Perceived Level of Knowledge of Tutors on Computer-Based Instruction for Improving Teaching and Learning in Teacher Colleges in the Kilimanjaro Region, Tanzania

Yudathade M. Mwanga, Prof. Ogoti Evance Okendo, Dr. Timothy Mandila
Faculty of Education, Mwenge Catholic University, P.O.BOX 1226 Moshi – Tanzania
Corresponding Author email: mwangayudathade@gmail.com

Abstract
This study assessed the perceived level of knowledge of tutors on computer-based instruction for improving teaching and learning in teacher colleges, in Kilimanjaro Region. The study was guided by the Diffusion of Innovation theory by Rogers 1962. A convergent research design under a mixed research methods was employed. The target population was 1220 students, 131 tutors, and 7 College principals. Stratified and simple random sampling was used to determine the sample of the study that consisted 124 of respondents. Questionnaires and interview guide used for collecting data. Instruments were validated by research expert and Cronbach Alpha was used to ensure the reliability. Quantitative data were analyzed using descriptive and inferential statistics using frequencies, percentages, and mean scores. Qualitative data were analyzed using thematic analysis. Independent sample T-test was used to test the hypothesis. The findings indicate that tutors have knowledge on the use computers for teaching and learning. The findings further, indicated thatthere is no significant difference in mean scores between male and female tutors on perceived level of knowledge on the use of computers in teacher colleges. The study concluded that majority of tutors have knowledge on the use computers for teaching.

Keywords: Information and Communication Technology, implementation of computer-based instruction, Teaching, Learning, and Teacher colleges

1. Introduction

Teaching is an art that lays stress on the imaginative and artistic abilities of the teacher in creating a worthwhile situation in the classroom to enable students to learn or a form of problem-solving and decision making which has many properties in common with the work(Rajagopalan, 2019).

Learning is an ontogenetic adaptation-that changes the behavior of an organism that result from regularities in the environment of the organism. A quantitative increase in knowledge, memorizing of facts, skills and methods that can be retained and used as necessary tools for behavior changing. Making senses of abstracting meaning, and relating parts of the subject matter to each other and to the real world, interpreting and understanding reality and comprehending the world by reinterpreting knowledge using skills (Behlo, 2016)

It has been explained as a quantitative increase in knowledge, memorizing of facts, skills, and methods that can be retained and used as necessary. It is also viewed as making sense or abstracting meaning, relating parts of the subject matter to each other and to the real world, interpreting and understanding reality and comprehending the world by reinterpreting knowledge. It is very difficult to decide what actually happens when an organism learns. It is also defined as adjustment, or adaptation to a situation or improvement.
ICT stands for "Information and Communication Technology". It refers to technologies that provide access to information through telecommunication. It is similar to Information Technology (IT) but focuses primarily on communication technologies thus transmitting, storing, creating, sharing, or exchanging information. This includes the internet, computer hardware and software, wireless networks, cell phones, television, radio, and other communication mediums(Ratheeswari, 2018).

Additionally, knowledge of both software and hardware about putting into the implementation of CBI in teaching and learning is necessary because one could not be able to implement any program or method without knowing how it is supposed to be implemented. Teachers have to equip themselves with knowledge and skills in computer use to cope with those challenges which were facing by students' and teachers' during teaching and learning such as shortage of teaching and learning resources and inaccessibility of materials which are complex where students met with during learning and bring them in the class. Currently, ICT is required to be used in the education field that will make the teaching and learning process successful and interesting (Kimaro, 2019).

Computer- Based Instruction is an instructional paradigm which uses computer technology to deliver training on educational materials to the users. Computer-based Instruction technologies are now being used worldwide, but are mostly researched in a small number of countries and contexts (Baker et al., 2019).

In teacher colleges, computers had been proposed to be used for teaching and learning by tutors in either preparing lesson contents in terms of videos, audio-visual and making presentation to the learners for more understanding by using power point software. Also, learners use computers for searching materials through internet which help to have more information about the contents concerned. Power point presentation has been used in over 30 million presentations a day and its

software is on 250 million computers worldwide, the presentations made teaching and learning more structured and interesting to audiences (Alley &Neeley, 2016).

Tanzania ICT policy 2003 says that programs for training teachers on different ICT tools and technologies influence the implementation of ICT in educational institutions. Appropriate use of electronic information systems in schools needs proper attainment of computer literacy and skills by teachers, as the basic skills and vital for operations and the applications in education (Ber-Nadette, 2010).

