DETERMINANTS OF TEACHERS' ACCESS TO AND USE OF INFORMATION COMMUNICATION TECHNOLOGY IN TEACHING AND LEARNING IN SPECIAL PRIMARY SCHOOLS FOR LEARNERS WITH VISUAL IMPAIRMENT IN KENYA

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Abstract:

This study aimed to identify factors of teachers' access to and use of ICT in teaching and learning in special primary schools for learners with Visual Impairment. The study was guided by Bruner's constructivist theory and was also supported by the social model of disability and the philosophy of universal design for learning. The study adopted a descriptive survey design and used both qualitative and quantitative methods of data collection. It targeted the seven special primary schools for the visually challenged in the country. The purposive sampling method was used to select the schools, head teachers, teachers and Ministry of Education officials. The stratified random sampling method was used to sample the learners. The sample size consisted of 3 MoE officials, 3 head teachers, 3 computer teachers, 18 class teachers and 168 learners with visual challenges. The students were selected randomly. Data collection instruments included questionnaires for the teachers and for the learners, a classroom observation schedule, and interview schedules for head teachers and officials from the Ministry of Education. Inventory document analysis was used to collect the data. Validity and reliability of the instruments were tested through piloting in one school, which was not included in the main study. The questionnaires were tested and accepted at r=0.785. Data was analyzed through descriptive statistics that included frequencies, percentages, means, ratios and inferential statistics. The Statistical Package for Social Sciences (SPSS) was used to analyze the data. The results revealed that various factors characterized the teachers. First, the majority of the teachers had a positive attitude toward the use of ICT in teaching their subjects. The lack of competence and confidence in using ICT in teaching and learning was another factor. However, the teachers lacked training in the use of the technology and pedagogical methods. Quite a number of the teachers had not been trained in the teaching of learners with VI using the ICTs. The study concluded that the majority of the teachers

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had a positive attitude toward the use of ICT in teaching their subjects. However, the teachers lacked training in the use of technology and pedagogical methods. Quite a number of the teachers had not been trained in the teaching of learners with VI using the ICTs. The study recommended that the Teachers Service Commission should ensure that the head teachers and teachers posted to special schools housing learners with VI are trained in the area of visual impairment.

Keywords: information communication technology, learners with visual impairment, special primary schools, teachers' access to ICT, teaching and learning, use of ICT

1. Introduction

Education is crucial for gaining gainful employment, creating opportunities for career advancement, and improving overall quality of life (Duta, Scguri-Geist, & Kundu, 2009). Global research has demonstrated that integrating Information, Communication, and Technology (ICT) into pedagogy is one of the best ways to address the issue of these students' lack of access to high-quality education. The incorporation of ICT into education has the potential to transform society's approach to learning and modify the characteristics and methods of the classroom (Montenegro, Rueda, Fernández, Batanero, Fernández & Cerero, 2022). Convenience, adaptability, and intuition are now requirements in the ICT world. ICT lays the groundwork for a new learning culture by enabling learners to develop, change, and exchange ideas and information globally (Arslantas & Gul, 2022). In order to improve analytical, creative, and problem-solving skills, it supports learner-centred, constructivist teaching methods (Akbar, Jabbar, Saleem & Ashiq, 2022).

Numerous studies demonstrate that effective ICT use can improve educational quality and link classroom instruction to real-world contexts (Kapote & Srikanth, 2021). ICT tends to open up more opportunities for visually impaired students to attend education anytime, anywhere. ICT helps visually impaired learners gain new knowledge by facilitating their access to, selection of, organization of, and interpretation of high-quality resources (Hood & Littlejohn, 2017). Additionally, ICT makes it possible for people who are blind or visually impaired to collaborate, explore ideas, develop concepts, learn, and share a variety of learning experiences (Tatut, 2022). Those who are visually impaired are among those who are typically categorized as disabled. These individuals also include those who suffer from numerous disorders or impairments of the mind, body, or ears (Hall, Mahony, Clapham, Heyworth, Lilley, Lawson, & Pellicano, 2022). Those who are impaired are a small minority whose condition prevents them from competing favorably with those who are sighted in society. Therefore, their needs are not clearly stated (Campisi, Ignaccolo, Inturri, Tesoriere & Torrisi, 2021). At all stages of human activity, it is now widely accepted that having information readily available is a requirement for enlightenment and meaningful progress (Jebril & Chen, 2021).

In Rwanda, the study by Sabomana (2017) revealed that the level of integration of ICT in teaching and learning science in lower public primary schools was low. It was found that the minimal use of ICT was influenced by inadequate ICT abilities among the majority of science teachers and inadequate resources in most primary schools. The Kenyan government's new constitution (2010) and Vision 2030 (2007) place education at the centre of unlocking Kenya's future. Vision 2030 is grounded on economic, political, and social pillars, where education is the centre of social growth. The government is committed to the provision of quality education, training, and research as a human right for all Kenyans, following the law and international conventions. The use of ICT in pedagogy was therefore emphasized to achieve this mission. Therefore, ICT should be able to offer tools for enhancing how people do their daily activities without restrictions or boundaries (Keitany, Munyi & Muthee, 2020). Unfortunately, Kenya has equally suffered from ineffective use of ICT, especially for learners with disabilities. A study by Makanda (2015) on the use of ICT in teaching found that teachers had a positive attitude towards the use of ICT, but barriers such as inadequate skills to integrate the technology into their teaching were a problem.

