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Strategies for Promoting the use of ICT Tools to Enhance Competence-Based Education and Training: The ELCT Northern Diocese Secondary Schools in Hai District, Kilimanjaro Tanzania

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ABSTRACT: This study explored the ways of promoting the use of ICT tools for enhancing competence-based teaching and learning in Hai District guided by bottom-up theory and social constructivism theory. Qualitative research approach and case study design was adopted involving a sample size of 31 participants who were sampled purposively from a population of 76 individuals' including; teachers, heads of school, school bursars and education secretary of the Evangelical Lutheran Church in Tanzania Northern Diocese. The data collection tools were questionnaire, interview guide, observation checklist and documentary analysis. The obtained data were analyzed through thematic analysis. The findings revealed that some efforts such as formalization of Computer Science studies, employment of professional ICT teachers, implementation of seminars and training based on ICT as well as creation of conducive-environment for promoting the use of ICT tools for integrating competence-based education and training. The study concludes that the adopted strategies are effective for implementation of competence-based education and training in this era of science and technology. The study recommends that heads school to develop School ICT policy for guiding the use ICT related facilities as well as enquiring for potential stakeholders who can support schools by providing ICT tools for teaching and learning. Teachers as supposed to use the teaching and learning approaches which are in hand with competence-based education.

KEYWORDS: ICT tools, competence-based education and training, teaching and learning, Computer Science studies, training and seminar

1. INTRODUCTION

The Information Communication Technology (ICT) refers to broad range of technologies used in computer-based information systems and communication systems to create, store process, transmit and share information (UNESCO, n.d.). ICT includes tools and systems such as computers, mobile devices, the internet, software applications, and communication networks that enables individuals and organizations to communicate and manage information efficiently (UNESCO, n.d.). Due to the development of science and technology these tools have been adopted to be used in education and training sector so as to simplify the whole process of teaching and learning in all levels of education and training together with management and administration matters (Pandey, 2021; URT, 2023a). The competency-based education involves developing students' capabilities in practical learning and important thinking aiming at transferring the skills and knowledge which are needed in the contemporary society. Teachers are required to impart the skills which are in hand with the industrial and societal needs which make the quality of education provided to be more valuable compared to content based education (Kasuga & Kalolo, 2025). Currently, ICT tools are being integrated world widely to enhance competence based-education.

In USA, teachers are encouraged to integrate ICT in education during teaching and learning process to improve students engagement and to retain the learned knowledge. Technology provides teachers with ability to teach the same thing in different ways which increases students' participation and understanding (Goldhaber, Khuan & Allysa, 2021). Moreover, ICT has replaced the use of traditional ways of teaching and learning hence increased teachers' status to be recognized globally (Goldhaber et al., 2021). Teachers are able to access technological resources such as laptops, smart-phones, computers and radios to assist students to be active during the instructional delivery (Jaman & Biswas, 2025; Munisi, Mtoi & Kawishe, 2026). Further, in China, ICT tools are integrated in each subject in schools for enhancing teaching and learning processes. However, there are some factors which hinder the practices. These factors include: lack of sufficient funding, and inadequate facilities which make difficult for successfully integration of ICT in teaching and learning (Cao, Rasul & Omar, 2023; Zhao, 2024). To solve the existing challenges, the government of China improves the ICT infrastructures together with allocation of supportive resources for enhancing technological based learning. School administrators are encouraged to fund for supporting teaching and learning at school level (Zhao, 2024). Also, teachers are required to prepare authentic teaching and learning materials when planning to use ICT in classrooms (Cao et al., 2023).

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In South Africa, the government provides ICT tools, make ICT policy which guide the teaching and learning processes, teachers are encouraged to use the available ICT related tools for teaching and learning as well as providing training to teachers for effective integration of ICT in education (Mnisi, Mtshali & Moses, 2024). However, there are some constrains including; absence of internet in classrooms for some of schools which expose difficulties for teachers to use ICT tools effectively in classroom for online collaboration as well as accessing learning materials. This is different from schools which classrooms are installed with pocket Wi-Fi devices in every classroom to provide comprehensive internet access (Mnisi et al., 2024). Similarly, in Nigeria, higher learning institutions encourage the use in ICT tools in teaching and learning so as to promote quality of instructional deliver leading to excellence in attaining of planned knowledge and skills among the students (Tonwe, 2022). In addition, ICT provides lifelong learning where individuals use self-directed learning resulting to professional development and facilitate accomplishment of tasks for a short period of time with minimum resources. Likewise, curriculum and assessment as well as school organization and administration are practiced more efficiently due to ICT integration in education operations. However, in Nigeria the ICT use is impeded by ICT incompliance among teachers and lack of ICT pedagogical skills in teaching and learning (Tonwe, 2022). Nevertheless, Kenya's education system has adopted the use of Artificial Intelligence (AI). Investments in infrastructure, teacher professional development and inclusive AI design are among the strategies which are done by the government to enhance ICT in school environment to improve the educational outcomes among the learners (Owidi, 2025). Although, infrastructure variations between urban and rural areas, limited digital literacy among teachers and students, and accessibility issues for students with disabilities hinder the efficiency use of AI in implementation of school-based activities.

