

**EFFECTIVENESS OF INTEGRATION STRATEGIES ON ACADEMIC
PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENT IN
PUBLIC PRIMARY SCHOOLS IN TURKANA COUNTY, KENYA**

BY

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DECLARATION

Declaration by the Candidate

This research thesis is my original work and has not been presented for examination in any other university.

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DEDICATION

This research thesis is dedicated to my family: my mother, my siblings and my friends who supported me throughout my masters' studies. I also dedicate it to my colleagues who took my shifts at times to enable me attend lectures.

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I am grateful to my supervisors, Dr. Jane Michael and Dr. James Sang, for their professional guidance and advice throughout the project period. My sincere gratitude to my classmates for the input and ideas that made this work a success. In addition, thank you to the University fraternity and faculty for giving me a conducive environment to undertake this research. I also pass my gratitude to the respondents who greatly contributed to the research. Above all, I thank the Almighty God for His protection during my studies.

ABSTRACT

The Ministry of Education's integration policy aimed at placing learners with hearing impairments in regular schools to foster academic and communication skills, and academic performance. Turkana County remains behind due to insufficient teacher training, lack of specialized resources, and ineffective teaching strategies, leading to a widening achievement gap between these learners and their hearing peers. The study purpose was to assess the integration strategies and their effectiveness on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya. The following objectives guided the study: to evaluate the academic performance of learners with hearing impairments in an integrated setting in public primary schools, to assess the influence of different teaching strategies on the academic performance of learners with hearing impairments in public primary schools, to establish the effects of teaching and learning resources appropriate for effective integration on the academic performance of learners with hearing impairments in public primary schools and to determine the instructional strategies used to teach learners with hearing impairments in an integrated setting in public primary schools. The study was guided by labelling theory and Gross Theory to comprehensively understand the learners with hearing impairments in an integrated educational setting by incorporating both social-psychological and sociological perspectives. The pragmatism paradigm guided the study. The convergent mixed method design was adopted in the study as the researcher merged both the qualitative and quantitative data. The target population was 24 Headteachers, 50 trained teachers of SNE, 24 members of the school BOM, and 2 Special Needs Educational Curriculum Support Officers. The study employed a systematic purposive sampling technique to select the sample for the study. The study used questionnaires to collect quantitative data and interview schedules for qualitative data. The descriptive statistical techniques of frequency, mean, and standard deviation were used to analyze the quantitative data. The inferential statistics of multiple regression analysis were used to analyze data. Qualitative data using thematic analysis. Study findings revealed that there was a significant difference in teaching strategies on the academic performance of learners with hearing impairment ($\beta_1=.260$, $p=.017$). There was a statistically significant effect of teaching and learning resources on the academic performance of learners with hearing impairment ($\beta_2=.208$, $p=.041$). Instructional strategies positively affect the academic performance of learners with hearing impairment ($\beta_3=.229$, $p=.031$). The study findings from interviews revealed that effective use of hearing aids, diverse communication methods, and a supportive interactive environment significantly enhance comprehension, participation, and overall academic performance for students with hearing impairments. The study concludes that effective integration strategies, including supportive measures, diverse teaching methods, appropriate resources, and tailored instructional approaches, significantly enhance the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya. The study recommended that primary schools should create a supportive and interactive classroom environment with accessible resources, diversify teaching strategies, and ensure fair assessments with regular feedback to enhance the learning experience for students with hearing impairments.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS.....	xi
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background of the Study	1
1.2 Statement of the Problem.....	7
1.3 Purpose of the Study	8
1.4 Specific Objectives	8
1.5 Research Hypotheses	9
1.6 Assumption of the Study.....	10
1.7 Significance of the Study	10
1.8 Scope of the Study	11
1.9 Limitations of the Study.....	12
1.10 Theoretical Framework.....	13
1.11 Conceptual Framework.....	15
1.12 Operational Definition of Terms.....	17
CHAPTER TWO	19
LITERATURE REVIEW	19
2.0 Introduction.....	19
2.1 The Concept of Integration Strategies of Learners with Hearing Impairment ..	19
2.2 Theoretical Framework.....	20
2.2.1 Gross Theory.....	20
2.3 Empirical Review.....	22
2.3.1 Academic Performance of Learners with Hearing Impairments	22
2.3.2 Different Teaching Strategies and Academic Performance of Learners with Hearing Impairments.....	26