Lack of sight places certain restrictions on students with visual impairments' access to information, which prevents them from reaching their full potential and wastes the brainpower that could have been used to boost the nation's economy (Barbareschi, Holloway, Arnold, Magomere, Wetende, Ngare & Olenja, 2020). Researchers in Kenya have demonstrated that the performance of learners with visual impairments has lagged far behind that of their sighted peers at all levels of education (Munyi, 2017; Wanjau, 2016; Mugo, 2013). Given the role that ICT plays in instruction, the performance of learners with visual challenges in Kenya should meet international standards. A pertinent question one would ask at this point is: are the schools for visually impaired learners in the country accessing and using ICT effectively in their teaching and learning? There are no answers to the pertinent questions because of a lack of empirical studies on the use of ICT for learners with visual impairments.

1.2 Statement of the Problem

It is evident that ICT has a positive impact on the education sector, the world over and that many countries in the world have embraced the use of this technology in pedagogy. Kenya has made considerable efforts to make ICT accessible to all groups of learners, including those with visual impairments. To ensure quality education for all, the government has given support and put emphasis on the use of ICT in all schools at all levels, including special schools. Legislation such as the Kenya Constitution (2010), the Persons with Disabilities Act (2003), and the Special Needs Education Policy (2009) has resolved a number of important issues affecting the quality of education for learners with visual impairments. However, research has shown that these learners still lag behind their sighted peers in access to ICT. This has generated numerous questions with respect to what could be done to help the learners compete equally with their peers. Moreover,
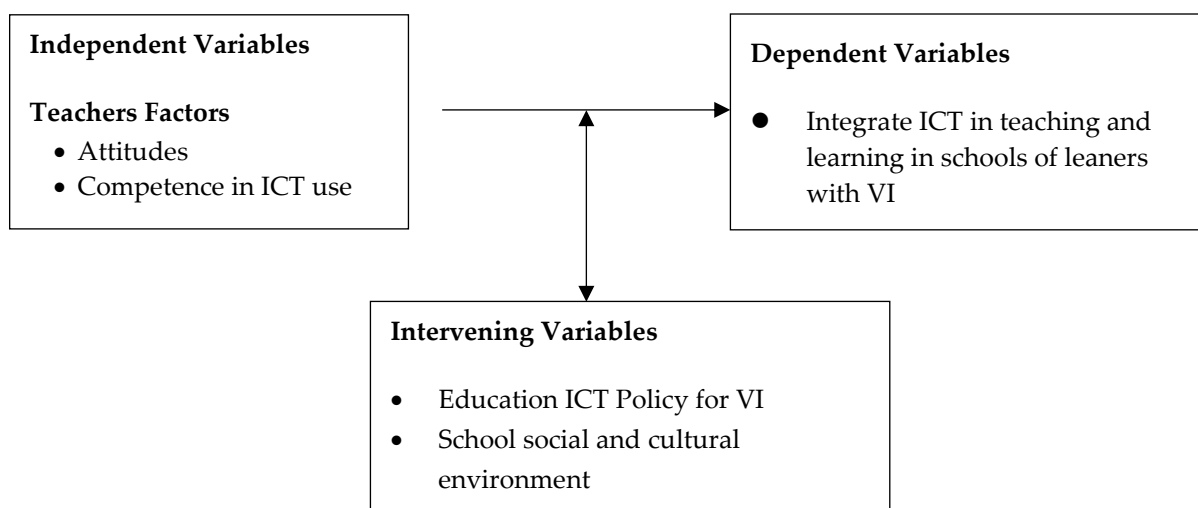
researchers in Kenya have shown that, across all educational levels, the performance of learners with visual impairments has fallen well short of that of their sighted counterparts. However, the current practice of providing this essential support to the learners in special primary schools lacks sufficient research. There is a lack of empirical research on ICT use for learners with visual impairments.

1.3 Purpose of the Study

The purpose of the study was to identify factors that influence teachers' access to and use of ICT in teaching and learning in special primary schools for learners with VI.

1.4 Conceptual Framework

Figure 1 illustrates the interrelationship between the teacher factors and the ICT Integration in teaching and learning in schools of learners with VI.

