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Factors Affecting The Use Of ICT In The Teaching And Learning Of Geography In The Lower Geography Curriculum In Selected Secondary Schools Of Busiika Town Council, Bamunanika County, Luweero District, Uganda

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Abstract:
The specific study objectives were; to find out the current status of ICT infrastructure in the teaching and learning of Geography in selected secondary schools of Busiika Town Council, to investigate the ICT competency of teachers of Geography in the teaching and learning of Geography in selected secondary schools of Busiika Town Council and to examine the teachers of Geography's attitude on ICT usage in the teaching and learning in selected secondary schools Busiika Town Council, Bamunanika County, Luweero District, Uganda. Data was gathered using a self-administered questionnaire on 12 respondents (students). Data was analyzed using SPSS in form of mean and standard deviation. The researcher used descriptive research design.
The study findings on objective one show that computer laboratory, internet access, ICT basics and ICT –based tools are factors affecting the teaching and learning of Geography in secondary schools of Busiika Town Council, Luweero District, Uganda. This was indicated by aggregate mean 3.7 with 0.78 standard deviation.

Study findings on objective two show that ICT competency is a factor affecting the teaching and learning of Geography in schools of Busiika Town Council. This manifests itself in terms of teachers of Geography being able to use computer packages such as Microsoft Word, Excell, PowerPoint and internet as well. This is indicated by aggregate mean 3.9 with standard deviation of 0.706.

Study findings on objective three show that teachers of Geography's attitude towards ICT usage affect the teaching and learning of Geography. This is seen in terms of ICT not being needed in teaching, Geography and ICT not being related, ICT being complicated and as well as bring expensive. This is indicated by aggregate mean 3.9 with standard deviation 0.82.

The researcher recommended that, government of Uganda should improve the ICT infrastructure by increasing both availability and accessibility of ICT-based tools and devices by schools all over the country; government should improve teachers' competency and ability to use ICT. This could be in terms of on-the-job-training among others; teachers and students should develop a positive attitude towards ICT. This will make it possible and easier to apply it in the teaching and learning of Geography and further studies should be conducted on other factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum in other secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda.

Keywords: *Teaching and Learning, Geography, Secondary Schools*

CHAPTER ONE

INTRODUCTION

Background of the Study

Geography is the study of physical features of the earth and its atmosphere and of human activities as they affect the environment and it is affected by those including the distribution of population, resources, political and economic activities. Geography as a subject is needed to produce and increase the number of professionals such as teachers of Geography, plane pilots, journalists, land surveyors, quantitative surveyors, astronauts and agriculturalists for the development of the country (Amalnik, Moayyedi and Mirzaei, 2021).

In India, the use of Information Communication Technology (ICT) into the teaching and learning of Geography in lower secondary enables both the teachers and leaners in the application computer-based skills during teaching–learning process. *For example*, less expensive laptops have been designed for use in school on a 1:1 basis with features like lower power consumption, a low cost operating system, and special re-programming and mesh network functions. The government of India provides these gadgets to various secondary schools (Balanskat, Blamire and Kefala, 2021).

In Africa, a case study of South Africa, the use of ICT into the teaching and learning of Geography in lower secondary is seen in terms of teachers and the learners making the use of Tablets (small personal computers) with a touch screen, allowing input without a keyboard or mouse. Inexpensive apps may be downloaded onto tablets, making them a versatile tool for teaching-learning process. The most effective apps develop higher order thinking skills and provide creative and individualized options for teachers and students to express their understandings of Geography subject content (Fox, Evan & Michael, 2020).

In East Africa, a cases study of Kenya and Tanzania, ICT is used in the teaching and learning of Geography in secondary schools. In some schools, both students and teachers use *Interactive White Boards or Smart Boards* to allow projected computer images to be displayed, manipulated, dragged, clicked, or copied. Simultaneously, handwritten notes may be taken on the board and saved for later use. Interactive white boards are associated with whole-class instruction rather than student-centred activities. Student engagement is generally higher when ICT is made available for student-teacher use throughout the classroom (Mukuna, 2021).

In Uganda, the use of ICT in the teaching and learning of Geography in lower secondary schools is viewed as producing positive academic results. In some schools especially international schools, both teachers and the learners *use* E-readers to hold hundreds of books in digital form, and they are increasingly utilized in the delivery of reading material. Students—both skilled readers and reluctant readers—have had positive responses to the use of e-readers for independent reading. Features of e-readers that contribute to positive use include their portability and long battery life, response to text, and the ability to define unknown words. Additionally, many classic book titles are available for free in e-book form (Hussain, Muzammil Howard and Philip, 2022).

In Luweero District, the application of ICT into the teaching and learning of Geography in lower secondary schools is impacting students and teachers positively. For teachers and students with different styles of teaching and learning as well, ICT provides diverse options for taking in and processing information, making sense of ideas, and expressing learning and teaching. Over 87% of students learn best through visual and tactile modalities, and ICT helps these students 'experience' the information instead of just reading and hearing it (Luweero District Information Office, 2022).

In Busiika Town Council, the usage of ICT in the learning and teaching of Geography in lower secondary schools has been facing various challenges. For example, teachers of Geography need specific professional development opportunities in order to increase their ability to use ICT for formative learning assessments, individualized instruction, accessing online resources, and for fostering student interaction and collaboration. Such training in ICT should positively impact teachers' general attitudes towards ICT in the classroom, but it should also provide specific guidance on ICT teaching and learning within each discipline. Without this support, teachers tend to use ICT for skill-based applications, limiting student academic thinking (Luweero District Information Office, 2022). However, factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum was s not known yet. This formed the basis of this study in selected schools of Busiika Town Council, Luweero District, Uganda.