In the context of Tanzania this study finds out strategies by which the Evangelical Lutheran Church in Tanzania (ELCT) Northern Diocese (ND) secondary schools in Hai District, promote the use of ICT tools to enhance competence-based education and training. In this article the term strategies is also used as plans or ways (Richard, 2025). The term promote could be understood as means of adhering to the Tanzania Policy statements on the use of ICT in teaching and learning (URT, 2023a). Regarding the concept of competence-based education, it refers to the characteristics of education and training which focuses on student(s) as the centre of teaching and learning in developing knowledge, skills and attitudes essential for achieving success in real life situations (Munisi, 2025; Richard, 2025). The rationale for conducting this study based on the plans made by the Ministry of Education, Science and Technology on emphasizing the use of ICT for academic purposes. According to sub-sections 3.3.1 and 3.3.2 of the Tanzania Education and Training Policy 2014 (2023) Edition, on the use of ICT, the Policy put forward that: The Government, in collaboration with stakeholders, will ensure that ICT is used in the delivery of education and training at all levels according to the needs (section 3.3.1). Also, the Government in collaboration with stakeholders, will establish conducive- environments for the delivery of education and training using ICT at all levels (3.3.2). Therefore, this article aimed to find out how secondary schools owned by the private institution (*ref. sub-section 3.2 of this article*) planned to implement the statements as one of ways of informing competence-based education and training.

In the process of implementing these statements in schools some scholars reported that schools are still straggling to implement teaching and learning by adopting the practices of competence-based education teaching and learning (Molla & Seyoum, 2022; Mathias, Mwamakula & Mhagama, 2023; Tumaini & Kiwonde, 2023). This is because of poor infrastructures, limited funding, lack of intrinsic motivation to some teachers, inadequate material resources such as reviewed textbooks and ICT facilities. Also, few offered trainings to teaching staff, and insufficient teaching and learning resources including E-resources are also inadequate (ELCT ND SP, 2024). It was important to conduct this study within the ELCT Northern Diocese secondary schools in Hai District. This is because the ELCT Northern Diocese Headquarters has strategized to evaluate the management and administration of its schools in order to make these schools sustainable (ELCT ND SP, 2024). However, no enough empirical studies on how the ELCT Northern Diocese secondary schools meet the demands of competence-based education in their schools. For this reason this study is important to be conducted as a contribution to non-Government schools to understand and use suggestions on strategies for promoting the use of ICT for competence-based education and training. If the problem would not be investigated the intended improvements in education and training outcomes may not be realized.

2. LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 The Bottom-Up Policy Theory

The Bottom-Up Policy theory was primarily developed by Michael Lipsky in 1960s and 1970s. Lipsky, in the seminal work, "Street-Level Bureaucracy" he argued that public service workers (such as teachers, police officers, and social workers) played a critical role in shaping the implementation of policies due to their direct interaction with the public (Lipsky, 1980). These frontline workers often have significant option in interpreting and applying policies, thus influencing the policy outcomes at the local level. The Bottom-up theory is applicable to the study in the way that emphasized decision making to any expected reform. The educational policy-makers should collect opinions and ideas concerning education reforms from teachers who are front-liners in implementing changes (Lipsky 1980). Therefore, the theory allowed the ELCT Northem Diocese secondary schools in the Hai District to adapt the policy to local realities, including resource limitations, cultural differences, and varying levels of teacher expertise. For-instance, schools may develop their own low-cost tools for competence-based education and training that reflect local needs, such as emphasizing agriculture, trade skills, or environmental sustainability, which are more relevant in the Hai District context. Moreover, empowerment of teachers (professional development) whereby teachers have the opportunity as active participants in decision-making, potentially leading to more innovative teaching methods and better engagement with the students.

2.1.2 The Social Constructivism Theory

The Social Constructivism theory was developed in the 1920s to 1930s by Lev Vygotsky, a prominent soviet psychologist and educator. According to Nino (2023), the social constructivist sees knowledge as what students do in collaboration with other students, teachers and peers. Teachers provide instructional assistance by utilizing teaching and learning materials and methods that allow students to find and create knowledge as they engage and collaborate during the learning process. Social constructivism is a subset of cognitive constructivism that stresses the collaborative character of learning, whether guided by a facilitator or in collaboration with other students. The key elements of the theory are active learning,

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student-centered, emphasis on prior knowledge, social interaction, problem-solving. The theory deals with the notion of the Zone of Proximal Development (ZPD) to emphasize the variety of tasks a student may complete under the supervision of a more competent individual. The ZPD idea highlights the need of collaborative and supportive learning settings, where learners engage in activities that push their capacities in learning (Vygosky, 1999).

Nevertheless, the Social Constructivism theory is highly relevant to enhance competence-based education and training. This is because the theory viewed learning as a social process in where students participated through group activities to facilitate meaningful learning. Teachers provided instructional assistance by employing teaching strategies that allow students to explore and develop knowledge as they interact and collaborate during the learning process. The theory shifts the responsibility for knowledge acquisition from the teacher to the student, resulting in a student-centered approach, as well as transforming the student from a passive listener to an active participant and co-constructor of knowledge with co-learners. Also, a theory centered on learners' ability to apply their knowledge and skills in real-world circumstances. Competencies are developed through active, hands-on learning and reflection, which fated the constructivist emphasized on experience-based learning (Nino, 2023; Vygosky, 1999).