2.3.3 Teaching and Learning Resources Appropriate for Effective Integration....	30
2.3.4 Instructional Strategies Used to Teach Learners with Hearing Impairments	34
2.4 Summary of Literature Review and Research Gap.....	38
CHAPTER THREE.....	40
RESEARCH METHODOLOGY	40
3.0 Overview	40
3.1 Research Paradigm.....	40
3.2 Research design	41
3.2 Study Area	41
3.3 Target Population.....	42
3.4 Sampling Procedure and Sample Size	43
3.5 Research Instruments	44
3.6 Pilot Study.....	45
3.6.1 Validity of Research Instruments.....	46
3.6.2 Reliability of Research Instruments.....	46
3.7 Data Collection Procedure	48
3.8 Data Analysis and Presentation	48
3.9 Ethical Consideration.....	50
CHAPTER FOUR.....	51
DATA PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS.....	51
4.1 Overview	51
4.2 Response Rate.....	51
4.3 Demographic Information.....	52
4.3.1 Gender of the Respondents	52
4.3.2 Age Bracket of the Respondents.....	53
4.3.3 Education level of the Respondents	53
4.3.4 Teaching Experience.....	54
4.4 Academic Performance of Learners with Hearing Impairments	55
4.5 Different Teaching Strategies	65
4.6 Teaching and Learning Resources Appropriate for Effective Integration.....	73
4.7 Instructional Strategies Used to Teach Learners with Hearing Impairments	83
4.8 Inferential Analysis.....	91
4.8.1 Correlation Analysis	91

4.9 Regression Analysis Results	93
4.9.1 Model Summary.....	93
4.9.2 Model Fitness.....	93
4.9.3 Regression Coefficients	94
4.10 Hypotheses Test Results	95
4.10.1 Hypothesis Testing for Different Teaching Strategies.....	95
4.10.2 Hypothesis Testing for Teaching and Learning Resources	96
4.10.3 Hypothesis Testing for Instructional Strategies	96
CHAPTER FIVE	98
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	98
5.1 Introduction.....	98
5.2 Summary of the Study Findings	98
5.2.1 Academic Performance of Learners with Hearing.....	98
5.2.2 Different Teaching Strategies	99
5.2.3 Teaching and Learning Resources Appropriate for Effective Integration....	99
5.2.4 Instructional Strategies used to Teach Learners with Hearing Impairment	100
5.3 Conclusions of the Study	100
5.3.1 Academic Performance of Learners with Hearing Impairment.....	101
5.3.2 Different Teaching Strategies	101
5.3.3 Teaching and Learning Resources Appropriate for Integration	101
5.3.4 Instructional Strategies Used to Teach Learners with Hearing Impairment	
.....	102
5.4 Recommendations of the Study	102
5.5 Suggestions for Further Study	103
REFERENCES	105
APPENDICES	121
Appendix I: Questionnaire For Teachers	121
Appendix II: Interview Schedule For Head Teachers.....	126
Appendix III: University Letter	128
Appendix IV: Research Permit From Nacosti	129
Appendix V: Research Permit From County Commissioner.....	130
Appendix VI: Research Permit From Ministry Of Education	131
Appendix VII: Map Of Turkana County	132
Appendix VIII: Plagiarism Awareness Certificate	134

LIST OF TABLES

Table 1. Target Population.....	43
Table 2 Sample Size.....	44
Table 3 Reliability Test.....	47
Table 4 Response Rate.....	51
Table 5: Gender of the Respondents.....	52
Table 6 Age Bracket of the Respondents.....	53
Table 7 Education level of the Respondents.....	54
Table 8 Teaching Experience.....	54
Table 9 Academic Performance of Learners with Hearing Impairments	56
Table 10 Different Teaching Strategies	65
Table 11 Teaching and Learning Resources Appropriate for Effective Integration....	74
Table 12: Instructional Strategies Used to Teach Learners with Hearing Impairments	84
Table 13 Correlation Analysis	92
Table 14 Regression Model Summary.....	93
Table 15 Results of Model Fitness.....	93
Table 16 Regression Analysis Coefficient.....	94
Table 17 Summary of Hypotheses Test Results	97

LIST OF FIGURES

Figure 1 Conceptual Framework	16
Figure 2 Evans, L. (1982). The Total Communication Circle, ...	30
Figure 3. Map of Turkana County FAO (2006).....	133