Statement of the Problem

Geography plays an instrumental role in the development of the society as it a channel through which professionals like teachers, journalists, land surveyors, quantitative surveyors, astronauts, architectures and pilots are produced. However, despite its importance, the integration of Information Communication Technology (ICT) into the teaching and learning of this subject (Geography) in lower secondary schools is low. This is seen in terms of some secondary schools not having even a single set of computer as well as not having some computer-based subjects (Luweero District Information Office, 2022). It was on this background; therefore, that the researcher intended to investigate factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda

Research Questions

1. What is the ICT competency of teachers of Geography teachers in the teaching and learning of Geography in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda?
2. What is the teachers of Geography's attitude on ICT usage in the teaching and learning in selected secondary schools Busiika Town Council, Bamunanika County, Luweero District, Uganda?
3.

General Objective

The general objective of the study was to investigate factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum was s not known yet. This formed the basis of this study in selected schools of Busiika Town Council, Luweero District, Uganda.

Specific Objectives

1. To investigate the ICT competency of teachers of Geography teachers in the teaching and learning of Geography in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda.

2. To examine the teachers of Geography's attitude on ICT usage in the teaching and learning in selected secondary schools Busiika Town Council, Bamunanika County, Luweero District, Uganda.

Scope of the Study

The study was carried out in Ristaka High School, Venus College, Nankabirwa Memorial Secondary School and Babrah Secondary School as selected schools in Busiika Town Council, Bamunanika County, Luweero District, Uganda. The selected schools are located 33 kilometres North of Kampala City, along Gayaza-Zirobwe road. The neighboring schools include: Busiika Moslem Secondary School to the West, Victory Secondary School to the North, Chado Junior School to the East and Busiika Parents to the South. The geographical coordinates of the selected schools are 00 50N, 32 30E (Latitude: 0.8333; Longitude: 32.500).

The researcher focused on investigating factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda.

. The independent variables were: the status of ICT infrastructure, teachers' competency and teachers' attitude. The dependent variable was teaching and learning of Geography.

The study took the span of four months that was from May-September, 2023.

Significance of the Study

Findings of the study may be useful to teachers and school administrators to devise possible ways of improving the teaching and learning of Geography through Information Communication Technology (ICT)

Findings of the study may be useful to Luweero District management on how to come up with strategies and approaches of improving the learning and teaching of Geography.

Findings of the study may act as a tool with back ground information upon which other researchers in similar or related subjects would base to verify their findings of the study.

Findings of the study may provide valuable data for secondary schools to enhance the teaching and learning of Geography.

Study findings may help secondary school students to make informed decision and choice in relation to ICT and Geography as learning subjects.

Conceptual Framework

The figure below shows factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum in selected secondary schools of Busiika Town Council, Bamunanika County, and Luweero District, Uganda. The independent variables were: the status of ICT infrastructure, teachers' competency and teachers' attitude. The dependent variable was teaching and learning of Geography.

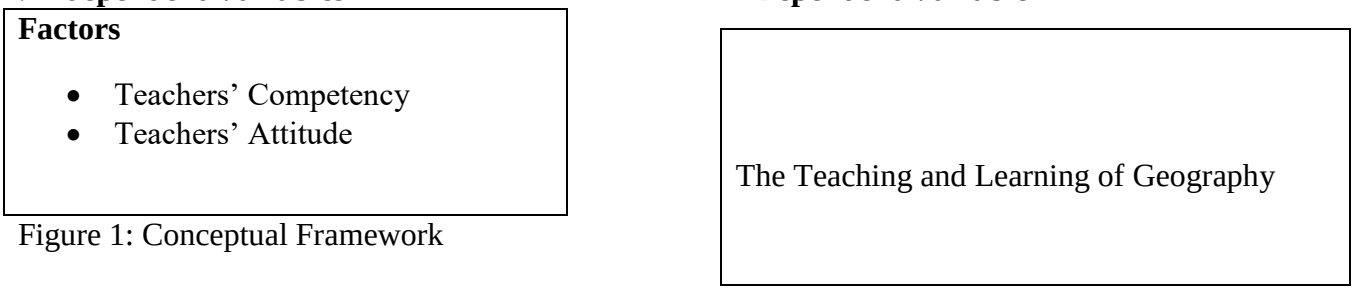

Figure 1: Conceptual Framework

Operational Definition of Terms

Information and Communications Technology (ICT): In this study, it meant is an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage and audiovisual, that enable both teachers and students of Geography in Busiika Town Council to access, store, transmit, understand and manipulate information.

Teaching and Learning of Geography: In this study, it meant classroom instruction by the teachers of Geography as well as giving students exercises, quizzes, tests and examinations in schools of Busiika Town Council.

Teachers' Competency: In this study, it meant teachers of Geography being able to use ICT with accuracy and punctuality in teaching-learning activities in secondary schools of Busiika Town Council.

Teachers' Attitude: In this study, it meant the opinions, views, ideas and suggestions that teachers of Geography attach to ICT which affect its (ICT) application in schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter examines and presents different literature according to the variables of the study. The literature is extracted from different sources such as library books, journals, internet, newsletters, reports, community dialogue, newspapers and magazines where the knowledge gaps is identified and bridged.