2.2. The use of ICT Tools for Competence-Based Education

Several scholars have written on similar research on ICT and competence-based education. For example, Msafiri, Kagwa, and Cai, (2023) conducted a study on a systematic literature review of ICT integration in secondary education: what works, what does not, and what next. The study used a qualitative approach. 51 chosen studies served as the basis for the thematic analysis of the data. Based on the findings, instructors can use ICT tools in a variety of ways, and how they adapt and use them can affect how they view, adopt, and use these tools. ICT integration skills can be developed through professional development while school leadership and support can also assist teachers with ICT integration by providing them with resources, guidance, and motivation. To critique, the researcher collected data through literature review which sometimes provide the data which are not realistic as a result of artificial intelligence used by different scholars in preparation of research work. To cover this gap the researcher collected primary data which were obtained directly from the field.

Further, Kalinga (2024), inquired about teachers' technological literacy for ICT integration to implement competence-based curriculum in public secondary schools in Tanzania. The study employed a qualitative research approach with interviews and focus group discussions as data collection methods from 139 participants including academic teachers and the head teachers sampled via simple random and purposive sampling techniques. The thematic analysis covered the whole process of data analysis. The study's findings revealed that teachers did not incorporate ICT as a pedagogical tool into their teaching and learning process; the majority of teachers did not use online assessment. However, smart-phones, computers, and laptops were the most commonly used ICT devices. The study discovered that most teachers recognize the value of ICT in establishing the competency-based curriculum. The study concluded that there is a need to align policies and practices, particularly in real school settings. Kalinga, (2024) assessed only the level of implementation of ICT teaching and learning in school without determined ways of enhancing the use of ICT tools. To address this gap, this article identified measures to promote the use of ICT for competence-based education and training in secondary schools.

Furthermore, Sendagire (2023) studied on ICT in the Competence-Based learning in lower private secondary School of Nakasongola District, Uganda. The study used a quantitative, cross-sectional survey research design. The data collection method was a questionnaire. The study indicated that ICT is integrated to a limited extent; teachers are aware of using smart-phones to look for essential materials, but they do not have the funds to purchase an internet bundle to access the internet. Teachers have a negative attitude towards ICT, believing that integration takes too much time, whereas students have a positive attitude toward ICT. Sendagire, (2023) did not suggest sources of money which could be used to support effective integration of ICT. To cover this gap, this article identified financial mobilization strategies which are used in generation of money in secondary school to support competence-based education.

In Uganda, Kagambe, Kabasiita, Kisembo, Kasiita, Muweesi, and Namubiru (2024) conducted a study about the integration of ICT for the effective implementation of competency-based curriculum in secondary schools. The study used mixed-methods approach, collecting data from 120 respondents via questionnaires, interviews, and classroom observations. Data were analyzed thematically by an SPSS program. The findings revealed that, for effective integration of ICT investment should be done more in ICT infrastructures, comprehensive teachers training and targeted student orientation to optimize competence-based curriculum delivery. As for this article the author has learned relevant strategies of enhancing integration of ICT devises for competence-based curriculum. Likewise, Mpumuje (2024) studied on ICT integration in teaching and learning in selected rural secondary school in Burera District, Rwanda. The purpose of this study was to look into how information and communication technology is used in secondary school teaching and learning. Mpumuje (2024) used a mixed-method technique with a descriptive study design. The results were gathered via a questionnaire and interviews with teachers and school authorities. The findings revealed that ICT enables teachers to share assessments with students and deliver lessons, as well as helping learners engage in peer assessments and independent learning. The study recommends that secondary schools provide the necessary facilities, resources, and ICT devices so that they do not fall behind in the use of ICT teaching and learning. As for this article knowledge was gained on the advantages of ICT in the teaching and learning process.

Kangara, Gocha, Tsokota, and Marovah (2022) in Zimbambwe inquired about assessing readiness for teaching and learning using ICTs in secondary schools. This study was conducted as a qualitative interpretative study with questionnaires and semi-structured interviews. The study found that a variety of ICTs, including mobile devices, general software, and desktop computers, were available in schools for assessing readiness for teaching and learning with ICTs in secondary schools. The study emphasizes the importance of integrating ICT technologies into teaching and learning. To critique, the researcher did not specify specific characteristics of teachers who are required to teach ICT skills to students because not all teachers who are available in school environment are able to operate the ICT devices. To cover this gap, the in this article the author identified the ways of equipping teachers with ICT skills through professional development. Nevertheless, Tumaini and Kiwonde, (2023) studied on the use of ICT towards improving teaching and learning processes in selected Hai District secondary schools in Kilimanjaro, Region Tanzania. The researchers adopted descriptive survey research design with a sample size of 128 respondents. The findings revealed that majority of teachers have

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basic skills and trainings on ICT, but the ICT skills are not linked with teaching and learning processes because teachers lack ability of preparing presentations which could be integrated in teaching and learning activities. Moreover, the findings revealed that computers are not adequately for supporting teaching and learning so as to be accessed for each student. Also, Tumaini and Kiwonde (2023) came up with the strategies for enhancing the use of ICT tools in secondary schools such as provision of pedagogical training to teachers in the area of ICT skills and maintaining the ICT facilities for enhancing sustainability for future use.

3. METHODOLOGY

3.1 Research Approach and Design

This study used a qualitative research approach and a case study design (Creswell & Creswell, 2023). The approach assisted the researcher to obtain in-depth data, and develop a deeper understanding on how the use of ICT devises could enhance competence-based education and training. Regarding the design, a single case study design was opted that is the ELCT Northern Diocese and its secondary schools. The design assisted in gaining in-depth understanding of the reality about the use of ICT for enhancing competence-based education and training (Creswell & Creswell, 2023; Yin, 2018).