The use of technology in education provides the students with a more suitable environment to learn; develop interest and increases students' motivation, this improves the whole process of teaching and learning (Adara, and Haqiyah 2021) Moreover, The use of computer technology enables learners to be active in constructing knowledge, developing skills for solving problems by discovering alternative solutions (Ozmen, 2008 &Alemu, 2015). Technology application in teaching and learning is in two ways; one is to achieve the same traditional aims in the same settings without having a face-to-face conversation. The second method involves using technology in the classroom to break down barriers, connect students to real-world activities, and assist them in becoming self-sufficient learners (Amer et al, 2022). In addition to that technology when used for teaching and learning make Students have full participation in subject matters. ICT is an instrument that emphasizes the changing of teaching and learning environments from teacher-centered to learner-centered (Gusango, 2021). Using computers for teaching and learning has become a potential method and internet that allows the exchange of information in the world. In Tanzania, the use of ICT in teachers' colleges started in 2005 as a joint venture between MoEVT and the Swedish International Development Agency (SIDA). The main goal was to improve the quality of pre-service and in-service teachers by preparing seminars and providing Computers and other ICT facilities in teacher colleges (Swarts, andWachira , 2010).

However, Computer-based instruction facilitates in teaching has becomes potential there is a problem of knowledge to develop implementation of CBI for promoting students' learning and adaptive computer based-instruction with ICT skills and conceptual knowledge, also provides understanding in both complex and simple contents in learning processes (Husam et al, 2021).

The poor use of computers for teaching raises a question about the knowledge of tutors on computer-based instruction in teacher colleges. Therefore, this study aimed at assessing the implementation of computer-based instruction in improving teaching and learning in teacher colleges in the Kilimanjaro region, Tanzania.

2. Statement of the Problem

Knowledge for implementing Computer-based instruction is important for tutors in the in improving teaching and learning in teacher colleges. However, there are contradictions on whether teachers and students are knowledgeable about computer-based instruction in the teaching and learning process. Educational stakeholders such as tutors, student-teachers, and the government are complaining about technological knowledge for teaching (URT, 2016). The study by Amer et al. (2022) indicates that technology particularly computers in teaching and learning is beneficial to universities in providing comprehensive and efficient training to students who will become technical specialists shortly. The other studies done by (Joke and Susan, 2016; Chirwa, 2018, Manal and Reem, 2021) revealed that computer knowledge and skills are very potential

elements in using computers for teaching and learning in schools. Knowledge of tutors on CBI could not be established enough. Few studies have been conducted basing on the computer-based instruction in teaching and learning in teacher colleges. Therefore, this study investigated the perceived level of knowledge of tutors on computer-based instruction for improving teaching and learning in teacher colleges in the Kilimanjaro Region

3. Research question
What is the perceived level of knowledge of tutors on computer-based instruction for improving teaching and learning in teacher colleges in the Kilimanjaro region, Tanzania?

4. Research hypothesis
There is a significant difference between tutors' perceived level of knowledge when categorized by gender and level of implementation of computer-based instruction in teacher colleges.

5. Significance of the study
The findings of this study benefited the Tanzania Ministry of Education Science and Technology (MEOST) as the information about the level of knowledge of tutors who are implementing this technological method of teaching were presented so that this findings could be used for making adjustments and improvements were necessary in order to equip the tutors who are still have the problem in terms of knowledge on implementing CBI.

This information is beneficial to the educational stakeholders in these categories tutors, student-teachers, and principals to avoid the barriers that are likely to hinder the implementation of computer-based instruction in improving teaching and learning in teacher colleges in Tanzania. This could help to increase the interaction and easy sharing of new knowledge and experiences.

Furthermore, the findings of this study are expected to add to the body of knowledge about the implementation of computer-based instruction in improving teaching and learning in teacher colleges in Tanzania. Moreover, Colleges could use this finding on how to implement CBI in the best way.

6. Theoretical Framework
This study was underpinned by the theory of diffusion of innovations developed by Rogers (1962) which describes the patterns of adoption, explains the mechanism, and assists in predicting whether a new invention will be successful. The theory states that the adoption of innovation which is computer-based instruction in the context of this study is usually taken a consideration as it solves some challenges which hinder the implementation of CBI for teaching and learning. Tutors and student-teachers are required to be innovative to adopt the new methods of teaching and learning which is about computer-based instruction (Rogers, 2003).

The Diffusion Innovation theory considers five steps that relate to innovativeness and creativeness for students-teachers and tutors which are Knowledge.