Teachers' Competency in ICT and Teaching and Learning of Geography

Teachers of Geography use a diverse set of ICT gadgets and tools to communicate, create, disseminate, store, and manage information. In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model where teachers guide students in watching lessons at home on the computer and use classroom time for more interactive exercises (Hilbert & Martin, 2020).

However, Hilbert and Martin (2020) forget that some teachers and students do not have the skills in computer-based information storage. Despite the fact that they have computer-based laboratories.

According to Genlott et al (2021), being actively used in various educational institutions like schools, colleges & big universities, computers are used by teachers of Geography to aid the teaching-learning process. School administrators and teachers in schools take help of audio-visual techniques to prepare lesson plans for learners. For this, they use Microsoft PowerPoint to may be shown on multimedia and sound projectors in classrooms. It is an interesting and simple method to learn for students. Multimedia (Sight and sound) presentations are easy to deliver for teachers also as these presentations spare a great deal of time and effort.

Genlott et al (2021) point out schools use computers in the learning and teaching process. Genlott et al pays little attention to the fact that not all schools have aces to computers.

The application of ICT in schools enables teachers of Geography to become creative and innovative. For example, they (students and teachers) use technology to create multimedia presentations, design projects, develop prototypes, and express their ideas innovatively. These tasks are highly valued in many organizations and institutions where creative problem-solving and innovative thinking are essential (Blackwell, Lauricella and Wartella, 2020).

However, Blackwell, Lauricella and Wartella (2020) forget that some teachers and students are not able to use computers simply because they lack computer-based knowledge and skills.

According to Kirsh David (2021), many ICT educational tools offer a variety of functionalities that promote collaboration among teachers of Geography. For example, video conferencing tools such as Zoom, Microsoft Teams, Slack, and Skype allow teachers to hold virtual meetings with the learners from anywhere in the world. With free online storage solutions like Google Drive, students can easily share and edit projects with each other, helping to foster better overall collaboration in both the academic sphere and the world of work. This mirrors the teamwork and communication-related task required in academic institutions for the instructors / teachers.

However, Kirsh David (2021) forgets the fact that some teachers and students do not know how to use some computer based applications and tools. This qualifies them to computer illiterate.

Many researchers and scholars like Fox, Evan & Michael (2020) point out that with social media sites galore, most students are already digital citizens. However, by incorporating technology into the classroom, students can learn how to be responsible in the digital world and with their digital actions. The class becomes a microcosm of the broader digital landscape where students can practice communicating, searching, and engaging with other digital citizens.

The integration of Information and Communication Technology (ICT) into the teaching of Geography makes it possible for the teachers to perform some academic tasks in and outside the classroom. For example, **teachers and students** utilize educational game websites or apps that offer interactive quizzes, puzzles, and

challenges related to the subject matter. This engages teachers in a fun and competitive environment while reinforcing their teaching as well (Enrique Hinostroza, 2020).

However, Enrique Hinostroza, 2020) forgets that some teachers and students have academic related tasks to perform. They fail to accomplish such tasks using computers, tablets, laptops among others.

A wide range of schools in various parts of the world make use of Online Polls and Surveys to perform academic-based tasks. Use online polling tools or survey platforms enable teachers of Geography to gather student feedback, conduct class surveys, or facilitate class discussions. This encourages active participation and allows teachers to give students an opportunity of expressing their thoughts. Additionally, teachers engage coding and programming academic activities using educational coding platforms or apps. They (teachers) teach the basics of coding through game-based tutorials and then the learners perform some tasks to create simple programs or animations (Mukuna, 2021).

However, Mukuna points out that ICT enables teachers to conduct online lesson. Mukuna forgets that not all schools have accessibility to internet connection.

According to Ngcobo and Herselman (2022), through ICT application teachers of Geography perform academic tasks related to Augmented Reality (AR) and Virtual Reality (VR) to create immersive and interactive learning and teaching experiences. Teachers also make use of AR/VR tools to explore historical sites, dissect virtual objects, or visualize complex concepts in a three-dimensional space. Effective instructors leverage technology to enhance their instruction and engage students in a wide range of tasks. However, it's essential for the teachers to ensure that students are guided on effectively searching for information, critically evaluating sources, and using technology responsibly. Instructors are crucial in helping students navigate the digital landscape and develop information for successful accomplishment of assigned academic–based tasks.

However, Ngcobo and Herselman (2022) forget the fact that not all schools have facilities like computer laboratories to aid the teaching and learning process.

Tikam (2022) makes it clear that the use of ICT into the teaching of Geography in secondary schools in various parts of the world enables teachers to perform several academic tasks. Software forms the backbone of ICT systems. It includes operating systems, applications, programming languages, databases, and various other tools that allow teachers to perform academic tasks efficiently. From productivity software like word processors and spreadsheets to complex enterprise resource planning (ERP) systems, the software is critical for teachers in managing and analyzing data and enhancing productivity across different domains.

However, Tikam (2022) does not put into consideration the fact many teachers are not able to apply some computer-based software in the teaching and learning process.

According to Tondeur et al (2022), ICT enhances teachers' ability to accomplish a wide range of academic activities like teaching, lesson preparation, typing, printing, scanning among others. ICT relies on a wide range of hardware devices, including computers, servers, networking equipment (routers, switches among others), mobile devices (smartphones, tablets), and other peripheral devices like printers and scanners. The continuous advancement in hardware technology has led to increased processing power, storage capacities, and miniaturization, enabling the development of more powerful and compact devices for teachers to perform teaching tasks.