3.2 Area of Study, Population, and Sampling

Hai District in Kilimanjaro Region, Tanzania was an area opted for the study. Geographically Hai District is located in Bomani area, Boma Ngo'mbe along the Arusha-Himo road. The administrative boundaries include: Kilimanjaro National Park and Rombo District to the North. Moshi Town District to the East, Siha District and Meru District to the West together with Simanjiro District to the South *(https:kilimanjaro.go.tz)*. Hai District seemed to be a rich institutional structure with Hai Province of the ELCT identity reasonable for the study since it accommodates more secondary schools owned by the ELCT Northern Diocese compared to other Provinces which are Karatu, Siha, Central and Kilimanjaro East. All of these Provinces are under the proximity of the Northern Diocese in Kilimanjaro Region (ELCT ND Reports, 2024). The targeted population of this study was 76 which included 65 teachers, 5 Heads of school, 5 School bursars, and 1 Educational Secretary of the ELCT Northern Diocese (ELCT ND reports, 2024). The researcher used a sample size of 31 participants including; 5 Heads of school, 5 Academic masters/mistress, 5 School bursars, 5 Heads of ICT department, 5 Heads of Arts department, 5 Heads of Sciences department, and 1 Education Secretary of the ELCT Northern Diocese secondary schools (Mugyenyi & Mokoro, 2022). Regarding sampling techniques this study used expert sampling to select knowledgeable and experience participants based on the policy implementation, teaching and learning resources as well as practices of competence-based education and training (Creswell & Poth, 2018; Mugyenyi & Mokoro, 2022).

3.3 Data Collection and Analysis

In this study the following research instruments were used; interview guide, observation checklist, questionnaire and document review. Interviews were conducted with Heads of school and the Education Secretary of the ELCT Northern Diocese in order to gather in-depth insights into their experiences, beliefs, and perceptions based on study aim (Ruslin, Mashauri, Rasak, Alhabsyi & Syam, 2022; Cohen, Manion & Morrison, 2018). Observation assisted to understand the context and dynamics from the perspective of the participants themselves. The researcher used observation checklist that guided to observe the ICT related teaching-learning resources (Kumar & Sharma, 2023). As for the questionnaire it assisted in collecting rich data as it was structured to include questions to explore participants' experiences, perspectives, or beliefs in depth. Thus, questionnaires were used to collect data from Academic masters, School bursars and Heads of department of ICT, Arts, and Sciences. The questionnaire questions were structured with both open-ended and close-ended questions (Creswell & Creswell, 2023; Kuphanga, 2024). In addition, document analysis was used to review the existing documents in researched schools which including schemes of work, lesson plans, financial statements, enrolment trends, school's timetable and strategic plans. These documents were useful to this study in order to validate information which was provided through interviews and questionnaires (Kutsyuruba, 2023). Regarding data analysis, the study used thematic analysis techniques by using coding scheme which categorized the main theme and sub-themes of the findings (Cohen, et al., 2018; Yanto, 2023).

3.4 Trustworthiness and Research Ethics

In this study the credibility of available information was ensured by employing four methods of collecting the data that is interviews, observations, questionnaire, and documents. In addition, literature review and theories assisted in interpretation of the data. Time was taken in rechecking the data accuracy and the researcher added knowledge on the study. The current study's transferability addressed the importance of ICT in delivering education and training and specifically the competence-based approach to teaching and learning. Thus, the findings seem applicable to similar studies of different contexts. The criterion for dependability evaluated in this qualitative study used a variety of methods, literature and theories to generate the data. Lastly, confirmability was ensured through quotations from obtained data and literature to support the findings Thus, the study's trustworthiness adhered to the criteria based on the credibility, transferability, dependability, and confirmability of the data (Creswell & Creswell, 2023; Guba & Lincoln, 1989; Yanto, 2023). As for adhering to research ethics, the key ethical principles guided the researcher as: Obtaining official permission from institutional channels at Tumaini University Makumira, and the ELCT Northern Diocese Head Office. In addition, the researcher respected cultural norms, values, and traditions of church schools of the ELCT Northern Diocese which were involved in the study. Provision of consent forms to participants for them to make decision on participation in the research without force, the use of plagiarism checker tool to identify the status of the entire research and acknowledged author's work used in the study (Smyth, Martin & Downing, 2025; Creswell & Creswell, 2023).

4.0 RESULTS

The study results are presented from the data generated via tools explained in section 3.3 of this study. The objective of the study was to find out ways for promoting the use of ICT tools in order to enhance competence-based teaching and learning in secondary schools of the ELCT Northem Diocese in Hai District. In this section the 5 secondary schools involved in the study are identified as SSC-1 to SSC-5. Participants were identified by their professional positions using abbreviations and identified respective school. These are for example, HoS, SSC-1 up to HoS, SSC-5; ICT

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HoD, SSC-1 to SSC-5 and same to other departments as well as the Education Secretary-EDS. The result section is divided into: Data collection returned rate, background characteristics of the participants, the status of ICT tool in schools, and ways in which ICT tools are used for competence-based education and training.

4.1 Data Collection Tools Returned Rate

The questionnaires returned rate from 31 participants who were involved in this study is shown in Table1.