The first step is Knowledge of the individual or organization is exposed to the innovation for the first time but does not have concrete information about it and is therefore inspired to find out more about the innovation. In this study tutors and students are required to be exposed to

computer knowledge this makes to motivate the application and uses of computers for improving teaching and learning.

The second step is Persuasion, users develop a keen interest in the innovation and the individual actively seeks detailed information about it. The students in the colleges are exposed to the uses of computers for teaching and learning.
The third step is the Decision, in this step agreed on whether to adopt the innovation or not based on the supposed merits, comparative advantage, and demerits of using it. In this study decisions about whether the computer is supposed to be used for teaching and learning or not were made up by the educational stakeholders.

The fourth step is the implementation; the individual puts the innovation into practice and assesses its usefulness depending on the situation, and may be spurred into seeking more information about it. Tutors and students' may start implementing the agreements of using computer-based instruction.

The fifth step is Confirmation, the individual makes up his or her mind on whether to continue using the innovative methods or not. Based on the five innovation steps developed by Rogers (2003) which are knowledge, persuasion, decision, implementation, and confirmation all of them focused on how to improve teaching and learning this will be evidence that computer based-instruction enhances the improvement of the learning process. Furthermore, there are five main factors that influence the adoption of an innovation and each factor play an important role in adoption of innovation which is CBI which are Relative Advantage, Complexity, Observability.

7. Review of Related Empirical Studies
Computer knowledge and skills is important in using computer facilities for teaching and learning. The use of computers, without having knowledge and skills the process would not work. Program for training teachers on different technological tools was identified as major factors that influence proper implementation of CBI in educational institutions. Different studies have been done about perceived level of knowledge of tutors on computer-based instruction in teacher colleges.

Amer et al. (2022) conducted a study about factors influencing college students' adoption of digital learning technology in teaching and learning in Saudi Arabia. The purpose of the study was to conduct a confirmatory factor analysis to better understand how to utilize computers in the classroom. The study adopted survey design and structural equations modelling (SEM)-AMOS was used to survey 711 college students. The study used an improved version of the Technology Acceptance Paradigm (TAP) approach, quantitative data collection and analytic methodologies. Students' comments were divided into seven categories and analysed to identify their attitudes toward and intentions for using technology in learning environments. The data collection instruments were not well articulated in the study hence validity and reliability of the findings would be questionable. Therefore, the current study filled the gap by questionnaires and interview guide for collecting these could influence triangulation which strengthen validity and reliability of the findings
The study revealed that tutors and student-teachers have technological knowledge, particularly on use of computers in teaching and learning. Based on the study findings information about the

implementation of CBI in teaching and learning was remained unknown. This current study however, filled this gap by adding more information through investigating computer-based instruction for improving teaching and learning.

Chirwa (2018) conducted a study about access and use of internet in teaching and learning at two selectedteachers' colleges in Tanzania.Purposive technique was used to select two government-owned teachers' colleges in Mainland Tanzania**.** The study used mixed methods research with purposive sampling to select college principal and computer system administrator, stratified and simple random sampling techniques used to obtain 16 tutors and 80 student teachers. The study used structured questionnaire to obtain data from tutors and student-teachers, semi-structured interview guide used to obtain data from college principle and ICT coordinators.
The study revealed that most of teachers are knowledgeable on using internet for academic purposes, others used for searching news and communication. To some extent there is limited access to internet and computer facilities in these teachers' colleges in Tanzania. The research design which was used in the study was not identified. These could raise questions on the validity and reliability of the findings. Since research design assists the researcher on data collection, data analysis so it was better to indicate in the study under review. In filling this gap the current study indicated appropriate research design in this convergent design, which could add validity and reliability of the findings.

Manal and Reem (2021) investigated about pre-service special education teachers' prior experience in using computers, their perception of the knowledge, and their preparedness toward integrating computer technology in teaching, barriers in integrating computer technology in their teaching practices and the level of confidence teachers gained from using technology applications in teaching in Saudi Arabia. Fifty-eight pre-service special education female teachers from a college of education in Saudi Arabia responded to a needs assessment survey. Most participants had more than eight years of experience in using computers. They reported that they are able to integrate computer technologies in their teaching but acknowledged the need for more training courses. The barriers mentioned were a lack of equipment, lack of practice, and lack of maintenance. The study did not indicate in detail about the instruments that used for collecting data this could bring some questions on the validity and reliability of the findings. Current study filled the gap by clearly identifying the appropriate instruments that used in the study which are questionnaire and interview guide in order to ensure validity and reliability of the findings.