Tondeur et al (2022) pay little attention to the fact that some teachers cannot execute academic tasks using ICT based tools and devices.

The study conducted by Albirini (2020) **indicates that ICT plays an instrumental role in affording teachers to perform their teaching tasks.** Computers and laptops have become the backbone of the modern classroom. Equipped with educational software and internet access, they serve as powerful tools for teachers to prepare interactive lessons, create multimedia presentations, and manage instructional resources efficiently. Teachers of Geography also use devices collaborating with other teachers on group projects. The versatility of computers and laptops allows for personalized teaching experiences tailored to individual teacher needs and teaching styles.

However Albirini (2020) does not consider teachers' inability to use computers during teaching and learning process.

Anderson and Dexter (2022) point out that ICT tools such as interactive whiteboards and projectors have revolutionized classroom instruction by making lessons more dynamic and engaging. Teachers present content in an interactive manner, annotate material, and conduct real-time demonstrations. These tools encourage active participation, allowing students to interact with the content and solve problems collaboratively. The visual appeal of interactive whiteboards and projectors captures students' attention and fosters better understanding and retention of the material.

However, Anderson and Dexter (2022) forgets that many students and teachers lack the capacity to use interactive while boards and projectors in the teaching and learning process.

ICT educational apps and software cover a wide range of subjects and teaching learning levels. These tools present content in an interactive and gamified format, making learning enjoyable and motivating. Students and teachers of Geography may explore math through educational games, practice foreign language skills with language learning apps, and conduct virtual science experiments using simulation software. ICT educational apps cater to diverse learning preferences, allowing students and teachers to progress at their own pace and reinforcing their understanding of the material during the teaching and learning process (Baylor and Ritchie, (2020).

According to Cohen and Hill (2022), ICT **Video Conferencing Tools** have become essential for remote and hybrid learning and teaching environments. They enable real-time communication and collaboration among students and teachers of Geography from different locations. Video conferencing facilitates virtual lectures, interactive discussions, and even virtual field trips, fostering a sense of connectedness and community in a digital learning setting. These tools have made education more accessible and inclusive, ensuring continuity in learning during challenging times. Therefore, ICT-based tools and devices contribute to students' and teachers' ability to accomplish academic tasks with the stipulated time and period.

Cohen and Hill (2022) talk of video conferencing in the teaching and learning process. However, Cohen and Hill forget many schools do not have the capacity to make use of some ICT tools like video conferencing.

Teachers' Attitude towards ICT and Teaching and Learning of Geography

Creemers (2021) avers that some teachers of Geography regard the internet as one of humanity's greatest gifts, and in the last 10 to 15 years, it has spread rapidly throughout the globe. Things like transfer of information and conversation between students and teachers sitting far from each other have gotten a lot quicker. Teachers point out that internet is a place where concepts from all parts of the world are found easily. There are several benefits of the internet for students and teachers of Geography because it allows them to easily obtain the information they require. It has made a significant contribution to the education of students by improving their ability to study and gain knowledge, right from their homes. Both students and teachers use the internet for a variety of purposes, including online lessons, research, assignment, revision, latest information, and more.

However, Creemers (2021) forgets that not all schools around the world have access to internet to enable teachers and students to accomplish academic –related tasks.

According to Dawson and Rakes (2020), teachers of Geography view ICT to be promoting accessibility to information for students and teachers through online education. Teachers and students are now aware of online education and distance learning, both of which have been the most significant benefits of the internet during the pandemic. Both teachers and students learn a wide variety of things from the internet while at home, in a comfortable atmosphere. Students easily access lessons or classes on various academic subjects. Different schools have started to offer online programmes and lessons to student in any part of the world. This is so with countries like China, Japan, UK (United Kingdom), USA (United States of America), Canada among other

However, Dawson and Rakes (2020) forget the fact that despite the presence of information on the websites, students and teachers may not be able to make use it in the teaching and learning process.

Academic Research conducted by Demetriadis et al (2021) clearly illustrates teachers of Geography's agreement that ICT enable them (teachers) to get up to date information. The internet has been the best source to get up to date information in the quickest possible way. Teachers of Geography hold the view that different websites and social media platforms play an important role in bringing the most recent news or information to

students' and teachers' attention. Students and teachers of Geography may gather the latest information related to their academics that help them in their teaching and learning. There are also media websites where teachers and students share their thoughts and the most recent facts.

However, Demetriadis et al (2021) pay little attention to the fact that in some schools students and teachers not have access to computers and internet as well.

Researchers like Devos et al (2022) show that teachers of Geography agree that the internet has established itself as a vital tool for self-study (for students and teachers). For example, Google, Bing and yahoo helps in learning and discovering various sources to get the latest information. Students carry out research on any topic / subject to improve their knowledge and get necessary study materials, which are crucial for their academics. Youtube and other platforms also provide free classes / lessons and courses and subjects for the learners.

Devos et al (2022) forgets that some teachers and students do not know how to use social media platforms to aid their teaching and learning process.

Teachers of Geography hold the view that ICT is most powerful information tools present in the world today. There are numerous benefits to using the ICT for teachers and students, and it has proven to be one of the best places to learn. It has changed the lives of students and teachers of Geography and made several things easier for them. Many students are now **enrolled in online education**, which is changing the face of academic education. Nowadays, most assignments are completed on computers with the use of the internet. The ICT has many benefits, but it also has some drawbacks, so it is essential for the teachers to teach students how to use it responsibly (Dexter, Anderson and Becker, 2022).