Independent Variables

Teachers Factors
- Attitudes
- Competence in ICT use

Dependent Variables
- Integrate ICT in teaching and learning in schools of leaners with VI

Intervening Variables
- Education ICT Policy for VI
- School social and cultural environment

2. Literature Review

2.1 Theoretical Framework

This study was anchored in Bruner's constructivism theory, the social model of disability, and the universal design for learning theory. Bruner's constructivism theory (1990) postulates that the basis for innovation, creativity, or the process of generating new information is the learner's past experiences. The student makes use of the knowledge they already possess in order to learn new information from a teacher or facilitator. These encounters arise from the surroundings and from the learner's interactions with their classmates. The process of learning environmental creativity requires the learner to apply what they have learnt and experienced to generate fresh insights related to their area of emphasis. The constructivism approach places a strong emphasis on the responsibility teachers have to effectively and actively involve students in the teaching and learning process. When teachers are given technology, for example, there are several elements that affect their choice of how and when to use it. Likewise, other education stakeholders may

choose to supply technology to students or not, based on how highly they regard the learners.

The social model of disability can be traced back to the 1960s (Hunt, 1966), and in the 1970s, the Union of the Physically Handicapped Against Segregation (UPIAS, 1977) questioned the dominance of a section of the staff in the medical field and those in social work over people with disabilities. UPIAS resisted the status quo and strived for a change in the social order. The social model of disability is a comprehensive perspective originated by PWDs to define their place in society. It is endeavoring to bring together PWDs into one group by defining who they are and explaining disability as a political issue. The social model illuminates the areas in society where PWDs encounter discrimination and offers a chance for this group of individuals to act as a united group to counter discriminatory practices (Campbell and Oliver, 1996). By exposing the areas of discrimination, the social model seeks to acquire for PWDs the same citizenship rights that people without disabilities possess. The social model theory was relevant to this study because access and use of ICTs by learners with visual impairments depend on how school administrators and teachers in education take and support the learning through the provision of ICTs and quality instruction, respectively.

Universal design for learning theory provides an educational structure that is considered to make the best of learning opportunities for all learners to acquire knowledge, skills, and values in learning (Rose & Meyer, 2002; Rose & Meyer, 2006; Rose, Meyer, & Hitchcock, 2005). According to Scott, McGuire, and Embry (2002), the theory of universal design was implemented as a form of instruction comprising practical design and the use of inclusive instructional strategies that benefit a wide range of learners, including those with disabilities. In the principles, multiple methods of expression where learners are given opportunities to interact with the learning material in a flexible manner are emphasized, and engagement, where learners are allowed to express their understanding of the learnt material in multiple and flexible ways, is paramount. Adopting this educational design was important in this study, for it helped to analyze how the teachers used ICTs with instructional methods to teach learners with visual impairments in the classroom.

2.2 Teachers' Factors that Influence Access to ICT

The primary agents of curriculum implementation are teachers. Teachers' capacity to incorporate ICT into pedagogical practice presents another difficulty that is closely tied to teacher confidence (Sepulveda-Escobar & Morrison, 2020). Falloon (2020) discovered that many instructors lacked the knowledge and abilities necessary to use computers and that they were unenthusiastic about the adjustments and integration of supplemental learning that came along with incorporating computers into their teaching practices. According to studies, teachers' lack of technological proficiency in underdeveloped nations is a major obstacle to their acceptance and implementation of ICT (Al Buabeng-Andoh, 2012). According to the research, teachers who don't use computers in the

classroom often cite "lack of skills" as a barrier to their ability to use ICT for instruction. Hall, Mahony, Clapham, Heyworth, Lilley, Lawson, & Pellicano (2022) discovered that adopting ICT in primary and secondary schools is seriously hampered by teachers' lack of knowledge and abilities in another global study of nationally representative samples of schools from 26 nations.

In Denmark, many teachers still choose not to use ICT and media in teaching situations due to a lack of ICT skills rather than for pedagogical or didactic reasons, according to the findings of a study by Motzfeldt and Naesborg-Andersen (2018). In contrast, in the Netherlands, teachers' ICT knowledge and skills are no longer seen as the main barrier to ICT use. Therefore, one major obstacle to integrating technology into education may be a lack of teacher competence. It could also be a contributing element to the reluctance to change. Since computers are the foundation of every innovative curriculum, the level of ICT integration in school management in developed and developing nations depends on how teachers are prepared to use them (Malik, 2018). Through in-service training and capacity development workshops, knowledge and skills are gained, and it helps the principal feel confident using ICT in regular school administration activities.

According to Nang'unda (2019), a number of issues, including poor pre-service training for teachers in ICT and a dearth of instructors with ICT diplomas, hamper the integration of ICTs in secondary schools. It was noted that 20.5% of instructors had a diploma in ICT and 70.5% of teachers had certificates in computer application packages, while 6% did not disclose their level of ICT training. This shows that even though many instructors' ICT abilities are not very advanced, they are able to use computers. Langat (2020) looked into how teacher-related factors affected the use of ICT in Nandi North Sub-County public secondary schools. The study made use of Everett Rogers' Diffusion of Innovation concept. Using the descriptive survey method, a target group of 20 public secondary schools, including 20 administrators and 174 instructors, was selected. There was a substantial correlation found between training and technology literacy, knowledge generation and development, and ICT integration for teaching and learning.