Joke and Susan (2016) conducted a study in Netherland about TPACK in teacher education: are we preparing teachers to use technology for early literacy. The study examine if and how five teacher education institutes are helping students to develop the technological pedagogical content knowledge needed to effectively use technology for early literacy. Focus group discussions were held with teacher educators in which their responses to expert recommendations were probed. Findings indicate that, currently, very little attention is specifically given to the knowledge that teachers need to foster early literacy through the use of technology. This is due to multiple factors, including the conviction that many new technologies (e.g. tablets) are not used much in schools. Additionally, teacher educators themselves struggle with effective use of technology in their own courses. And although technological and early literacy specialists are available in teacher training colleges, pre-service educators note a distinct lack of integrated expertise in their

institutions. The study did not indicate the approach and design that used in the study, this could raise question about how the study were valid and reliable. Current study filled the gap by using appropriate approach and design which is mixed research approach and convergent design.

8. Research Methodology

This study employed a convergent design under a mixed research approach; this approach is favourable to this study because the researcher wants to make triangulation of the data. This design is useful hence the researcher collected both quantitative and qualitative data at once. Creswell and Creswell (2018) state that a mixed research approach involves the collection of both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The use of qualitative and quantitative data provides additional information rather than using quantitative or qualitative data alone. The sample of the study comprised 40 tutors, 80 student-teachers selected by stratified random sampling procedure, and 4 college principals were included in the study to participate by virtue of their positions. Two data collection instruments were employed were questionnaire was used to collect quantitative data from tutors and student-teacher and interview guides were used to collect data from college principals. The quantitative data was validated by research experts and Cronbach's alpha was used to check for reliability. Descriptive statistics were used to analyze the data using frequencies, percentages, and mean scores were employed. Inferential statistics were tested in the assumption at a confidence level of 95% and a significance level of 5%. In this study, the hypothesis was tested by using an independent sample T-test at a 0.05 significant level. The qualitative instrument was validated using research experts, and conformability and transferability were used for reliability. Thematic analysis was used to analyze the qualitative data where themes were developed, relevant information was extracted, interpreted, discussed, and finally presented also direct quotations and transcription.

9. Findings and Discussion

This section provides the study results for the implementation of computer-based instruction in improving teaching and learning in teacher colleges in the Kilimanjaro region of Tanzania.
The perceived level of knowledge of tutors on computer-based instruction for improving teaching and learning in teacher colleges in the Kilimanjaro Region
The research question intended to determine the perceivedlevel of knowledge of tutors on computers-based instruction in teacher colleges. The information obtained in this research question was to perceive the knowledge of tutors exposed to the use of CBI to improve teaching and learning in teacher colleges. Data to answer this question was collected from tutors, student teachers and the principal of the colleges. Table 1 presents the responses from tutors about their knowledge of tutors' computer-based instruction.

Table 1_Tutors Response on the perceived Level of knowledge on CBI in teachers colleges (n=40)_

S/N	Statement	SD		D		U		A		SA		Mean
		F	%	F	%	f	%	F	%	f	%	
1.	I have been trained on computer-based instruction for teaching and learning	-	-	1	2.5	1	2.5	16	40.0	22	55.0	4.48

2.	I attended different seminars conducted on the uses of Computer for teaching and learning at colleges	4	10.5	3	7.9	2	5.3	18	47.4	11	28.9	3.76
3.	My Student-teachers knows how to use the computer for learning	1	2.5	5	12.5	6	15.0	16	40.0	12	30.0	3.83
4.	I know how to use computer software for teaching	-	-	2	5.0	1	2.5	20	50.0	17	42.5	4.30
5.	I am competent in using computer for teaching	1	2.6	1	2.6	1	2.6	17	43.6	19	48.7	4.33
6.	I know how to use internet for searching materials that I use for teaching	1	2.5	-	-	1	2.5	13	32.5	25	62.5	4.53
7.	I know how to present materials by using the computer for teaching	-	-	2	5.0	1	2.5	16	40.0	21	52.5	4.40
8.	I can prepare lessons by using computer	-	-	2	5.0	1	2.5	15	37.5	22	55.0	4.43
9.	I can use the other ICT facilities for teaching	-	-	2	5.0	1	2.5	23	57.5	14	35.0	4.23
10.	I can teach my students' online and zoom meeting	4	10.3	4	10.3	11	28.2	12	30.8	8	20.5	3.41
Average Mean												**4.17**

Source:Field Data (2022)

Key: SD=Strongly Disagree D = Disagree U = Undecided A = Agree SA= Strongly Agree