Table 1: Data Collection Tools Returned Rate (N=31)

Data Collection Tools	Participants Category	Targeted Freq.	Participated Freq	Percentage %
Questionnaires	Academic master	5	5	100
	Heads of departments (ICT, Arts, Science)	15	15	100
	School bursars	5	5	100
TOTAL		**25**	**25**	**100%**

Source: Field Data, 2025
Key: Freq. = Frequency

The data in Table1 show that 100% of the participants returned the questionnaires which were distributed for enquiries. From interviews, all the sampled 6 participants participated and rated as 100%. According to Habiyu and Njuguna (2025), 75% of tools returned rate is enough for the study. Thus, for this study, the 100% of participation of sampled participants allowed the researcher to proceed with data analysis processes as the percentage obtained were above 75%.

4.2 Background Characteristics of Participants

The background characteristics of the participants involved in this study include gender, education qualifications, and working experiences in years. Table 2 shows the participants' background characteristics.

Table 2: Background Characteristics of Participants

Demographic Category	Intervals	Frequency	Percentages (%)
Gender	Female	4	12.9
	Male	27	87.1
	TOTAL	**31**	**100**
Education Qualifications	Diploma	3	9.7
	Bachelor	25	80.6
	Master	3	9.7
	TOTAL	**31**	**100**
Working Experiences	Less than 1 year	1	3.2
	1-5 years	14	45.2
	6-10 years	7	22.5
	11-15 years	3	9.7
	16-20 years	3	9.7
	Over 20 years	3	9.7
	TOTAL	**31**	**100**

Source: Field Data, 2025

The data in Table 2 show that the researcher used a total of 31 participants where by gender-wise majority of them were males (87.1%) and minority were females (12.9%). This implies that most of teachers are males, possibly due to geographical reasons. These schools are mostly located in rural areas where some females could find impossible to travel daily with their families. Also, participants were characterized into four groups based on the aspect of educational qualifications. The (9.7%) of research participants were holding a diploma qualification, (80.6%) holding a bachelor's degree qualification, and (9.7%) holding a master's degree academic qualification. This means that the majority of secondary school teachers are skilled due to their high degree level of education.

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Further, the data in Table 2 demonstrate that 14 (45.2%) of the participants had 1-5 years of working experience. 7 (22.5%) of the participants had 6-10 years of working experience, 3 (9.7%) of the participants had 11-15 years of working experience, 3 (9.7%) of the participants had 16-20 years of working experience, and 3 (9.7%) of the participants had more than 20 years of working experiences. This means that, the involved participants were highly experienced in teaching and could be possible to adopt reforms on competence-based education and training enhanced by the ICT.

4.3. ICT Tools Status in Schools

The objective of this study aimed to find out how the ELCT Northern Diocese secondary schools in Hai District promote the use of ICT tools to enhance competence-based teaching and learning. In order to address this objective various item questions were designed and the data is presented in the sub-sequent sections and sub-section.

4.3.1 Availability of ICT Tools

Table 3: Availability of ICT Tools

Item	Responses					
	Yes		No		Total	
	F	**%**	**F**	**%**	**F**	**%**
	25	100	-	-	25	100

Source: Field Data, 2025

Table 3 shows that, 25 participants who responded to questionnaires agreed that their schools have ICT tools used for teaching and learning purposes. Through interviews Heads of school mentioned ICT tools available in their schools are as follows- "*computers and projectors*" (Interview with HoS, SSC-1 on 10th March 2025). Another Head of school mentioned *"computers and projectors"* (Interview with HoS, SSC-2 on 3rd March 2025) and HoS, SSC-3 mentioned "*"computers and projectors"* (Interview with HoS, SSC-3 on 7th March 2025). Also, the HoS, SSC-4-5 mentioned *"tablets and router-free-Wi-Fi"* (Interview on 4th & 3rd March 2025). Together with "*smart phones"* were mentioned as available ICT tools (Interview with HoS, SSC-1 on 10th March 2025). The mentioned ICT tools above were also mentioned by Academic Masters, Heads of Department and Bursars for each secondary school involved in the study. Through observation, the researcher noted that in all five secondary schools "computers and projectors" were available in computer laboratories for classroom teaching and learning (Observed in March 2025). However, in SSC-5 and SSC-4 *"*tablets*"* were available to students (Observed on 3rd & 4th March 2025).

Table 3 indicates that several ICT tools were available in schools involved in the study. Computers and projectors were mentioned more than any other facility. In this study, the results indicated that the ELCT Northern Diocese secondary schools in Hai District execute the policy statement to encourage the use of ICT tools on teaching and learning for competence-based education and training, as outlined in section 3.3.1 and 3.3.2 of the Education and Training Policy 2014 (2023) Edition, (URT, 2023a).

4.3.2 Students Access to ICT tools

Table 4: Students Access to ICT Tools

Responses	Frequency (f)	Percentage (%)
Always	9	36
Frequently	15	60
Infrequently	1	6
Never	-	-
Total	**25**	**100**

Source: Field data, 2025

Table 4 shows that, research participants gave different perceptions whereby majority of the participants in all five secondary schools said that, 60% of the student were frequently accessing ICT tools and minority-36% of the students always access ICT tools and 4% replied that they access ICT tools infrequently. Through interviews Heads of school showed how students' access ICT tools through technologies available. As commented: "*Through computer lab students are able to learn in conducive- environment which enhances competence-based education. Moreover, through projectors, students are able to visualize and understand more during the lesson*" (Interview with HoS, SSC-1 on 10th March 2025). Another participant said that, "*…tablets are used for students to acquired materials through online and all tablets are controlled by password to avoid unnecessary materials"* (Interview with HoS, SSC-4 on 4th March 2025).