LIST OF ABBREVIATIONS

ASDC	American Society for deaf children
BOM	Board of Management
FPE	Free Primary Education
GPRS	General Packet Radio Services
HOH	Hard-Of-Hearing
KCPE	Kenya Certificate for Primary Education
NACOSTI	National Commission for Science, Technology and Innovation
NAD	National Association of the Deaf
NGO	non-governmental organizations
PSLE	Primary School Leaving Examination
SNE	Special Needs Education
TC	Total Communication

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Quantitative education relies primarily on two senses in particular: visual and auditory (Hutmacher, 2019). Materials such as textbooks, charts, and software serve as cues to visualize a concept (Rees & Laramée, 2019). Yet rarely are these accompanied by audio explanations spoken by the teacher or by other media (videos or audio vignettes). When one of these two senses is not functioning well, it has an impact on academic performance (Purgina, Mozgovoy & Blake, 2020). Visual disorders are more easily spotted and addressed. For hearing disability, which is a hidden disorder, it is a different story. Statistics show that 12.5% of the learner's population in an integrated classroom has or moderate hearing loss, a communication disability which often impacts negatively on children's language development, academic performance, and social-emotional quality of life. Most of the teachers overlook these challenges to gain full integration in the classroom, hence giving little attention to the learners (Nilsen, 2020).

Integration means the placement of learners with special educational needs in mainstream schools (Williams-Brown & Hodkinson, 2020). The integration movement basically came as a result of the assimilation model, whose emphasis was to provide support to the students to enable them to fit into the mainstream program without any adjustment made to that program (Alderson, 2018). In contrast, inclusion comes in, and it is about the pupil's right to participate fully in school life, which welcomes and accepts them (Williams-Brown & Hodkinson, 2020). It also requires society to make physical infrastructure, information, and communication accessible to all. Integration then implies a means to end exclusion in the education sector (Maag et al., 2019).

Integration strategies, such as different teaching strategies, teaching, and learning resources, are crucial for the effective integration of learners with hearing impairments in mainstream settings. For instance, visual aids, such as images, diagrams, and charts, help support learning by providing clear and concrete representations of abstract concepts, which are beneficial for students with hearing impairments (Luckner & Muir, 2021). Teachers can also use assistive technologies like hearing aids, Frequency Modulation systems, and captioning tools to ensure that students can fully access auditory information, thus enhancing their learning experience (Gibbons, 2020).

Moreover, instructional strategies such as differentiated instruction and collaborative learning are essential to meet the diverse needs of all learners. Differentiated instruction allows educators to adjust their teaching methods to cater to individual learning styles, while collaborative learning encourages peer support, enabling students with hearing impairments to interact and learn from their classmates (Tharp & Hick, 2020). Sign language interpreters, captioned videos, and real-time transcription services are invaluable resources in supporting communication and ensuring that learners with hearing impairments are included in class activities and discussions (Williams-Brown & Hodkinson, 2020). Creating an inclusive classroom environment requires a comprehensive approach to teaching that embraces various modes of communication, diverse resources, and the active participation of all students.

Integrating learners with hearing impairment into mainstream primary schools has its origins in the international policy documents supporting the integration of all learners. It is an inclusive method, which has both academic and social advantages, providing opportunities to communicate and interact with each other (Sume & Takala, 2018).

Students with hearing disabilities are a subgroup of students with special needs. They are impaired, which means they have lost hearing, which restricts their ability to listen to sounds in their surroundings.

It is commonly held that placing children with disabilities in special schools leads to their segregation from their non-disabled counterparts, which in turn can isolate them from day-to-day experiences with other children, while integrating them into regular schools helps them to achieve their maximum potential in a more favorable educational and social environment (Imaniah & Fitria, 2018). Integration is an ongoing process of learning to live together, and it also involves increasing knowledge about self and others. For deaf children, the question of integration is more complex than it usually appears. An integrated educational programme with no special methods and strategies prepares the child for life in a hearing community. It is said that integration is the way to provide deaf children with what they cannot gain from their deaf environmental experiences. Social, business, and professional contacts in life cannot be fully achieved without effective language and communication skills (Mitchiner, Batamula & Kite, 2018).