Data in Table 1 contain the response from tutors on perceive level of knowledge in implementation of CBI in teacher colleges. Data in Table 1 showextreme majority (95%) of tutors agreed and strongly agreed that the colleges had trained tutors in CBI for facilitating teaching and learning. On the other hand,extreme minority (2.5%) of tutors strongly disagreed on the matter. In addition (2.5%) of tutors were undecided opinions on the matter. Data in Table1 imply that most tutors (95%) were positive about the statement concerning the fact that colleges have trained tutors who are well versed on computer-based instruction for teaching and learning. This high agreement rate implied that tutors who facilitate teaching and learning in colleges are equipped with adequate skills on training and caneasily cope with the new innovation of using computer-based instruction to facilitate teaching and learning.

In affirming on the statement about tutors preparedness of being trained to implement CBI in colleges, one College Principal replied during interview that; "*The tutors are always are attending training in different workshops, prepared and organized once a year; where they are reminded about how to employ computer and other ICT facilities for teaching and learning*" (*Personal interview with college principal, 5th May 2022*). Responses from the principal indicate that tutors attend training for implementing computer-based instruction which help them improve the use of computer for teaching and learning. These findings concur with study conducted by Amer et al. (2022) in Saudi Arabia which revealed that, technologicalskills and knowledge; particularly use computers in teaching and learning were beneficial to colleges in providing comprehensive and efficient training to students. This implies that technology knowledge and

skills are required as it influence the use of technology in teaching and learning. Generally, findings established that teacher colleges in Kilimanjaro region have taken initiatives to ensure that tutors attend training to acquire adequate knowledge and skills that enable them implement CBI.

Moreover, data in Table 1 indicate that extreme majority (92.2%) agreed and strongly agreed on the statement that tutors are competent in using computer for teaching and learning. extreme minority (5.2%) of tutors dis agreed and strongly disagree with the statement that they are competent in using computers for teaching and learning. The other extreme minority (2.6%) of tutors had undecided perception on the argument. Information in Table 1 concerning competent in using computers for teaching indicates that most tutors (92.2%) were agreed that they are competent in using computers for teaching and learning. The findings imply that that majority tutors are competent in using computers for teaching and learning that enables them to improve the process learning for students-teachers in teacher colleges agreed that they are competent in using the computer for teaching. These findings were also established by the Principal of college B during interview who exposed that:

> Some few tutors are still relying on using old methods of teaching though even the ones who are competent for the moment before they were disliked by fearing that they cannot use them but now most tutors have become competent, additionally I always organize them to share ideas and experience with those who are not competent for now *(Personal interview with college principal, 4th May 2022).*

Responses from the Principal represent that at the beginning tutors feared on using a computer for teaching but currently majority of tutors are competent in using them in the class for teaching. These findings concurred with the study byJoke and Susan (2016) in Netherland who revealed that, currently, very little attention is specifically given to the knowledge that teachers need to foster early literacy through the use of technology. This is due to multiple factors, including the conviction of many new technologies which is result of low competent on the use of computers for teaching. The findings indicate that tutors are competent in using computers for teaching and learning. However, there is a need to motivate them so that they could develop more competence in using computers technological for teaching and learning.

On the other hand, data in Table 1 shows thatextreme majority (92.5%) of tutors agreed and strongly agreed that they know how to present materials by using computers. In addition extreme minority (5%) of tutors disagreed with the statement and other extreme minority (2.5%) of tutors had undecided views on the matter. Data in Table 1 imply that most tutors (92.5%)agreed and strongly agreed with the statement that tutors are knowledgeable on how to present materials by using computers. Such agreement implied that tutors who instruct teaching and learning in the colleges are equipped with knowledge on how to use computers for presenting materials during teaching and learning. In confirming on the argument of tutors on uses of computers for presentation during teaching in the colleges, one Principal during interview replied that:

> Most of my tutors but not all prepared lesson notes on computers and also put them in PowerPoint for presentation to the class during the lesson….. Those who know, teach the others although few tutors do not want to hire about using a computer for teaching *(Personal interview with college principal, 4th May 2022).*

Responses from the principal indicate that majority of tutors in the college employ computers for presenting materials. Also, use computer for preparing lesson notes. These findings concurred

with the study conducted by Amal and Eyyüp (2022) in India who revealed that teachers believe computers help them organize their work within a few minutes also, presentation through computers help students to communicate easily beyond the classroom and create an interactive atmosphere.