Studies by Stronge, Tucker, & Hindman, (2004) found that when teachers participate in professional development that relates to their content area, it enhances their effectiveness, resulting in higher levels of student success. The teachers' central role in the implementation of the curriculum has been further exposed by Katz (1989), who emphasized that there is a general agreement among specialists in the field that the competence of the teacher is a central determinant of the quality and effectiveness of a programme. The implementation of new technologies in teaching depends on the knowledge, skills, and attitudes fostered during initial training. Indeed, teachers and teaching pedagogies must be close and constant. A study by Schoepp (2005) indicates that the act of integrating ICT into teaching and learning is a complex process and one that may encounter a number of difficulties or barriers. The barriers could be extrinsic or intrinsic.

Becta (2004), as cited in Bingimlas (2009), concluded their study by agreeing that many teachers who do not consider themselves to be well-skilled in using ICT feel anxious about using it in front of a class of children who perhaps know more than they do. In the same survey, many of the teacher respondents who identified their lack of confidence as a barrier reported being particularly afraid of entering the classroom with limited knowledge in the area of ICT, with their learners knowing that this was the case. On the other hand, teachers who are confident use ICT effectively to support learning. Cox, Preston, and Cox (1999) found that teachers who have confidence in using ICT identify those technologies as helpful in their teaching and personal work, and they feel they need to extend their use further.

3. Methods

3.1 Study Locale
In consideration of this, the study was conducted in three counties: Kiambu County, Meru County, and Mombasa County. Although there are seven public special primary schools for learners with visual impairments spread across Kenya's counties, the researcher concentrated on these three counties due to the fact that they have the oldest special primary schools in terms of year of establishment. In addition, the schools have a large population, which yields rich data. Further, the study assumed that because these schools were established significantly earlier than the others, they are likely to have more ICT resources, which is therefore appropriate for the purpose of the study.

3.2 Study Design
This study adopted a descriptive survey research design. Descriptive survey research design describes systematically the facts and characteristics of a given population or area of interest, factually and accurately. According to Mugenda and Mugenda (1999), a descriptive study is probably the best method for social scientists and educators who are interested in collecting original data for describing a population. The survey approach was used to assess the thoughts, feelings, and opinions of the respondents concerning the access and use of ICT in the instruction of learners with visual challenges (Mwanje, 2001). In order to collect in-depth and accurate data for the purpose of the study, this study also adopted both qualitative and quantitative research paradigms.

3.3 Study Population, Sampling Techniques and Sample Size
The study targeted seven special primary schools with learners with visual impairments. The schools are located in six counties, namely Kisumu, Siaya, West Pokot, Mombasa, Kiambu, and Meru. The study had a total target population of 1,845; these comprised 1,667 learners with VI, 161 teachers teaching learners with VI, 7 computer teachers, 7 head teachers, and 3 Ministry of Education officers in the six counties. The study employed the purposive sampling technique to sample three special primary schools. This was based

on the fact that these three were the oldest special primary schools in terms of year of establishment. In addition, the schools had a large population with computer labs, thus relevant to the purpose of this study. The three schools were situated in three counties: Kiambu, Meru, and Mombasa counties. Further, the purposive sampling technique was used to sample the school headteachers of the three schools. The head teachers were sampled to participate in the study because they are the ones who are in charge of implementing government policy in the schools. Based on the recommendation by Mugenda and Mugenda (2019), the study sampled 195 respondents, which is 10% of the target population. The sample size consisted of three (3) head teachers, three (3) Ministry of Education officers, three (3) computer teachers, 18 teachers teaching learners with IV, and 168 learners with IV (Table 1).

Table 1: Sample Frame

Category of Respondents	Target Population (N)	Sample (n)	Percentage (%)
Special schools	7	3	43
Learners with VI	1,667	168	10
Teachers	161	18	11
Computer teachers	7	3	43
Head teachers	7	3	43
Ministry of Education officers	7	3	43
Total	**1,849**	**195**	**10.5**

3.4 Research Instruments

Data was gathered using questionnaire forms, structured interviews, observation checklists and document analysis. The teacher's questionnaire obtained information about the use of ICT in the classroom and about how the teachers and the learners benefited from its use. Questionnaire for learners aimed at collecting information about the challenges the learners have in accessing ICT and the learners' opinions on how they benefited from the use of ICT in the teaching and learning process. The questionnaire was designed for those learners who used the system for their reading and writing. Semi-structured Interview schedules were administered to computer teachers, head teachers, and Ministry of Education officials. The interview schedule involved a set of predetermined questions. Classroom observation was carried out in three schools. A document analysis guide was utilized to collect data on the performance of learners with VI. In addition, the guide was utilized in obtaining data on the extent to which teachers used ICT in instruction.

3.5 Piloting

A pilot study was conducted in one of the special schools for learners with visual challenges in Kisumu County to determine the validity and reliability of the instruments. The sample for the pilot study was 10 participants, comprised of one head teacher, one officer from the Ministry of Education, one computer teacher, three teachers, and four

learners. This exercise ensured that the instruments were in line with the research objectives and also determined the time duration that it would take to respond to the instruments. The pilot study also enabled the researcher to identify inconsistencies, discrepancies, and ambiguities that could have led to a misinterpretation of the research instruments.