4.4. The Use ICT Tools for Competence-Based Education

Research participants gave different suggestions on how their schools promote the use of ICT tools to enhance competence-based teaching and learning. The suggested ways are presented in several sub-themes which include: Formalization of Computer Science studies, employment of professionals ICT teachers, training and seminars on application of ICT tools and conducive teaching and learning environment as next presented:

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4.4.1 Formalization of Computer Science Studies

The data on ways of promoting the use of ICT tools to enhance competence-based education and training informed official plans and practices of teaching and learning of Computer Science as a subject. Through questionnaires one participant commented that; "include Computer Science in the teaching time-table, give tests, and examinations to students" (Questionnaire from Burs, SSC-2). During document review, the researcher reviewed class time-table and noted that Computer Science is taught to all students regardless of their levels of class. For example, in SSC-2, SSC-3 Computer Science is taught from Form I to Form VI (Document reviewed by the researcher on 3rd March, 2025 & 7th March, 2025).

The researcher also observed that teachers use students centered learning approach in computer laboratory classes. Students were given a certain task concerning excel computer programme and the students attempted the task practically (Observation from researcher on 3rd March, 2025, 7th March, 2025 & 4th March, 2025). Nevertheless, interview data from HoS, SSC-5 said that *"teaching of Computer Science is very useful as students develop ICT skills"* (Interview on 3rd March, 2025). Likewise, "school encourages students to use ICT tools so as to develop skills and knowledge" (Questionnaire from Arts HoD, SSC-5).

The data imply that Computer Science is recognized as a taught subject of its own. Thus, teachers and students in the ELCT Northern Diocese secondary schools in Hai District engage in studying ICT resources and apply them during teaching and learning to enhance competence-based education and training.

4.4.2 Employment of Professional ICT Teachers

Since schools have allocated Computer Science in the class timetable, and other resources such as projectors and computers and text books are available, participants were of the views that teachers who are expert in Computer Science studies must be available in schools as one of the participant said that; "*schools are to employ computer teachers*" (Interview with HoS, SSC-1 on 10th March 2025), *"employment of ICT teachers"* (Interview with HoS, SSC-3 on 7th March 2025)."…*employ competent ICT teachers*" (Interview with HoS, SSC-2 on 3rd March 2025). The HoS, SSC-2 elaborated further that:

> The school is working hard to recruit ICT teachers so as to facilitate learning and students gain knowledge, but the school has also been able to prioritize teachers in listing the necessary books and equipment that lead students to practical learning and acquire the required skills (Interview with HoS, SSC-2 on 3rd March 2025).

Likewise, the Education Secretary informed that:

> Every secondary school in the ELCT Northern Diocese has attempted to employ Computer Science teachers. It doesn't matter if the employment is on part-time or full-time basis so that all students from Form I to Form VI are engaged theoretically and practically to acquire knowledge and skills in learning even other subjects (Interview with the EDS on 12th March, 2025).

The data on the need for qualified Computer Science teachers imply that the ELCT Northern Diocese secondary schools in Hai District has engaged in technological progress methods, particularly the involvement of ICT professionals in the delivery of teaching and learning utilizing ICT technologies.

4.4.3 Trainings and Seminars on Application of ICT Tools

Participants were of the views that all teachers are to be trained on how to apply ICT tools in teaching. One of the participant commented that "teachers are to be trained to use ICT in planning lessons and teaching" (Questionnaire from ACM, SSC-2, on 3rd March 2025). Also, "*to ensure that all teachers have ICT knowledge"* (Interview with HoS, SSC-3 on 7th March 2025). The data on offering trainings and seminars was also said by HoS during interviews such as "*seminars are opportunities for teachers to learn more about the use of ICT tools*" (Interview with HoS, SSC-4 on 4th March 2025). "*Training for teachers regardless what they teach"* (Interview with HoS, SSC-2 on 3rd March 2025).

Furthermore, the components of training and seminars were also mentioned in the questionnaires. These are "Introduction to computer studies" (Questionnaire from Arts HoD, SSC-1 on 10th March 2025). "To define the clear meaning of digital literacy to students and highlight the benefit of ICT" (Questionnaire from ICT HoD, SSC-2 on 3rd March 2025). "How to use a projector and a computer" (Questionnaire from ACM SSC-3 on 7th March 2025). Other components of trainings mentioned were; "highlight the benefits of ICT" (Questionnaire from ACM, SSC-4 on 4thMarch 2025). "Inco-operating digital learning activities or using online platforms" (Questionnaire from ACM, SSC-5 on 3rd March 2025). "The use of multi-media content like videos, animations and podcasts" (Questionnaire from ICT HoD, SSC-1 on 10th March 2025). "Define the clear meaning of digital literacy" (Questionnaire from ICT HoD, SSC-1 on 10th March 2025). In addition, during the interview with the Hos, SSC-4 it was explained that "*since tablets are available in our school, teachers and students are mutually being trained to use different programmes which are installed in the tablets"* (Interview on 4th March 2025). While the Education Secretary said;

> We have trained and updated teachers on how to conduct meetings on the absence of the physical gathering. For example, zoom meeting whereby after training each head of school was assigned to have zoom meeting with teaching staff for more practice (Interview with EDS on 12th March 2025).