However, Dexter, Anderson and Becker (2022) forget that some teachers and students rely on textbooks as the only source of information reason being they do not have access to internet connection in their schools and computers as well.

It is concurred with Becker (2021), in relation to teachers' opinion and views that ICT has revolutionized the way students and teachers access information. Previously, both teachers and students of Geography heavily relied on textbooks and libraries for teaching and learning materials. Today, with the internet and digital resources, a vast amount of information is available at teachers' and students' fingertips. They access educational websites, online libraries, research papers, and multimedia content, enriching their understanding of subjects beyond what is covered in textbooks. This democratization of information has leveled the playing field, enabling teachers and students from different backgrounds and locations to access the same knowledge resources.

However, Becker (2021) does not know that some school to not have the financial capacity to have commuter laboratories and internet connective as well.

According to Bhaurao (2022), teachers of Geography point out that ICT allows for personalized teaching and learning experiences tailored to individual student and teacher needs and learning and teaching styles. Educational software and teaching and learning management systems (LMS) collect data on students' performance, progress, and preferences. Based on this data, adaptive learning systems generate customized learning pathways for each student. Some students may require additional challenges, while others need more support in specific areas. ICT helps deliver content at the right pace, matching the individual needs of each student. Additionally, online teaching and learning platforms and educational apps offer flexibility in scheduling and pacing. Students learn at their own convenience, allowing them to balance their studies with other commitments. Asynchronous teaching and learning options provide opportunities for teachers and students to engage with the material when it suits them best.

However, Bhaurao (2022) forgets that some schools have teachers and students lack computer skills to access information from the websites.

Kirsh David (2021), in his study, shows that teachers of Geography hold the view that ICT has transformed how they collaborate and interact with students. Virtual classrooms and online discussion forums create opportunities for teachers and students from different regions, cultures, and backgrounds to collaborate on projects, share ideas, and learn from one another. This global interconnectedness fosters cultural

understanding and appreciation, promoting a sense of global citizenship. Moreover, video conferencing tools enable virtual guest teachers and educational exchanges, connecting classrooms across the world. Teachers aver that ICT enhance their communication with experts, practitioners, and educators beyond their local community, enriching their teaching experience with diverse perspectives.

However, Kirsh David (2021) fails to understand it that some teachers and students do not know how to conduct online academic discussions with other academicians.

Findings from the study conducted by Tikam (2022) indicate that ICT has opened up various avenues for teachers' professional development. Online courses, webinars, and educational platforms provide teachers with continuous learning opportunities. They update their knowledge in specific subject areas, acquire new pedagogical skills, and explore innovative teaching methodologies. Professional learning communities online allow teachers to collaborate with colleagues and share best practices, promoting a culture of continuous improvement in education. Therefore, ICT and the teaching and learning of Geography are interconnected.

However, Tikam (2022) forgets that some students and teachers of Geography do not know how to use educational; platforms to aid their teaching and learning process.

Baylor and Ritchie (2020) **make it clear that teachers of Geography are in an opinion that ICT plays a crucial role in the teaching and learning of Geography in secondary schools around the globe. This is reflected in the efficient assessment and feedback:** Traditional assessment methods, such as pen-and-paper exams are time-consuming and labor-intensive for teachers. ICT has streamlined the assessment process, making it more efficient and effective. Online quizzes and exams are automatically graded, providing instant feedback to students. Learning and teaching analytics and data-driven insights allow teachers to identify learning gaps and adjust their teaching strategies accordingly. This data-driven approach helps ensure that students receive the support they need to succeed academically.

However, Baylor and Ritchie (2020) do not put it into consideration that some schools operate in rural areas where there i is not power and internet which limits their ability to use ICT tools and devices in the learning and teaching process.

To some teachers of Geography, ICT provides those (teachers) with instant access to a vast amount of information and resources. The internet and digital tools allow teachers and students to explore various subjects. Digital libraries or online databases allow teachers and students to access various academic and research materials, including e-books, scholarly articles, journals, and multimedia content that support their learning. Additionally, Educational platforms and learning management systems (LMS) provide a centralized location for teachers to share resources and for teachers and students to access information. These platforms host digital textbooks, multimedia content, interactive modules, and assignments (Baylor and Ritchie, 2020).

However, Baylor and Ritchie, 2020) forgets some teachers and students cannot access digital libraries and online databases to aids their teaching and learning process.

Gaps in Reviewed Literature

With methodology gap, many researchers like Gillings et al (2021) carried out studies on integration of ICT into the teaching and learning of Geography in the lower Geography curriculum in secondary schools in other parts of the world using only qualitative research methodology while ignoring quantitative methodology. Therefore, this methodological gap will be bridged by employing both qualitative and quantitative methodologies.

With content gap, many researchers have many researchers like Amalnik et al (2021) carried out studies on integration of ICT into the teaching and learning of Geography in the lower Geography curriculum in secondary schools in other parts of the world basing on student attitude, textbooks and entry behavior. Therefore, this identified gap was bridged by employing application of skills and knowedge, performance of tasks using electronical gadgets and accessibility to information as study variables, and the study was carried out in selected secondary schools in Busiika Town Council, Bamunanika County, Luweero District, Uganda.