3.6 Validity and Reliability of the Research Tools

In this study, content validity and construct validity were considered for measurement. The content and construct validity were ascertained. This was to establish whether the instruments measured what was intended. Expert opinion and judgement from the university supervisors were sought. Further, in this respect, piloting of the study instruments was done. Items in the questionnaire and interview protocol that were found to be inconsistent with the domain or content of interest were identified and modified to ensure clarity of information. The criterion, also known as predictive validity, refers to the use of a measure in assessing subjects' behavior in specific situations (Mugenda & Mugenda, 2003). This was also measured in this research. To ensure criterion validity, the instruments were designed to achieve measurements that conformed to the theoretical expectations of the research. Experts' guidance from the supervisors who were conversant with the area of ICT and learners with visual impairment enabled this. Difficult questions were sorted and reframed using appropriate language, which was easily understood by the respondents with visual challenges.

To determine the reliability of the instruments for this study, the internal consistency technique was used. The instruments for this study during the piloting study were administered once. The Cronbach's alpha formula was then employed to compute the reliability of the instrument. The Cronbach's alpha reliability test is the most popular single-administration reliability test. It determines the agreement of answers to questions targeted at specific traits. Besides estimating the reliability coefficient, the Cronbach coefficient alpha has the added advantage of reducing the number of times the researcher is required to visit the field for data collection. In determining reliability, the higher the reliability coefficient, the more consistent participants are when filling out the questionnaire. Hence, in this study, the reliability coefficient of 0.72 was used to judge the reliability of the instruments. This implied that there was a higher degree of reliability in the data (Mugenda & Mugenda, 2003). Orodho (2009) opines that a reliability coefficient of 0.75 is considered high enough to judge the reliability of the instrument.

3.7 Data Collection Procedures

Questionnaires were distributed to parents of pre-primary children through their respective teachers. Parents were given sufficient time to complete the questionnaires, which the researcher later collected to ensure all items had been addressed. Afterwards, survey forms were delivered to the class teachers, who facilitated their delivery to parents or guardians. These forms included essential information, such as the date and specifics

of upcoming interviews, which were scheduled to coincide with the school's parent-teacher meetings. A formal request letter was also included, asking parents to confirm their willingness to participate in the interviews. The discussions were conducted at agreed-upon times, adhering to effective interview protocols.

Once the questionnaires were collected and interviews completed, the final stage of data collection involved document analysis. This process focused on reviewing children's progress reports and literacy books to assess their performance in reading, writing, speaking, and listening. All collected data was securely stored in an encrypted, password-protected database for later analysis. Finally, insights from all data collection tools were compared to ensure consistency and establish a systematic approach for data analysis.

3.8 Data Collection Procedure

With the help of teachers, classroom observations were administered by sitting in classes six and seven in each of the three selected schools and observing lessons directly in each school. Each lesson lasted for 30 minutes. The observation guide to get the intended data guided the researcher. After and before observing each lesson, the researcher held discussions with the respective teachers about his or her expectations. The heads of departments, who included the head of mathematics, the head of sciences, the head of languages and the head of humanities, and four teachers from each of the schools sampled, were followed and observed at least three times. A total of 36 observations in the three schools were therefore carried out. Consequently, face-to-face interview schedules with the head teacher, the ministry of education representative, and the computer teacher were the next things to be done. The researcher met each one of them to book an appointment. Then, guided by the interview schedule, the researcher interviewed each one of them at each school on different days and recorded their responses.

Finally, the researcher distributed the questionnaires to the teachers herself and collected them three days later. This gave the respondents enough time to respond at their convenience, ensuring a high rate of return. Questionnaires in large print and in Braille were prepared in advance for the low-vision and totally blind learners, respectively. The learners' questionnaires were distributed to them with the assistance of the class teachers in the sampled schools. The researcher requested that the teachers assemble the students in a hall and explained to the students her expectations before filling out the questionnaires. The students were given one and a half hours to respond to the questionnaires, and then the researcher, assisted by their respective teachers, collected them as they left the hall. This ensured 100% collection of the questionnaires.

3.9 Data Preparation and Analysis

Qualitative data was analyzed deductively by converting the responses that were written in Braille to print; she then listened to the audio recordings and converted them to print.

Data was then coded from the text data, categories were developed from the data, and common categories were merged into predetermined themes. In this approach, the researcher was very careful not to force data into the categories. Data was further studied to determine its meaning in context, and the findings were reported. The qualitative data were presented in narrative form, where the voices of the interviewees were captured in the analysis. On the other hand, quantitative data obtained through the research instruments were first organized based on the study variables. Organizing data is important since it makes the data more compact, easier to work with, and easier to understand (Weiss, 2004). The data were then entered into SPSS version 22 and analyzed using descriptive statistics. Data on all the specific objectives were analyzed using frequencies, means, and percentages based on the objectives. The qualitative and quantitative data were used to complement each other in answering research questions. The findings of the study were presented using tables, graphs, pie charts, frequencies, ratios, and percentages in relation to research objectives and questions.