Torppa and Huotilainen (2019) in Singapore have identified one case study in which learners with hearing impairment were taught using regular primary schools alongside hearing learners. The teachers and learners with hearing impairment are treated in the same manner as the regular one, both hearing- and hearing-impaired students were taught in the same location and took the same tests and exams as the regular pupils, including Primary School Leaving Examination (PSLE), played together, shared common desks and ate together during the mealtime (Fiorini and Manzini, 2018). Out of such integration, the hearing-impaired learner jaws given the chance to engage in purposeful interaction with their mainstream peers, develop more effectively in social

integration, and reinforce further learning of both children in both kinds of schools, one-on-one conversation, academic remedials, or other ways of support like additional support lessons for hearing-impaired learners. The aim of all these learning strategies ways to improve the ability of the hearing-impaired learners to cope effectively in the normal primary schools (Tohara, 2021).

The Malaysian government adheres to the international regulations on disability equality, such as the UN Convention on the Rights of Persons with Disabilities. It targets that 75 percent of children with disabilities attend normal schools by the year 2025. It is a strategy to stop the discrimination of individuals with disabilities (Miles, Khairuddin, and McCracken, 2018).

It is not easy to teach deaf children to attend regular schools. The Malaysian school system has numerous languages and its examinations. Deaf children find it difficult to acquire language and communication (Miles, Khairuddin, and McCracken, 2018). The goal of the government is that by 2025, 75 percent of students with and without disabilities, including the deaf, should be enrolled in regular classes. This is its strategy of halting discrimination. This is not an easy objective, particularly for the deaf children, since they require special language assistance like the sign language. The numerous languages and cultures in Malaysia serve to complicate the situation (Khairuddin and Miles, 2020).

Learners with hearing impairment in Nigeria have encountered challenges such as hostile cultural beliefs, a lack of high-quality teachers, and poor funding (Ademokoya, 2019). The state governments have initiated initiatives to provide a hearing-impaired student with an integrated education. The assistive technology and videos with captions help these students to perform positively in school (Lawal, 2022).

Another obvious objective of Nigeria is to enroll students with special needs in mainstream schools, as outlined in the National Policy on Education (Egunjobi, 2022). Deaf children can perform well with their hearing colleagues in regular classrooms, provided that they have an appropriate environment. This involves having sufficient specialized personnel, assistive equipment, learning plans, equipment, and materials that assist them in the integration program (Brydges & Mkandawire, 2020).

The matter of integrating deaf and hard-of-hearing students into university courses with regular hearing learners remains controversial in Egypt (Gürkan, 2019).

It benefits the deaf and hard-of-hearing students by making them perform better in school and socially develop, according to those who support integration. The advocates of separation believe that normal classrooms are not always suitable for students with hearing loss (Gürkan, 2019). It is also said that it is in the best interest of every student to be placed individually. Opponents of integration point out that integration may lead to problems related to language, communication, social normalization, and cultural identity (Garner, 2019).

According to Okinyi (2022), most children with hearing impairment in Kenya join pre-primary classes (Nursery and Infant Classes) at the age of 5 years for two years. A small percentage is identified late and therefore starts school late. In the third year, they move to class (grade) one, which runs up to grade eight, at which they sit for a national examination, the Kenya Certificate for Primary Education (KCPE), together with their hearing counterparts in regular schools. The only rebate offered is an extra 30 minutes during the examination period. There are a few academic secondary schools for the deaf that are qualified to provide secondary education.

Education of learners with hearing impairment in regular primary schools in Kenya has faced several challenges since the inception of Free Primary Education (FPE) (Musa, 2021). The number of learners with hearing impairment in regular primary schools has been on the increase (Kiru, 2019). For example, data for the last three years indicated there were 133 learners with hearing impairment in 2008, 2009, (161, and 2010 (206). There were 121 learners with hearing impairment in regular primary schools, in classes three and four, and these schools with hearing impairment faced several problems both in class and extracurricular activities (Musa, 2021).

The academic performance of learners with hearing impairment in Turkana County, Kenya, is supported by various international organizations and the Kenyan Government. St. Bernadette School for the Deaf in Turkana County provides education for children with hearing impairments, some of whom also have other disabilities (Zuurmond, Nyapera, Mwenda, Kisia, Rono, & Palme, 2016). Additionally, the Diocese of Lodwar in Turkana County focuses on deaf and hearing-impaired children aged 4 to 16 years, providing them with educational opportunities and personal development support and training for teachers to ensure that they employ proper integrative strategies in teaching such learners, parents, and support staff (Kibias, 2015). Organizations such as the Lutheran World Federation (LWF) operate Educational Assessment & Resource Centers (EARC) in Turkana, where children with disabilities, including hearing impairment, are assessed to determine their intervention and better placement options needed to support their learning. These efforts aim to provide children with hearing impairments in Turkana County with the necessary support and opportunities for better academic performance and success. They have tried to implement policies that promote the integration of learners with hearing impairment in mainstream schools, supported by special education services and resources. Providing teachers with training on