During documents review the researcher reviewed financial statements which show payments made for seminars and trainings for teachers on how to use ICT tools, (Document review from SSC-2 & SSC-4 on 3rd March, 2025 & 4th March, 2025). Moreover, some of schools have strategic plans that show schools plan for teachers to attend trainings and seminars on the use of ICT tools (Document review from SSC-1, SSC-2 & SSC-3 on 3rd, 7th& 10th March, 2025). The data from the ELCT Northern Diocese secondary schools in Hai District on conducting trainings and seminars about ICT tools imply that in-service training are very much needed to equip teachers, librarians and IT technicians on currents needs of technological advancements.

4.4.4 Conducive Teaching and Learning Environment

Another means of promoting the use of ICT tools to enhance competence-based teaching and learning, was to ensure that schools must have computer laboratory whereby teachers and students are able to integrate ICT in learning. During observation for example, the researcher observed computer laboratories with enough tables and chairs that accommodate all students in the computer laboratories (Observation from researcher-

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SSC-4 on 4th March 2025). Also, the researcher reviewed one of the History subject lesson plans for Form Three which indicated that students studied history subject by using a computer and a projector (Document review from researcher-SSC-2 on 3rd March, 2025).

Also, one of the head of school during the interview said that, *"In computer laboratory students are able to learn practically through computer lessons. When it comes for computer lesson students are attentive as they learn by doing themselves"* (Interview with HoS, SSC-1 on 10th March, 2025). Another head of school also said, *"school emphasizes students to use ICT tools effectively in the computer laboratory to acquire knowledge"* (Interview with HoS, SSC-2 on 3rd March 2025). Also, *"we create conducive environment for students to download books e.g., TIE books through tablets and school provide free-WIFI to all students and online materials which are relevant to learners context*" (Interview with HoS-SSC 5 on 03, March 2025). In addition, the Education Secretary was of the view that *"our strategic plan includes learning environment matters and practices for schools development"* (Interview with the EDS on 12th March 2025). Through questionnaires some participants responded that; "equipping schools with computer rooms facilitates easily teaching and learning process" (Sc HoD, SSC-4 on 4th March 2025). "Construction of computer room is very important" (ACM, SSC-1 on 10th March 2025). "Equipping classroom with computers and projectors" (ICT HoD, SSC-1 on 10th March 2025). "School set up computer labs equipped with internet" (Sc HoD, SSC- 3 on 7thMarch 2025 & Burs, SSC-1 on 10th March 2025). In relation to this study the data imply that the ELCT Northern Diocese secondary schools in Hai District implement the policy statement on the need to create a suitable atmosphere for teaching and learning so that to enhance competence-based education using ICT as stipulated in section 3.3.2 of the ETP 2014 (2023) Edition, (URT, 2023a).

5. DISCUSSION

Based on the data on ways to promote ICT tools to enhance competence-based education and training, the study found some possible strategies which can be used by schools and in specific the non-Government schools. The suggested strategies were: formalization of Computer Science Studies, employment of professional ICT teachers, training and seminars on application of ICT tools, and conducive teaching and learning environment. These sub-themes are discussed next.

5.1 Formalization of Computer Science Studies

The findings of the study revealed that, a way to promote the use of ICT tools in the ELCT Northern Diocese secondary schools in Hai District is to ensure that Computer Science is taught as a subject from Form-I to Form IV to all students. The findings from the study depicted that; the researcher reviewed class time-table and noted that Computer Science is taught to all students regardless students' class level. This is also supported by the Tanzania Institute of Education, the publisher of Computer Science current syllabus (URT, 2023b). Also, the researcher observed that teachers use students centered learning approach in computer laboratory where by students were given a certain task concerning excel computer programme and the students were able to do practically. These findings align with the study of Murith and Yoo (2021) in Kenya, who insist formalization of computer studies as a subject in order to equip students with needed 21st century skills. This means that students are able to learn Computer Science because the schools consider computer as a subject and students are acquired necessary skills needed in the real-world.

Moreover, the current Education and Training Policy 2014 (2023) Edition depicted that, the Government, in collaboration with stakeholders, will ensure that ICT is used in the delivery of education and training at all levels according to the needs (URT, 2023a). Furthermore, the National ICT Policy (2016) advocates for increasing students enrollments, improving access and equity as well as improving quality and relevance, expanding and optimizing facility use, and improving operational efficiency across the board. Goal 9 of the Sustainable Development Goals focuses on boosting infrastructural development, industry, and innovation through the use of ICT (United Nations, 2015). The ICT Skills Development Framework aligns with this goal since it intends to produce students who will contribute to poverty alleviation by providing ICT solutions to the government and community via graduates (United Nations, 2015; URT, 2016).

The findings are also, aligned with the Social Constructivist theory that emphasizes students to construct their own understanding and knowledge through experience and reflection. As the researcher observed that students were given several computer tasks and they were able to practice by themselves. Based on the findings, if the government makes significant efforts to facilitate Computer Science technological resources in both Non-Government and Government schools, students will be able to gain 21st century skills and address global challenges in economic, social, and political areas.