4. Results

4.1 General Characteristics of the Sample

The study collected demographic data from the respondents. This included age, experience, academic and professional qualifications. From the data gathered, percentages and means were calculated for each category. The findings are presented in subsequent sections. The information gathered about the teachers included gender, age ranges, and educational and professional backgrounds. The results from the respondents are shown in Table 2.

Table 2: Demographic Information of the Teachers (N=18)

Demographic Information		F	%
Gender	Male	8	44
	Female	10	56
Ages (years)	20-30	1	6
	31-40	2	11
	41-50	7	39
	51-60	6	33
	Beyond 60	1	6
	Non commital	1	6
Experience in teaching VI	1-5 yrs	-	00.0
	6-10 yrs	3	17
	11-15 yrs	6	33
	16-20 yrs	4	22
	20 yrs & Over	5	28
Highest academic qualification	KCSE/ KCE	11	61
	B. Ed	5	28
	Post graduate	1	6
	Noncommittal	1	6

Highest professional qualification	P1	3	17
	Diploma	8	44
	B.Ed	5	28
	Masters	1	6
	Noncommittal	1	6

According to Table 2, slightly less than half of the eighteen teachers sampled for this study were men, and slightly more than half were women. The age range of the teachers who taught classes six and seven was primarily between forty-one and fifty years old. A little over 25% of the participants were aged 51 to 60. Less than 25% of the population was in the 31–40 age range. One teacher was younger than thirty years old, and another was older than sixty. The teachers' experiences in instructing students with visual impairments varied. Most of the instructors had taught for 11 to 15 years, over 25% had taught for over 20 years, and over 25% had taught for 16 to 20 years. Each teacher had been in the classroom for more than five years. The data also shows that slightly less than 25% of the teachers held a bachelor's degree in education, whereas the rest of them held diplomas. This demonstrates that these professors have strong academic credentials in addition to their teaching experience. It is true that individuals who completed their diplomas did so at the Kenya Institute of Special Education (KISE). This clearly shows that the teachers were trained and had substantial experience in teaching the learners who are visually challenged and, hence, could make a concrete contribution to this study. The two main categories of learners with visual impairments or issues are those who are blind and those who have other visual impairments. These two categories apparently use ICT in distinct ways (Mugo, 2013). Therefore, this study initially classified the students according to their gender before determining the degree of vision impairment. The gender and eyesight classifications of the learners are shown in Table 3.

Table 3: Demographic Information of the Learners

Category of Learners	Male	Female	Total
Blind	40 (24%)	73 (43%)	113 (67%)
Low Vision	34(20 %)	21(13 %)	55 (33%)
Total	**74 (44%)**	**94 (56%)**	**168 (100%)**

Table 3 demonstrates that the majority of the study's students with sight problems were female. The majority of the students were blind, and nearly half of the blind students in the sample were female. The proportion of low vision learners in the sample was somewhat higher than 50%, and males made up the majority of low vision learners. The gender issue had to be considered when analysing the demographic data for this research since it affects how the implementation strategies for the recommendations and suggestions are carried out.

4.2 Teachers' Factor that Influenced Access to ICT for the VI

The fourth objective of this study was to find out the teacher's factors that led to learners' access to ICT who are visually impaired in special primary schools. The study was interested in finding out if teachers were aware of the importance of using ICT in teaching learners with visual impairments. The findings are presented in Table 4.

Table 4: Teachers' Awareness about Use of ICT in Teaching

Item	N	Yes	No	Not sure
I am aware that one should use ICT with learners who are visually impaired in the teaching and learning process	18	15(84%)	3(16%)	-
Knowing how to use ICT in teaching learners with VI is crucial since it makes the teacher's work easy to present the content and make learners to understand better.	18	12(67%)	4(22%)	2(11%)

The sentiments from the teachers, as presented in Table 4, indicate that the majority of teachers of learners with visual impairments were aware of the use of ICTs in teaching, while far less than a quarter were not aware. The majority even acknowledged the importance of learning to use special ICT for the blind for them to effectively teach the learners. However, 16% reported that they were not aware that one should use ICT with learners who are visually impaired in the teaching and learning process, and 22% acknowledged that they did not know how to use ICT in teaching learners with VI, which is crucial. This finding implies that despite the growth of ICT in the teaching of learners with visual impairment, some instructors still hesitate about ICT acceptance and adoption. The findings of the current study are in line with the findings presented by Eligi and Mwantimwa (2017), who conducted a study at the University of Dar es Salaam to evaluate the usability and accessibility of information and communication technology resources to support learning for visually impaired students (UDSM). The study established that some of the teachers did use ICT in instruction due to challenges like poor training on how to use special ICTs in instruction and a lack of ICT experts. Similarly, the findings agree with the findings reported by a study carried out by Ghavifekr, Kunjappan, Ramasamy & Anthony (2016) who assessed how ICT tools were used for teaching and learning in Malaysia. The study reported that a proportion of teachers do not embrace technology in teaching because they lack technological proficiency and awareness of the issues and challenges related to ICT use in teaching and learning.