inclusive teaching methods and strategies to assist learners with hearing impairment in the classroom. Ensuring that learning materials are available in formats suitable for learners with hearing impairment, such as Sign language interpretation, teacher assistants, captioned videos, and visual aids. Engaging the local community to raise awareness about the needs of learners with hearing impairment and promote inclusive attitudes and practices. Offering support services such as speech therapy, hearing aids, and assistive devices to facilitate the learning process for students with hearing impairment. However, there is a need for integration strategies and their effectiveness on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya.

1.2 Statement of the Problem

The Ministry of Education in Kenya has implemented an integration policy that places children with disabilities, including those with hearing impairments, in regular schools. This policy aims to offer hearing-impaired learners the opportunity to develop both academic and communication skills in an inclusive environment. However, despite these efforts, academic performance among learners with hearing impairments in public primary schools in Turkana County remains notably poor. Studies show that learners with hearing impairments in this region score significantly lower than their hearing peers in subjects such as mathematics and language, with some schools reporting pass rates as low as 30% for these learners compared to 70% for their hearing counterparts (Ng'ang'a, 2021). This academic underperformance is attributed to a lack of qualified teachers trained in Kenya Sign Language, insufficient teaching materials, and the inability to effectively implement the right integrative teaching strategies.

If the challenges are not addressed, the gap in academic achievement between hearing-impaired learners and their peers is likely to widen, further hindering their ability to

succeed in future education and fully participate in society. The failure to improve academic outcomes for these learners may lead to long-term social and economic disadvantages, limiting their potential for employment and independent living. Previous studies on the integration of hearing-impaired learners have highlighted the importance of teacher training and the need for specialized teaching. However, these studies have largely focused on the social aspects of integration, such as promoting inclusive attitudes and behaviors, while overlooking the critical issue of academic performance. Furthermore, while some studies have acknowledged the lack of resources and teacher preparedness, they have not provided clear strategies for addressing these gaps in an integrated classroom setting. This study sought to address these gaps by investigating the effectiveness of current integration strategies on the academic performance of learners with hearing impairments in public primary schools in Turkana County.

1.3 Purpose of the Study

The purpose of this study was to assess integration strategies (teaching strategies, teaching and learning resources appropriate, instructional strategies used to teach learners) and their effectiveness on the academic performance of learners (continuous assessment test, signing, and total communication and interaction with other learners) with hearing impairment in public primary schools in Turkana County, Kenya.

1.4 Specific Objectives

The study was guided by the following specific objectives;

- i. To evaluate the academic performance of learners with hearing impairments, conducted in an integrated setting in public primary schools in Turkana County, Kenya.

- ii. To assess the influence of different teaching strategies on the academic performance of learners with hearing impairments in public primary schools, in Turkana County, Kenya.
- iii. To establish the effects of teaching and learning resources appropriate for the effective integration of the academic performance of learners with hearing impairments in Jin public primary schools in Turkana County, Kenya.
- iv. To establish instructional strategies used to teach learners with hearing impairments in an Integrated public primary school in Turkana County, Kenya.

1.5 Research Hypotheses

The research was guided by the following hypotheses;

- H₀₁** There is no significant difference in the academic performance of learners with hearing impairments. In an integrated setting in public primary schools in Turkana County, Kenya.
- H₀₂** There is no significant influence of different teaching strategies on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya.
- H₀₃** Teaching and learning resources appropriate for effective integration have no significant effect on the academic performance of learners with hearing impairments in public primary schools, in County, Kenya.
- H₀₄** Instructional strategies used to teach have no significant influence on learners with hearing impairments in an integrated setting in Public Primary Schools in Turkana County, Kenya.

1.6 Assumption of the Study

The study assumed that respondents cooperated and were willing to provide the required data for the study, and that the findings contributed to successful integration strategies on the academic performance of learners with hearing impairment in public primary schools.