METHODOLOGY

This chapter gives methodologies that were used in conducting this study. It covers the locale of study, research design, study population, target population, sample size, sampling technique, data collection methods, data processing and analysis.

Locale of the Study

The study was carried out in Ristaka High School, Venus College, Nankabirwa Memorial Secondary School and Babrah Secondary School as selected schools in Busiika Town Council, Bamunanika County, Luweero District, Uganda. The selected schools are located 33 kilometres North of Kampala City, along Gayaza-Zirobwe road. The reason why the researcher chose to conduct the study in Busiika Town Council is that there are some schools having challenges with the integration of ICT into the teaching and learning of Geography. Therefore, the study investigated factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda, a gap which this study sought to bridge.

Research Design

The researcher used descriptive research design. Descriptive research design helped the researcher to give detailed information on the variables under study.

The study involved the use of quantitative and qualitative approaches. The quantitative approach helped the researcher to generate data and identify a connection between independent and dependent variables while qualitative approach helped the researcher to collect data towards achieving study objectives.

Study Population

The study was drawn from the population teachers of Geography in the selected secondary schools at both “O” and “A” levels. According to Luweero District Information Office (2022), Ristaka High School, Nankabirwa Memorial Secondary, Babrah Secondary School and Venus College have 3,467 students with 83 teachers. Out of the 3,467 students, 384 take Geography in candidate classes while 12 are teachers of Geography.

Target Population

The study targeted teachers of Geography in selected secondary schools (Ristaka High School, Nankabirwa Memorial Secondary, Babrah Secondary School and Venus College) in Busiika Town Council, Bamunanika County, Luweero District, Uganda. The reason why the researcher targeted these teachers was that they are / were the ones held responsible for fostering the application of ICT in the teaching and learning of Geography.

Sample Size

The study was conducted in selected schools in Busiika Town Council. Since the total number of teachers of Geography in selected schools is known (12), According to Luweero District Information Office (2022), the researcher used all of them.

Table 1: Sample Size

Schools	Target Population (Teachers)	Sample Size
Ristaka High School	3	3
Nankabirwa Memorial Secondary School	4	4
Babrah Secondary School	3	3
Venus College Busiika	2	2
Total	**12**	**12**

Sampling Procedure

The sample of the study was achieved through purposive sampling technique. The reason for the adoption of this sampling technique by the researcher was that

The researcher will choose students and teachers that he finds. This will make the study convenient hence solving the problem of biasness.

Research Instrument

The researcher used a self-administered questionnaire as an instrument for data collection from 12 respondents. This comprised of three Sections; A, B and C. The research instrument was constructed with guidance of the research supervisor.

The questionnaire comprised of both closed and open ended questions which were drawn in accordance with the set objectives of the study. The questionnaire had simple structured questions that required the respondents to answer by choosing one alternative from the five point likert scale: Strongly Disagree (SD), Disagree (D), Not Sure (NS) Strongly Agree (SA) Agree (A).

Table 2: Likert Scale

Questionnaire Scale	Value Mean	Range	Interpretation
Strongly Agree	5	4.51-5.00	Very High
Agree	4	3.51-4.50	High
No Sure	3	2.51-3.50	Medium
Disagree	2	1.75-2.50	Low
Strongly Disagree	1	1.00-1.74	Very Low

Validity of the Instrument

Validity is the degree to which the results obtained from analysis represent the phenomenon. To ensure the validity, the questionnaire was designed in consultation with the research supervisor to ensure that the items in them measure adequately the possible items necessary to meet the objectives of the study and check the clarity and consistency of items in it. Content Validity Index was used to establish the validity of the instrument. A minimum CVI analysis of 0.6 was considered a reasonable measure of internal validity. The formula below was used to determine the content validity of the instrument.

$$CVI = \frac{\text{Total Number of Relevant Items}}{\text{Total Number of Items}}$$

$$CVI = \frac{16}{18}$$

$$CVI = 0.8$$

This implied that the instrument was reliable for data collection since the Content Validity Index of 0.8 was higher than 0.6.

Reliability of the Instrument

Reliability refers to the degree of consistency and precision of the data collection instrument. Cronbach's Alpha was used to determine the coefficient of reliability using Statistical Package for Social Scientists (SPSS). The questionnaire was pre-tested at Victory Secondary Schools on 3 teachers of Geography to establish the reliability of the instrument.

The results from the pre-test indicate that 2(66.7%) of the respondents at different levels agreed that the status of ICT infrastructure, competency and teachers and students' attitude affect the teaching and learning of Geography, 1(33.3%) of the respondents at different level disagreed with this view. This implied accessibility

to and availability of ICT, the competency to use it as well as attitude towards it affect its (ICT) application into the teaching and learning of Geography.The results of the pre-test are summarized in the table below:

Table 3: Reliability Statistics

Based on Standardized Items	Cronbach's Alpha Cronbach's Alpha	N of Items
.11	.11	3

Data Collection Procedure

The researcher obtained an introductory letter from the Dean, School of Education, Humanities and Social Sciences, Bugema University, which she presented to the head teachers of selected schools. Once the permission was granted, the researcher formulated field activity plan and the time table. Once this was achieved, the researcher proceeded to collect data from 12 respondents using a self-administered questionnaire.

Data Processing and Analysis

This included: data editing, coding, tabulation and formatting to ensure accuracy. The researcher analyzed data using Statistical Package for Social Scientists to derive meaning of the study outcome. Objectives 1, 2 and 3 were analyzed using descriptive statistics whereas respondents' suggestions were analyzed using descriptive interpretive method.

