the recent ESD scan, conducted under the SST programme, reveals that teacher education needs to be more adequately aligned with the SDGs, and teachers need to be supported to understand and implement ESD. Furthermore, a general perception of ESD as an addition to what is already a heavy curriculum for teacher education is another challenge [11].

3.4.3 E-learning Facilities to Support Teaching and Learning Process

The study aimed to know whether the number of facilities such as computers is enough for the teaching and learning process. As indicated in figure 3, 55.6% (30) respondents strongly agreed, 33.4% (24) respondents agreed that the number of computers is not enough for learning and

teaching. Based on the findings, majority of the respondents in the study indicated that the number of computers is not enough to facilitate the teaching and learning process. Therefore, the teachers' ICT integration in the teaching and learning process in the classroom becomes difficult as some of the ICT training needs computers to be executed, for instance, a computer together with the availability of the internet assists teachers to search supporting materials in teaching and learning process. These findings show that in most of the primary schools there are insufficient e-learning facilities. ICT teaching and learning resources particularly computers, television, radio, newspapers to mention a few have to be available in schools to facilitate the teaching and learning process[1]. Therefore, ICT equipment and tools must be made available to achieve the 2030 vision education goals.

3.4.4 Teachers' Freedom to Design their Teaching with the Help of the ICT

The study aimed to know whether teachers are given the freedom to design their teaching resources with the help of ICT. As indicated in figure 3, 48.1% (26) respondents agreed, 33.3% (18) respondents strongly agreed, 7.4% (4) respondents neither agreed nor disagreed, and 7.4% (4) respondents disagreed, and 3.7% (2) respondents strongly disagreed that they are given the freedom to design their teaching with the help of the ICT. Based on the findings, majority of the respondents in the research indicated that they are given the freedom to design their teaching with the help of ICT. The findings imply that the freedom to design their teaching can assist them to apply the supporting materials they download with the help of search engines from the webs. Teachers should have the freedom to design themselves teaching materials and make full use of ICT, but they must remember that freedom must be consistent with the designed curriculum of the MoEVT. Therefore, it is envisaged that apart from effective e-learning training, there is a need to have pedagogical support, technical support, and support from the management so that teachers can design and develop their courses, deliver content and design the learners' activities using ICT resources.

4. CONCLUSION

The study examined the e-learning training programmes and its contribution towards teachers' professional development in Tanzania. The findings of the study have shown that e-learning is a valuable tool in education sector which need to consider technical as well as pedagogical training. Effective training of teachers will enhance sustainable development through SDG number 4 which focus on quality education for all. Introduction of ICT into the education system has helped to eliminate constraints and thereby enable application of scientific knowledge to meet the societal aspirations and goals. The study therefore concludes that e-learning training programmes to teachers are crucial for promoting sustainable education in Tanzania. It is believed that if properly harnessed and put into proper usage, a reasonable level of development would be achieved through ICT.

4. RECOMMENDATIONS

From the study, the following recommendations were made; e-learning should enhance pedagogical methods that are appropriate for a shift from teacher-centred approach towards learner-centred approach, there is a need to develop new curricula specifically designed for an e-learning setting, there should be frequent follow-ups, teacher interventions, and continuous assessments, after training as well as IT support to the teachers in order to improve teaching and learning process. The level of support available for teachers makes a difference where teachers generally are more motivated and committed when they feel supported by their schools. Schools can support teachers by providing technical support, training assistance, or just showing the commitment of the institutional leaders. The government is also urged to create an enabling environment in schools that will enhance teachers to integrate ICT in teaching and learning process.

REFERENCES

1. Jeremy W. The role of ICT in realizing sustainable education by 2030. Sustainable Development Goal. 2021; 3 (4): 27- 42.
2. Bouderssa N. The importance of teachers' training and professional development programs in the Algerian educational context:Towards informed and effective teaching practices. Experiences Pedagogiques. 2016; 1: 1-14.
3. MoEVT. ICT Policy for Basic Education. Dar Es Salaam: Tanzania; 2007.
4. Hooker M, Mwiyeria E, Verma A. E-Learning for teacher training in Tanzania policy players, models and recommendations for the ASANTE Africa. Foundation introduction to policy analysis. University of California: Berkeley spring; 2011.
5. UNESCO. Annual Report. UNESCO Institute for Education; 2002.

6. Unwin T. Towards a framework for the use of ICT in teacher training in Africa. Open learning. The Journal of Open Distance and E-Learning. 2005;20(2) 113-129.
7. Botha J. Peer aggression by secondary school learners in a South African school setting: Effects of race, ethnicity and gender. Journal of Psychology in Africa. 2012; 22(3), 409-414.
8. Awouters V. Digital portfolio: a strategy for teachers professional development. International Journalof Emerging Technologies in Learning. 2008; 3(1), 72 - 89.
9. Jimoyiannis A, Komis V. Examining teachers' beliefs about ICT in education: Implications of a teacher preparation programme. Teacher Development. 2007; 11(2),149-173.
10. Swarts P, Wachira E. M. Tanzania: ICT in education situational analysis. Global e-School and communities initiatives; 2010.
11. UNESCO. World conference on education for sustainable development learn for our planet. Act for sustainability. German Commission for UNESCO; 2021.
12. Baker A, Joaquin A, Nick GH, Anja S, Jaime M. Emerging Vibrio Risk at High Latitudes in Response to Ocean Warming. Nature Climate Change. 2013; 3, 73-77.
13. MoEVT. Education Sector Development Programme Secondary Education Development Programme II (July 2010 – June 2015). Dar Es Salaam: Tanzania; 2014.
14. Sánchez JJC, Alemán EC. Teachers' opinion survey on the use of ICT tools to support attendance-based teaching. Computers and Education. 2011; 56(3), 911-915.
15. Lu Z, Hou L, Huang X. Research on a Student-Centered Teaching Model in an ICT-based English Audio-video Speaking Class. International Journal of Education and Development. 2010; 6(3), 101-123.
16. Ghavifekr S, Kunjappan T, Ramasamy L, Anthony A. Teaching and learning with ICT tools: Issues and challenges from teachers' perceptions. Malaysian Online Journal of Educational Technology. 2016; 4(2), 1-20.
17. Denzin NK, Lincoln YS. The SAGE handbook of qualitative research. Thousand Oaks: Sage Publications; 2005.
18. Creswell J. Educational Research: Planning, Conducting, and Evaluatin Quantitative and Qualitative Research (2nd ed.). Upper Saddle River, NJ: Pearson Education; 2005.
19. Cooper D, Schindler P. Business research methods (10th ed,). New York, McGraw-Hill/Irwin; 2008.
20. Cohen L, Manion L, Morrison K. Research Methods in Education (6th Ed). New York: Routledge; 2007.
21. Major S. Qualitative Research. The essential guide to theory and practice. Routledge: United Kingdom; 2013.
22. Bravo PC. ICT in Education and Sustainable Futures. Thousand Oaks: Sage Publications; 2018.
23. Anyasi FI, Onianwa CU, Akpadia VOA, Idiakheua LO, Ebegba D. (2012). Promoting sustainable development in Nigeria through ICT. A Journal of Electronics and Communication Engineering. 2012; 3(1), 05-11.
24. Abdelwahed EE. Barriers to implementation of ICT in public Sudanese secondary schools: Teacher's prospective, Journal of Sociological Research. 2016; 7(1), 1948-5468.