This finding generally, implied that majority of tutors are use computer by preparing presentations and preparing lesson notes for teaching the students that enhance improvement of teaching and learning and simplify acquisition of knowledge. However, few tutors are not competent in preparing presentations for present material by using computers which signifies that college administrationhas not made enough to make all tutors able to use technology for teaching successfully.

Additionally, data in Table 1 indicate thatextreme majority (92.5%) of tutors agreed and strongly agreed on the statement that tutors use the Available computers facilities for teaching and learning. Equally, extreme minority (5%) of tutors disagreed with the statement that they use other computer facilities for teaching. The other extreme minority (2.5%) oftutors hadundecided opinions on the argument. Information in Table 1 relating to that the use of other computer facilities for teaching indicates that most tutors (92.5%) were affirmative about using other ICT facilities for teaching. The findings imply that majority tutors use computers and other ICT facilities for teaching and learning that enables them to be understood by the student-teacher during teaching and learning in teacher colleges. The findings were also confirmed by the principal from college "A" during an interview who indicated that:

> Most of the time tutors prefer the use of computers for teaching and sometimes they used even their telephone for finding more information especial when content is complex through internet that help them to be competent making elaboration of the contents when they are teaching *(personal interview with principal, 28th April 2022).*

The information obtained during interview with the principal portray that tutors use computerfor teaching and learning that help to equip improvement and competent by simplifying the elaboration of the complex contents. These findings are in agreement of those of the study by Mubasher, and Tabasum, (2021) in India who revealed that superficial use of computer in teaching will yield the required learning outcome, but the integration of ICT in pedagogy is important to enhance the improvement of teaching, and learning process as mostly is liked by the teachers. This can be done only when teachers are competent enough to use computer tools and facilitate ICT in education. The findings generally indicate thattutors are able to use other ICT facilities for teaching and learning that in affects the entire process of ensuring improvement of teaching and learning in teacher colleges.

Additionally, data from Table 1 show that majority of tutors their knowledge level for using computers for teaching and learning is high because the average mean score of seven items out of ten was above the central mean (3.00) which was (4.39) and some of the respondents in three items out of ten their level of knowledge are moderate as their average mean score was (3.67). The result teachers having moderate level of knowledge in using computer for teaching is due to the complexities, individual knowledge and persuasion interest as articulated by Diffusion Innovation theory (Rogers, 2003).

Furthermore, students were asked on the perceived level of knowledge of tutors regarding computer-based instruction Table 2 presents the summary of students-teachers responses on tutors' perceived level of knowledge in computer-based instruction in teaching and learning in teacher colleges.

Table 2*Student-Teachers Response on the perceived level of knowledge of tutors on computer-based instruction for improving teaching and learning in teacher colleges (n=80)*

S/N	Statement	SD		D		U		A		SA		Mean
		F	%	F	%	f	%	F	%	f	%	
1.	I encouragedwhen computers used for teaching and learning.	4	5.0	4	5.0	8	10.0	35	43.8	29	36.3	4.01
2.	I like to use computer for instructing the lessons	1	1.3	1	1.3	1	1.3	20	25.0	57	71.3	4.64
3.	My lessons become understandable when instructed by using a computer	-	-	4	5.1	1	1.3	31	39.7	42	53.8	4.42
4.	My tutors has a positive perception of the implementation of computer-based instruction in teaching and learning in your college	2	2.5	2	2.5	7	8.8	42	52.5	27	33.8	4.13
5.	My tutors' are competent in using a computer for teaching and learning	4	5.1	5	6.3	8	10.1	34	43.0	28	35.4	3.97
6.	My tutors know how to operate CBI for teaching and learning	1	1.3	3	3.8	6	7.5	38	47.5	32	40.0	4.21
7.	My tutors do not know how to use the computer for learning in the college	20	25.6	28	35.9	5	6.4	18	23.1	7	9.0	3.46
8.	My tutors are aware of the soft-wares that used for teaching	1	1.3	5	6.3	11	13.8	40	50.0	23	28.8	3.99
9.	My tutors know how to prepare a presentation by using a computer	5	6.3	3	3.8	6	7.5	33	41.3	33	41.3	4.08
10.	My tutors know how to employ CBI software materials for learning	3	3.8	8	10.0	8	10.0	37	46.3	24	30.0	3.89
Average Mean												**4.08**

Source: Field Data (2022)

Key: SD=Strongly Disagree, D= Disagree, U= Undecided, A= Agree, SA= Strongly Agree

Data in Table 2 show that the mean score for students' responses on whether the tutors encourage the use of computers for learning was 4.01. The value of the mean scores implies that students were encouraged by tutors for using a computer for learning. Concerning whether tutors like to use the computer for instructing the lessons the mean score of students was 4.64. This value implied that tutors like to instruct lessons using computers. The mean score of the two items that tutors make the lessons enjoyable when instructed by using computer and tutors have a positive perception about the implementation of computer-based instruction in teaching and learning in your college was 4.42 and 4.13. This value of mean score signifies that students agreed with the statement that tutors have high positive perceptions and make the lesson enjoyable when using computers due to the mean score being above 4.00.