It was assumed that the school environment, cultural attitudes, and policy frameworks towards inclusive education were conducive for learners with hearing impairment to actively participate in learning activities. The study also assumed that integration practices in the sampled public primary schools reflected the broader situation within the education sector in the county. The study assumed that the instruments used for data collection were valid and reliable in capturing the intended information. It was further assumed that the sample selected was representative of the target population and that the respondents interpreted and answered the questions accurately and truthfully. In addition, it was assumed that the mixed methods approach (qualitative and/or quantitative where applicable) provided complementary insights that enriched the findings. The study was guided by the assumption that the theoretical framework underpinning it was relevant in explaining how integration strategies influence the academic performance of learners with hearing impairment. It was assumed that learning is socially mediated and that inclusive strategies such as peer support, teacher scaffolding, and the use of assistive technologies enhance the educational outcomes of learners with hearing impairment.

1.7 Significance of the Study

The study's findings would provide valuable insights for parents and guardians, helping them understand the effectiveness of integration strategies on the academic performance of learners with hearing impairment in public primary schools. This

knowledge can guide their involvement in the education of their children and enable them to advocate for effective integration strategies. The study findings would also directly affect the learners, providing them with a better understanding of the strategies that contribute to their academic success. It empowers them by highlighting effective approaches to be used and advocating for their needs in the educational system.

The findings of the study would inform education policies and guidelines related to the integration of learners with hearing impairment. Policy makers can use this information to develop, implement, and enrich strategies that would enhance the overall learning experience for these students and promote inclusivity in education. The study may highlight specific challenges and opportunities in Turkana County, enabling local authorities to allocate resources and support programs that address the unique needs of learners with hearing impairment in public primary schools.

Researchers and scholars in the field of education, special education, and inclusive education can benefit from the study by building upon its findings. The research may contribute to the existing body of knowledge on effective integration strategies for learners with hearing impairment, serving as a foundation for further academic inquiry. The study's insights may have broader applications beyond Turkana County, providing a basis for comparative studies and contributing to international discussions on inclusive education and strategies for improving academic performance among students with hearing impairment.

1.8 Scope of the Study

The study was on integration strategies and their effectiveness on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya. The county consists of a few special schools and units; others are

integrated in nature, and the rest are inclusive primary schools. The target population was the Head teachers, trained teachers of SNE, members of the school BOM, and Special Needs Educational Curriculum Support Officers. The participants, as mentioned earlier, were the Head teachers and trained teachers of SNE because they are the ones handling most of the learners in public primary schools, special schools, and units. The study was done between periods of November 2023 to April 2024.

1.9 Limitations of the Study

The study was confined to public primary schools in Turkana County, thereby excluding private and non-formal learning institutions, which might have different integration experiences for learners with hearing impairments. This limitation may affect the generalization of the findings beyond the public school context. The study specifically focused on learners with hearing impairments, leaving out other categories of learners with special needs, such as those with visual or physical disabilities. Consequently, the results may not represent the broader spectrum of special needs education.

Several constraints and challenges were encountered during the study. First, geographical barriers and poor road infrastructure in Turkana County made data collection difficult, especially in remote schools. Second, language and communication challenges arose when interacting with learners with hearing impairments, as not all respondents were proficient in sign language. Third, the limited availability of respondents, particularly special needs education teachers and curriculum support officers, posed scheduling difficulties and delayed data collection. Additionally, some participants exhibited reluctance in providing information, possibly due to fear of criticism or institutional policies restricting disclosure of performance-related data. Time constraints and the cost of logistics also limited the extent of data collection. Despite these challenges, every effort was made to ensure that the data obtained were

valid, reliable, and reflective of the true situation in public primary schools within Turkana County.

1.10 Theoretical Framework

The study was guided by Labeling Theory, developed by Becker in 1963. Labelling theory was preferred for this study because it reveals that people obtain labels from how people view their behaviors. According to Halton et al. (2021), labelling is assigning a child with a condition to a general category in the classification system. There are both positive and negative sides to labeling. The positive part of labeling is that it leads a learner to improved legislation, improved communication, and development of advocacy, but on the negative side, there are possibilities of stigmatization, peer rejection, and wrong placement of learners with disabilities based on inappropriate assessment (Nyakundi, Awori & Chege, 2016).

This theory builds a subjective conception of the self, but others penetrate the reality of that individual's life. The theory hypothesizes that the labels applied to individuals influence their behavior, particularly the application of negative judgment or stigma. Labelling promotes deviant behavior, becoming a self-fulfilling prophecy that an individual who is labeled has little choice but to conform. The essential meaning of labeling theory is that people become deviant because the majority of the population and the authority concerned attach certain labels to their behavior.