Resistance to change adversely affects the adoption of technology and the implementation of ICT in education pedagogy, as some teachers still do not utilise the available resources in their instructional activities. Resistance to change seems not to be a barrier by itself; instead, it is an indication that something is wrong. According to Earle (2002), the change from a present level to a desired level of performance is facilitated by driving forces such as the power of new developments, rapid availability, creativity, internet access, or ease of communication. The findings further imply that integrating

new technologies into educational settings requires change, and different teachers will handle this change differently depending on their attitude. Also, according to Becta (2004), considering different teachers' attitudes toward change is important because teachers' beliefs influence what they do in classrooms. The research went further to investigate how the teachers became aware of ICT for the visually impaired (Table 5).

Table 5: Ways in Which the Teachers Became Aware of the ICT for VI

Means of awareness	Frequency	Percentage (%)
Training	4	20.0
Social media	5	23.0
Conference, seminars & workshops	5	24.0
KICD circulars	6	32.0
School policy	3	17.0
MOE policies	1	5.00

Table 5 shows that the teachers were made aware of the use of ICT through various means. About a quarter of the teachers become aware through social media, conferences, seminars, and workshops. More than a quarter through KICD circulars and far below a quarter through school policy and even MOE policy. Looking at the data, one can tell that it was the circulars from the curriculum developer that made most of the teachers aware of the use of technology. One would expect them to be made aware of this through training and practice. Being aware of something does not always lead to action. The findings are in line with the findings reported in India by Philomia and Anutha (2016) in their study on the teacher's competence in the use of computers in teaching. The study reported that the teachers' awareness and interest in using the technology led to their understanding, tenacity, and competency in offering quality instruction. In this study, a larger number of the teachers of learners who are visually impaired were aware of ICT, but a smaller number would say the importance of using the technology in pedagogy. Further, the findings corroborate the findings reported by Falloon (2020). He established that many instructors lacked the knowledge and abilities necessary to use computers and that they were unenthusiastic about the adjustments and integration of supplemental learning that came along with incorporating computers into their teaching practices. According to studies, teachers' lack of technological proficiency is a major obstacle to their use of ICT. This research was further interested in finding out the teachers' feelings about the use of ICT in the teaching and learning process in the special schools for the VI. Table 6 presents the findings.

Table 6: Learning through ICT

	N	Percentage (%)
ICT is very useful in the instruction of learners with VI.	10	55.5
ICT might unnecessarily consume the precious time for learning by VI	6	33.3
I am not sure whether ICT has a positive or negative impact in the instruction of learners with VI. It might have both effects.	2	11.1

The research established that the majority of the respondents had the opinion that computers can be useful for instruction in all subject areas for learners with VI, while slightly more than a quarter were of the opinion that ICT might consume a lot of learning time for learners with VI. Only a few were undecided. These findings are in agreement with Fu's (2013) research on the benefits of using ICT for learners with special needs. He concluded that ICT improved teaching and learning quality and supported teaching by facilitating access to course content. It is clear that teachers' opinions towards the use of ICT with all learners were positive, and hence, the teachers should be further assisted in using ICT with the learners.

On the other hand, not all participants acknowledged whether ICT is very useful in instruction for learners, with VI implying that teachers still perceived more limitations in using ICT. This finding is supported by the findings of Ghavifekr, Kunjappan, Ramasamy & Anthony, (2016) which revealed that the following critical concerns and challenges prevented instructors from effectively using ICT tools: limited accessibility and network connection, limited technical support, inadequate training, time constraints, and a lack of teacher competency. The findings concur with those of Chin, Ching, del Castillo, Wen, Huang, del Castillo, & Trajera (2022)who discovered that adopting ICT in primary and secondary schools is seriously hampered by teachers' lack of knowledge and abilities in another global study of nationally representative samples of schools from 26 nations.

The teachers were asked what would make them not use ICT in their teaching. Some of the statements from the teachers were as follows:

"I do not have the knowledge and skills to use most of the ICT devices and software, especially the computer. I even feel very tense and uncomfortable when I hear that the quality control officers from the Ministry of Education are coming to the school. You know, they tell us to use the computer to teach, but they do not effectively train us on how to use it."

This statement was a clear indication that the majority of the teachers had not been trained on how to use ICT in pedagogy. The teachers were therefore not able to use the technology and, hence, were not able to help their learners use it. Competence is directly related to teachers' confidence. These findings are also corroborated by Albarini (2006), who indicated that teachers' lack of technical competence has been cited as the main barrier. The researcher asked teachers whether they have competence in using ICT in teaching learners with VI.

The majority of the teachers echoed the following statement:

"The majority of us lack competence in the use of computers. Although there is an NGO known as UWEZO that has supported the school with computers and some trainers, we don't have time for the training because we have to prepare for our lessons. Our learners

are not easy to teach, and therefore, a teacher has to take time to prepare for the lesson. It also takes time to teach them since one must give remedial teaching to them. Most of the time, we are not able to cover the syllabus on time."