Concerning whether tutors are competent in using a computer for teaching and learning the mean score from the respondents was 3.97. This implies that the competence of tutors in using a computer for teaching and learning is moderate rate due to the mean score that has not yet reached 4.00 and above. The mean score of students about tutors knowing how to operate CBI for teaching and learning were 4.21 this implied that tutors know how to use the computer for teaching and learning.

Data in Table 2 also show that the mean score of the two items that tutors do not know how to use the computer for learning in the college and they are aware of the soft-wares used for teaching was 3.46 and 3.99. These findings implied that awareness of tutors on soft-wares that is used for teaching is moderate. These findings implied that to some extent majority of tutors' knowledge of computer-based instruction is high with an average mean score of 4.24 and other tutors have moderate knowledge of computer-based instruction with an average mean of 3.82. This implies that to some extent there is a need for college administrators and the government to find a way forward to make all tutors to have highly knowledge and skills on computer-based instruction.

The researcher further tested a Null hypothesis to determine whether the level ofknowledge on the use of computer-based instruction in teachers' colleges differs in terms of gender. To achieve this, an independent samples t-test was run at a 95% confidence level.

Null hypothesis

There is no significant difference in mean scores between male and female tutors on perceived level of knowledge on implementation of computer-based instruction in teacher colleges.

The results of descriptive and inferential statistical analysis are presented in Tables 3 and 4respectively.

Table 3*SPSS Output Descriptive Statistics for the null hypothesis*

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Level of knowledge and skills in the use of CBI mean scores	Male	25	4.2480	0.51163	0.10233
	Female	11	4.0455	0.78021	0.23524

Source: Field data (2022)

Data in Table 3 show that the mean score for level of knowledge on the use of CBI for males was higher (4.24) in the colleges than that of females (4.04). To find out whether the observed difference in the mean scores was significant, the hypotheses test was further run and the results are summarized in Table 4.

Table 4*Tutors' Independent samples t-Test*

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig	T	Df	Sig
Equal variances assumed	1.326	0.258	0.928	34	0.360
Equal variances not assumed			0.790	13.934	0.443

Source: Field data (2022)

Data in Table 4show that t (34) = 0.928 and p-value=0.360. Since the p-value (0.360) from table 4is greater than the significance level (0.05) hence we fail to reject the null hypothesis. There is no significant difference in mean scores between male and female tutors on perceived level of knowledge on implementation of computer-based instruction in teacher colleges. Thus in the college, all tutors have contained computer knowledge which facilitated teaching and learning; hence improve the process of teaching and learning in teacher colleges.

The implications of the findings are that tutors in teacher colleges in the Kilimanjaro region have knowledge for implementing computer-based instruction for improving teaching and learning. However, some tutors have moderate knowledge and skills, means there is a need for the government to employ an extra effort to equip these tutors to attain higher levelsof knowledge and skills of CBI because they are the main implementers of this technological innovation. However, hypothesis testing indicated that here is no significant difference in mean scores between male and female tutors on perceived level of knowledge on implementation of computer-based instruction in teacher colleges because the p-value was above 0.05 (p>0.05). Thus in the colleges, both males and females know about how to implement computer-based instruction to improve teaching and learning.

10. Conclusion
Based on the above findings the study concluded that:

Tutors in teacher colleges in the Kilimanjaro region have knowledge for implementing computer-based instruction for improving teaching and learning. However, some tutors have moderate knowledge which means that there is a need for the government to employ an extra effort to equip these tutors to know higher level because they are the main implementers of this technological method. However, hypothesis testing indicated thatthere is no significant difference between tutors' perceived level of knowledge in gender in the implementation of computer-based instruction in teacher colleges because the p-value was above 0.05 (p>0.05). Thus in the colleges, both males and females know about how to implementing computer-based instruction in improving teaching and learning.

11. Recommendations

The college principals together with the permanent secretary in Ministry of Education Science and Technology should have to organize more training for the tutors in teacher colleges on proper ways for implementing computer-based instruction for improving teaching and learning in teacher colleges.