Respondents' Demographic Information

The study assessed respondents' demographic information in terms of gender, age, and education level in order to find out whether there were any variations in the respondents' personal character which may affect the final study results. The findings are presented in table 4 below.

Table 4: Respondents' Demographic Information

		Frequency	Percent
Gender of Respondents	Male	7	58.3%
	Female	5	41.7%
Age of Respondents	25-30	6	50.0%
	31-35	4	33.3%
	36 and above	2	16.7%
Education Level of Respondents	Degree	9	75.0%
	Diploma	3	25.0%

n =12

Table 4 above shows that 7(58.3%) of the respondents that participated in the study are male while 5(41.7%) of the respondents are female. This implied that most of the respondents that participated in the study were male. However, all respondents got a chance of being included in the sample hence making the study convenient and solving the problem of biasness.

Furthermore, study findings on the age of the respondents show that 6(50.0%) of the respondents that participated in the study were in the age bracket of 25-30, 4(33.3%) of the respondents were in the age bracket of 31-35 while 2 (16.7%) of the respondents were in the age bracket of 36 and above. This implied that most of the respondents that participated in the study were in the age bracket of 35-30.

Finally, study findings show that 9(75.0%) of the respondents had bachelors degree while 3(25.0%) of the respondents had. This implied that most of the respondents that participated in the study had degrees.

In conclusion, regarding respondents demographic information, it was found out that most of the respondents that participated in the study were 7(58.3%), aged 25-30, 6(50.0%) and had degree 6(50.0%).

ICT competency and Teaching and Learning of Geography

Objective two of the study was to investigate the ICT competency and the teaching and learning of Geography in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda. Data was analyzed using SPSS through descriptive analysis of Mean and Standard Deviation. Data was collected from 12 respondents using a self-administered questionnaire. The findings are presented in table 6 of the study.

Table 6: ICT competency and Teaching and Learning of Geography

Items Rated	Mean	S.D
Knowing how to use Microsoft Excel enables me to enter Geography data for students.	4.33	.888
Being able to use Microsoft Word makes it possible for preparing revision notes for students.	4.11	.920
Having knowedge of Microsoft PowerPoint makes it easy for me to make slides for class presentation.	3.67	.523
Having a skill in internet use helps me to send Geography reading materials and assignments to students via their parents' smartphones during school holidays.	3.50	.494
Aggregate Mean and S.D	**3.9**	**0.706**

n= 12

Mean range: 5. Very High (5: 4.51 -5.00), 4. High (3.51-4.50),3. Medium (2.51-3.50), 2. Low (1.75-2.50), 1. Very Low (1.00-1.74).

Table 6 above presents findings on ICT competency and teaching and learning of Geography. Study findings reveal that respondents at different levels agreed that knowing how to use Microsoft Excel enables them to enter Geography data for students and this was indicated by 4.33 mean and .888 S.D. This implied that having computer knowedge enhances the teaching and learning of Geography in schools of Busiika Town Council.

Study findings show that respondents at different levels agreed that being able to use Microsoft Word makes it possible for preparing revision notes for students and this was represented by 4.11 mean and .920 standard deviation. This implied that Microsoft Word is crucial for teachers of Geography as they can use it for teaching and reading materials for students.

Furthermore, study findings show that respondents at various levels agreed that having knowedge of Microsoft PowerPoint makes it easy for them make to slides for class presentation and this was indicated by 3.67 mean and .523 standard deviation. This implied that Microsoft Excell enables teachers of Geography to present information to students in an organized manner.

Finally, study findings show that the respondents at different levels agreed that having a skill in internet use helps them to send Geography reading materials and assignments to students via their parents' smartphones during school holidays and this was represented by 3.50 mean and .494 standard deviation. This implied that the use of interest in key in the teaching and learning of Geography in schools of Busiika Town Council.

Study findings on objective two show that ICT competency is a factor affecting the teaching and learning of Geography in schools of Busiika Town Council. This manifests itself in terms of teachers of Geography being able to use computer packages such as Microsoft Word, Excell, PowerPoint and internet as well. This is indicated by aggregate mean 3.9 with standard deviation of 0.706.

Study findings agree with Cohen and Hill (2020), who say that ICT **has** become essential for remote and hybrid learning and teaching environments. It enables real-time communication and collaboration among

students and teachers of Geography from different locations. It makes education more accessible and inclusive, ensuring continuity in learning during challenging times.

Teachers Attitude Towards ICT and the Teaching and Learning of Geography

Objective third objective of the study was examine the teachers of Geography's attitude on ICT usage in the teaching and learning in selected secondary schools Busiika Town Council, Bamunanika County, Luweero District, Uganda. Data was analyzed using SPSS through descriptive analysis of Mean and Standard Deviation. Data was collected from 12 respondents using a self-administered questionnaire. The findings are presented in table 7 of the study

Table 7: Teachers Attitude Towards ICT and the Teaching & Learning of Geography

Items Rated	Mean	S.D
I do not need any ICT tool / device when teaching students of Geography.	4.09	.711
ICT and Geography are not related. Therefore, no applying it in the teaching-learning process of this subject (Geography).	4.13	.757
ICT is too complicated to understand that is why I cannot make use of it while teaching students.	3.44	.817
ICT is very expensive to adopt and manage that is why I do away with it when teaching students of Geography.	4.06	.998
Aggregate Mean and S.D	**3.9**	**0.706**

n= 12

Mean range: 5. Very High (5: 4.51 -5.00), 4. High (3.51-4.50),3. Medium (2.51-3.50), 2. Low (1.75-2.50), 1. Very Low (1.00-1.74).