The implication of this theory to the study at hand is that during assessment, learners with HI are labeled and they end up being wrongly placed in a bleak environment (Nyakundi, 2015). They are de-powered and marginalized and have no opportunity for advancement, and largely remain voiceless because of in-built misplacement. The theory points out that an erroneously labelled child with special needs would be

inappropriately placed and unsuitably instructed, which the first two theories have not clearly pointed out. He metaphorically describes this as a process of handicapping the already handicapped person.

Labeling allows for more targeted research and the development of specific instructional strategies for students with disabilities. It can also make the public aware of the needs of children with disabilities, potentially attracting sponsorship and funding. On the other hand, labeling can lead to stigmatization, misunderstandings among children, and the potential for biased expectations and judgments from teachers and parents. It may also result in the overreliance on past experiences and the use of unreliable assessment instruments, leading to incorrect labels.

In the context of integration strategies for learners with hearing impairment, the application of labeling theory should be approached carefully. While labeling can help in designing targeted interventions, it is important to be mindful of the potential negative effects, such as stigmatization and biased expectations. Therefore, the effectiveness of integration strategies should be evaluated while considering the potential impact of labeling on the academic performance and well-being of the learners.

The application of labeling theory in the context of integration strategies for learners with hearing impairment in public primary schools should be approached with a balanced consideration of its potential benefits and drawbacks. It is important to ensure that the labeling process is managed well to mitigate the negative implications and maximize the benefits for the academic performance and overall development of the students.

Labeling theory focuses on the manner in which society defines and creates deviance. Labeling theory has become a popular sociological approach to the study of deviance, but it has also received criticism for its inability to explain primary deviance, its lack of attention to the labeling of categories of people, and its failure to specify the conditions under which official labeling works. Critics of labeling theory argue that it ignores factors such as differences in socialization, attitudes, and opportunities that lead to deviant acts (Rist, 2017). They also assert that it is not entirely certain whether labeling increases deviancy. Ex-cons might end up back in prison because they have formed connections to other offenders; these ties raise the odds that they would be exposed to additional opportunities to commit crimes. In jail, likelihood, both labeling and increased contact with the criminal population contribute to recidivism.

1.11 Conceptual Framework

The conceptual framework is a visual and specific representation that describes and illustrates the relationship between the independent variables (Integration strategies) and the dependent variable (Academic performance). This study sought to focus on integration strategies and their effectiveness on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya.