From this statement, one observes that there is a scarcity of training for teachers on ICT for pedagogy from the Ministry of Education. Additionally, one would conclude that the majority of the teachers are ignorant of the fact that ICT would make the work of teaching easier for them. According to Sepulveda-Escobar and Morrison (2020), teachers' ability to incorporate ICT into pedagogical practice presents another difficulty that is closely tied to teacher confidence. The findings concur with findings reported in Denmark by Motzfeldt and Naesborg-Andersen (2018). The study established that many teachers still choose not to use ICT and media in teaching situations due to a lack of ICT skills rather than for pedagogical or didactic reasons, according to the findings of the study. Further, the findings agree with the findings reported by Nang'unda (2019) that a number of issues, including poor pre-service training for teachers in ICT and a dearth of instructors with ICT diplomas, hamper the integration of ICTs in secondary schools.

Also, in a related study by Falloon (2020), it was revealed that many instructors lacked the knowledge and skills necessary to use computers and were unenthusiastic about the adjustments and integration of supplemental learning that accompanied the incorporation of computers into their teaching practices. According to the research, teachers who do not use computers in the classroom often cite a "lack of skills" as a barrier to their ability to use ICT for instruction. Motzfeldt and Naesborg-Andersen (2018) further revealed that many teachers still choose not to use ICT and media in teaching situations due to a lack of ICT skills rather than for pedagogical or didactic reasons. Contrary to the findings of the study, Lui (2022) revealed in his study that teachers' ICT knowledge and skills are no longer seen as the main barrier to ICT use in the Netherlands.

The researcher further wanted to know from the teachers whether they got the ICT support they needed from the head teacher of their schools. The findings were presented in Figure 2.
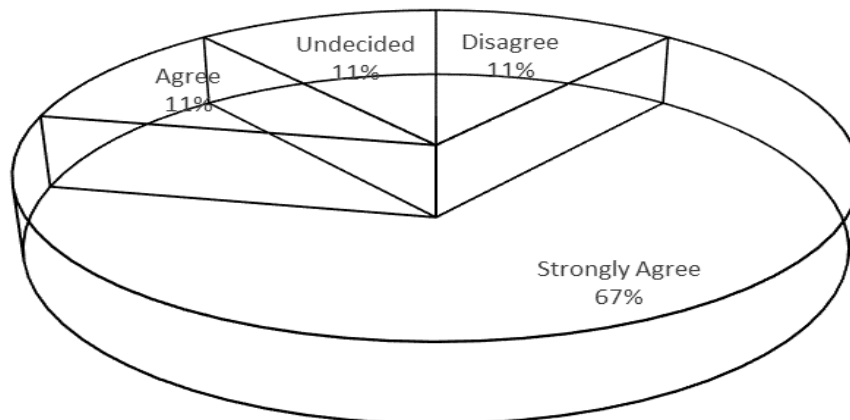
Figure 2: The School Administration's ICT support

The study established that slightly above three-quarters of the respondents agreed with the view that school managers were committed and supported ICT, while a few disagreed and far below a quarter were undecided. This is in agreement with the findings of Papaioannou and Charalambous (2011), who carried out a descriptive survey study on head teachers' attitudes towards ICT and their perceptions about the factors that facilitate or inhibit ICT integration in primary schools in Cyprus. Two hundred and fifty primary school heads participated in the study. The findings indicated that head teachers play an important role in the integration of ICT in schools. According to Mutisya., Mulwa & Mwania (2017) administration is the activity that leads staff members' actions to work toward achieving organizational goals. A school administrator's job is to make sure that certain tasks are allocated and carried out and that there is ongoing input to enhance overall school management. Technology is changing education, but not all students or staff members will benefit from its advantages, claims Malik (2018). This is because of weak leadership. Schools will continue to lag behind the society in which they are located. Moreover, the researcher wanted to find out from the teachers whether there was support for technical infrastructure in the schools. The findings are presented in Table 7.

Table 7: Support for Technical Infrastructure

	Frequency	Percentage (%)
Strongly Agree	4	22.2
Agree	8	44.4
Undecided	1	5.6
Disagree	3	16.7
Strongly Disagree	2	11.1
Total	**18**	**100.0**

The findings in Table 7 indicated that the majority of the respondents agreed that there was available technical staff at school to maintain technical infrastructure, train, and

support the teachers, while slightly above a quarter disagreed with this. Only one teacher was undecided. This was very important since the teachers would then get quick rescue in case they were using the technology and it stopped working. Korte and Husing (2007) argued that ICT support structures or maintenance contracts in schools help teachers use ICT in teaching without losing time by having to fix software and hardware problems. It was therefore necessary for this study to find out if technical support was provided in the schools for learners with VI, for it is a crucial component for effective implementation of ICT in teaching and learning.

5. Conclusion

The study concludes that the majority of the teachers had a positive attitude toward the use of ICT in teaching their subjects. However, the teachers lacked training in the use of technology and pedagogical methods. Quite a number of the teachers had not been trained in the teaching of learners with VI using the ICTs.

Conflict of Interest Statement

The author declares no conflicts of interest.

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