Table 7 above shows findings on Teachers attitude towards ICT and the teaching and learning of Geography. It was found out that the respondents at different levels agreed that they do not need any ICT tool / device when teaching students of Geography and this was indicated by 4.09 mean and .711 standard deviation. This implied that the negative attitude that teachers attach to ICT affects the teaching and learning of Geography.

Study findings show that the respondents at different levels agreed that ICT and Geography are not related. Therefore, no applying it in the teaching-learning process of this subject (Geography) and this was indicated by 4.13 mean with .757 standard deviation. This implied that negative attitude that teachers have towards ICT jeopardizes the teaching and learning of Geography in schools of Busiika Town Council.

Furthermore, study findings show that the respondents at different levels agreed that ICT is too complicated to understand that is why they (teachers) cannot make use of it while teaching students. This was represented by 3.44 mean with .817 standard deviation. This implied that ICT being hard to master, discouraged teachers of Geography from making use of it in schools of Busiika Town Council.

Finally, study findings show that the respondents at different levels agreed that ICT is very expensive to adopt and manage that is why they (teachers) do away with it when teaching students of Geography and this was shown by 4.06 mean with .998 standard deviation. This implied that ICT being expensive makes the teachers of Geography to apply it into the teaching and learning process.

Study findings on objective three show that teachers of Geography's attitude towards ICT usage affects the teaching and learning of Geography. This is seen in terms of ICT not being needed in teaching, Geography and ICT not being related, ICT being complicated and as well as bring expensive. This is indicated by aggregate mean 3.9 with standard deviation 0.82.

Study findings agree with Kirsh David (2020) who avers that teachers of Geography hold the view that ICT adoption in the teaching and learning comes along with various challenges. This include: accessibility, availability and the capacity to use it.

Respondents' Suggestions

The table 8 below represents the respondents' suggestion on what could be done to promote the use of ICT in the teaching and learning of Geography in secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda. The respondents' suggestions were analyzed using interpretive method.

Table 8: Respondents' Suggestions

Items Rated	Respondents
Training of students and Teachers in ICT use	5(41.6%)
Provision of computers by government	3(25.0%)
Teachers and students embrace ICT	2(16.7%)
Establishing ICT-based school libraries	2(16.7%)

n = 129

Table 8 above shows respondents' suggestions on what could be done to promote the use of ICT in the teaching and learning of Geography in secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda. The findings show that 5(41.6%) of the respondents suggested training of teachers and students in ICT use, 3(25.0%) of the respondents suggested provision of computers by government, 2(16.7%) of the respondents suggested teachers and students embrace ICT and 2(16.7%) of the respondents suggested establishment of ICT-based school training of teachers and students in ICT use 5(41.6%).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter contains summary, conclusion and recommendations of the study on "Factors affecting the use of ICT in the teaching and learning of Geography in the lower geography curriculum in selected secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda".

Summary

The specific study objectives were; to find out the current status of ICT infrastructure in the teaching and learning of Geography in selected secondary schools of Busiika Town Council, to investigate the ICT competency of teachers of Geography in the teaching and learning of Geography in selected secondary schools of Busiika Town Council and to examine the teachers of Geography's attitude on ICT usage in the teaching and learning in selected secondary schools Busiika Town Council, Bamunanika County, Luweero District, Uganda. Data was gathered using a self-administered questionnaire on 12 respondents (students). Data was analyzed using SPSS in form of mean and standard deviation. The researcher used descriptive research design.

The study findings on objective one show that computer laboratory, internet access, ICT basics and ICT –based tools are factors affecting the teaching and learning of Geography in secondary schools of Busiika Town Council, Luweero District, Uganda. This was indicated by aggregate mean 3.7 with 0.78 standard deviation.

Study findings on objective two show that ICT competency is a factor affecting the teaching and learning of Geography in schools of Busiika Town Council. This manifests itself in terms of teachers of Geography being able to use computer packages such as Microsoft Word, Excell, PowerPoint and internet as well. This is indicated by aggregate mean 3.9 with standard deviation of 0.706.

Study findings on objective three show that teachers of Geography's attitude towards ICT usage affects the teaching and learning of Geography. This is seen in terms of ICT not being needed in teaching, Geography and ICT not being related, ICT being complicated and as well as bring expensive. This is indicated by aggregate mean 3.9 with standard deviation 0.82.

Conclusion

The researcher concluded that, the status of ICT infrastructure, ICT competency and teachers attitude towards ICT affect the teaching and learning of Geography in secondary schools of Busiika Town Council, Bamunakia County, Luweero District, Uganda.

Recommendations

The researcher recommended that,

Government of Uganda should improve the ICT infrastructure by increasing both availability and accessibility of ICT-based tools and devices by schools all over the country.

Government should improve teachers' competency and ability to use ICT. This could be in terms of on-the-job-training among others.

Teachers and students should develop a positive attitude towards ICT. This will make it possible and easier to apply it in the teaching and learning of Geography.

Further studies should be conducted on other factors affecting the use of ICT in the teaching and learning of geography in the lower geography curriculum in other secondary schools of Busiika Town Council, Bamunanika County, Luweero District, Uganda.

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