5.2 Employment of Professional ICT Teachers

The findings supported on the need for qualified Computer Science teachers as the way of promoting the use of ICT tools in the ELCT Northern Diocese secondary schools. Each school had employed a professional ICT teacher. However, those teachers were not enough as participants suggested the number of ICT teachers to be increased. These findings concur with Ndume, Kisanga and Selemani (2021) who conducted a study and found that in each school there is at least one teacher capable of using ICT devices. This means that students are able to learn computer as a subject in schools because there is access for ICT tools and knowledgeable teacher for integration of ICT skills. The study aligned with Education and Training Policy 2014 (2023) Edition that initiatives should be done to increase competent human resources in terms of quality and quantity (URT, 2023a). These findings are supported by the bottom-up policy theory of Michael Lipsky (1980's), which emphasized on local context whereby policy are adapted or created based on the needs, conditions, and input from front-line implementers. The schools need to focus on employment of competent ICT teachers who are at front-line to implement the use of ICT so as to enable quality education to students. The number of recruited teachers should be proportional to the number of students for effective integration of ICT skills as most of teachers complained the shortage of teachers as well as previous studies revealed that teachers are inadequate in secondary schools. Thus, secondary schools need to recruited teachers who will promote the use of ICT tools on teaching and learning process (Kagori & Haule, 2025).

5.3 Training and Seminars on Application of ICT Tools

The findings from the ELCT Northern Diocese secondary schools in Hai District on conducting trainings and seminars about ICT tools imply that in-service trainings are very much needed to equip teachers, librarians and IT technicians on currents needs of technological advancements. Some of these needs are the knowledge of using AI in teaching and learning, and the use of technological systems in managing schools' practices (URT,

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2025; URT, 2023a). According to Msafiri et al. (2023), it is importance for teachers to participate in practical and meaningful professional development opportunities related to pedagogical approaches, strategies, and methods that align and integrate ICT tools with curriculum objectives, content, or standards in order to use ICT effectively for teaching and learning. This means that instructors who participate in practical and meaningful professional development will be able to update their expertise and effectively apply ICT tools. Also, the study done by Ntsobi (2022) in South Africa was of the view that ICT training influences educators' readiness to employ ICT resources for curricular delivery. Training expands educators ICT knowledge and equips them to apply acquired abilities. This indicates that the learned set of information and skills boosts teachers' confidence in the classroom and their ability to teach the subject.

The findings are consistent with Adu and Zondo (2024) study in South Africa, which found that schools should ensure that the necessary equipment for ICT integration is available and consider regular trainings for teachers, which has implications for addressing global ICT learning difficulties. Thus, improving teachers' digital skills in secondary schools, continuous professional development and the adoption of ICT champions as tools for improving teachers digital abilities. As for the ELCT Northern Diocese secondary schools this research revealed that ICT seminars and training are conducted at least thrice per year (ELCT, ND report, 2024). Also, the study corresponds with the Social Constructivism theory which insists that individuals are encouraged to find support in areas of learning where they encounter difficult. Teachers are required to find support from expertise persons in ICT so as to gain knowledge and skills on how it is integrated in education (Vygotsky, 1999).

5.4 Conducive Teaching and Learning Environment

Another way of promoting the use of ICT tools to enhance competence-based teaching and learning was to ensure that schools must have computer laboratory whereby teachers and students are able to integrate ICT in learning. The researcher observed computer laboratories also were enough tables and chairs that accommodate all students. Also, the researcher reviewed one of the History subject lesson plans for Form Three which indicated that students studied History subject by using a computer and a projector. The findings are supported by the study of Manizabayo and Kachchhap (2025), who said that well-prepared environment for teaching and learning, learners can easily facilitate the implementation of competence-based education and training. This implies that, schools need to prepare conducive- environment for teaching and learning which facilitates students to learn theoretically and practically. Also, findings correspond with a study done by Assey, (2022) in Tanzania, the study highlighted numerous ways that can be used to successfully implement a competency-based curriculum, including conducive learning environment to learners and enough teaching and learning materials which is competency-based curriculum books so as to simplify teaching and learning process. Thus, students acquired the needed 21st century in digital skills.

Regarding the findings on the use of ICT tools to facilitate the adoption of digital platforms and enhancement of the teaching and learning environment, the findings align with the theory of Lev Vygotsky (1999) of the social constructivism learning theory. The theory shifts the responsibility of knowledge acquisition from the teacher to the student, resulting in a student-centered approach. Also, the theory transforms the student from a passive listener to an active participant and co-constructor of knowledge among co-students. To fulfill that environment should be supportive with all learning facilities.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study concludes that the adopted strategies are effective for implementation of competence-based education and training in this era of science and technology. Teachers are very much aware of educational and economic reform on the use of ICT related tools or facilities. Teachers seem to demonstrate ICT competences in teaching and learning process due to the trainings and seminars which are conducted at school level.

6.2 Recommendations

The study recommends that heads of school could develop School ICT policy for guiding the use ICT related facilities as well as finding potential stakeholders who can support schools by providing ICT tools for teaching and learning. Each school could put effort to encourage the use of ICT related tools in order to accommodate new educational reforms in the 21st century era. Also, teachers are supposed to use teaching and learning approaches which are in hand with competence-based education. Nevertheless, researchers are recommended to engage in further investigations on the quality and quantity of the available ICT tools in both Non-Government and Government schools to determine whether they are in line with the competence-based education.

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