References

Adara, R. A. &Haqiyah, A. (2021). Improving Indonesian EFL Learners' Motivation Through Computer Assisted Learning (CALL); *Journal of English Language Studies.*

Alley, M. & Neely, A. K. (2016).*Rethinking the Design of Presentation Slides: A Case for Sentence Headlines and Visual Evidence;* Pennsylvania State University

Amal, E.M. &Eyyüp, Y. K. (2022).*EFL Teachers' Attitudes towards Computer Assisted Language Learning;* Istanbul Aydin University Institute of Social Sciences, Beşyol, İnonu Cd. No:38.

Amer, M. S., Mahdi, M. A., Mohammed, A. A.,&Waleed, M. A. (2022).*Factors Influencing University Students' Adoption of Digital Learning Technology in Teaching and Learning*; (https:// creativecommons.org/licenses/by/4.0/)

Baker, R.S., Ogan, A.E., Madaio, M., Walker, E. (2019).*Culture in Computer-Based Learning Systems: Challenges and Opportunities*. Computer-Based Learning in Context, 1(1), 1-13.

Behlo, M. G. (2016). Concept of Learning.*International Journal of Psychological Studies 2(2)*,Fatima Jinnah Women University

Bernadette, T. (2010).*Computer Education and Computer Use by Preschool Educator;* Doctoral Dissertation, Unpublished. Minneapolis, MN: Walden University.

Chirwa, M.(2018). *Access and use of the internet in teaching and learning at two selected teachers' colleges in Tanzania*; Sokoine University of Agriculture, Tanzania

Creswell, J.W. & Creswell, J. D. (2018).*Research Design Qualitative, Quantitative, and Mixed Methods Approaches Fifth Edition*; Copyright © 2018 by SAGE Publications

Danial H.,Yeongwook, Y., Margus, P.,MinhongWan,H. (2021*). An adaptive educational computer game: Effects on students' knowledge and learning attitude in computational thinking;*

Gusango, E.H. (2021). ICT and Reflective Practice integration; A Constructivists Approach in Teacher Preparation at Primary Teachers Colleges in South Eastern Uganda; *American Journal Education and Practice.*Kyambogo University

Husam, Q., Brendan, B. & Ali, L. Q. (2020). Evaluating the impact of ICT on teaching and learning: A study of Palestinian students' and teachers' perceptions; *Journal of Education and Information Technologies*

Joke, V. & Susan, M. (2016).*TPACK in teacher education: are we preparing teachers to use technology for early literacy?*Informa UK Limited, trading as Taylor & Francis Group

Kimaro, A.R. (2019). Access and Use of ICT among Tutors in Public Teachers Training Colleges: A Case of Moshi Rural District Tanzania. *Journal of Adult Education*; Institute of Adult Education

Manal, M. A. &Reem, F. A. (2021). Saudi Pre-Service Special Education Teachers' Knowledge and Perceptions toward Using Computer Technology, *International Education Studies; Vol. 14, No. 3; 2021*

Mubasher, H. &Tabasum, M. (2021).*The Digital Literacy in Teachers of the Schools of Rajouri (J&K)-India: Teachers Perspective*. BGSB University Rajouri, J&K (India)-185234

Oqua, E. A. &Ugbe, E. B. (2022) Assessment of gender and age difference of prospective university students' attitude towards computer-based testing in the University of Calabar, Nigeria: *A Journal of Contemporary Research 2022*

Özmen, H. (2008). *The influence of computer-assisted instruction on students' conceptual understanding of chemical bonding and attitude toward chemistry*: A case for Turkey. Computers & Education, 51 (1), 423- 438

Rajagopalan, I. (2019). Concept of Teaching.*Shanlax International Journal of Education*, vol. 7, no. 2, 2019, 5-8.

Ratheeswari, K. (2018). Information Communication Technology in Education;*Journal of Applied and Advanced Research, 2018: 3(Suppl. 1) S45–S47*

Rogers, E.M. (2003). *Diffusion of Innovation* 5th (Ed.)

Sagun, A., Demirkan, H., &Goktepe, M. (2008).A framework for the design studio in web-based education.*Journal of Art & Design Education,* 20(3), 332–342

Swarts, P. &Wachira, E. M. (2010). *Tanzania: ICT in education situational analysis*. At http://creativecommons.org/licenses/by-nc-sa/3.0/

URT. (2003). *National information and communications technologies policy*; Government Printer, Dar Es Salaam-Tanzania