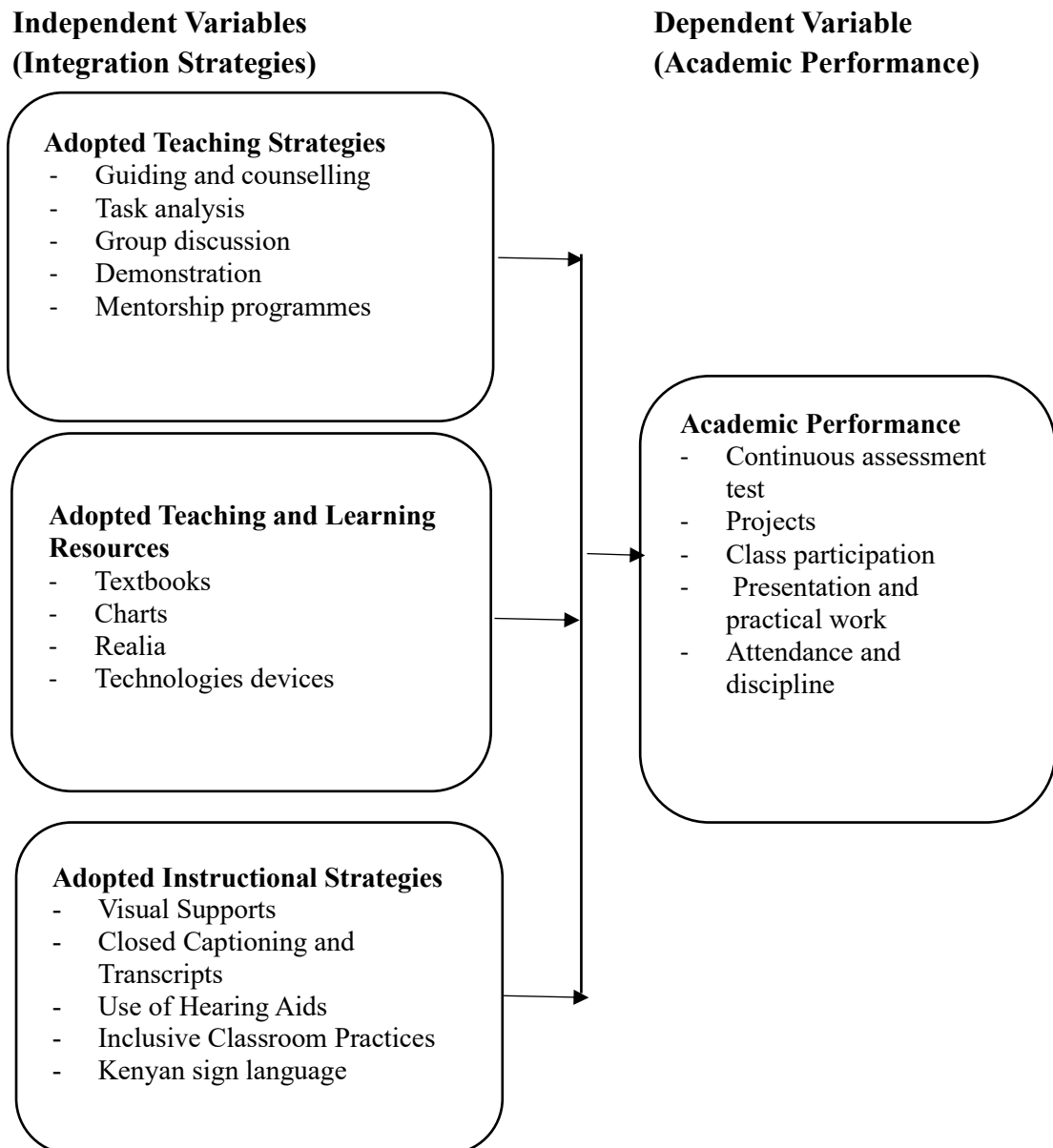


Figure 1 Conceptual Framework

Source: Researcher (2025)

The conceptual framework indicates that there is a relationship between the independent variable (integration strategies) and the dependent variable (academic performance). The independent variable (integration strategies), which is also the predictor, while the dependent variable (academic performance), becomes the predicted, whose features are observed and manipulated.

The conceptual framework indicates that there's a relationship between integration strategies and academic performance of learners with hearing impairment, thus enhanced through administering examinations and tests, hence attracting hearing impaired learners to collaborate and be mainstreamed with the hearing peers.

This then translates to improved academic performance, reduced dropout rates, increased transition rates, enhanced socialization, and cooperation. However, the lack of assessment in public schools would have a negative impact on the dependent variable (integration strategies).

This would result in low enrolment, increased dropout rates, poor academic performance, increased emotional and behavioral disorders, poor leadership, and governance in schools. For proper and quality integration strategies to be fully achieved, tight school rules and regulations should be enacted, and all legal frameworks should be fully operational by following the right protocols and procedures in all public primary schools.

1.12 Operational Definition of Terms

Academic Performance: This refers to the measurable learning outcomes of learners with hearing impairments in public primary schools, as reflected in their test scores, class participation, completion of assignments, and progression in curriculum-based assessments.

Teaching and Learning Resources: These are the instructional materials and aids, such as visual charts, sign language manuals, hearing devices, textbooks, and other specialized tools, used by teachers to facilitate effective instruction and support the academic performance of learners with hearing impairments.

Instructional Practices: This refers to the systematic methods and techniques that teachers employ to deliver content, engage learners, and evaluate understanding, such as continuous assessment, assignments, demonstrations, group discussions, and classroom observations, to enhance the academic performance of learners with hearing impairments in public primary schools.

Attitudes of teachers: This refers to the perceptions, beliefs, and dispositions of teachers towards teaching learners with hearing impairment, measured by their willingness to adapt teaching strategies, use of inclusive practices, and interaction with the learners.

Effective integration of learners: This refers to the extent to which learners with hearing impairment are actively included, engaged, and able to participate in academic and social activities alongside their peers without disabilities..

Teaching strategies: These refer to the specific instructional methods and approaches employed by teachers, such as the use of sign language, peer tutoring, individualized instruction, demonstration, and visual aids to facilitate effective learning and enhance the academic performance of learners with hearing impairments.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed the literature related to integration strategies and their effectiveness on the academic performance of learners with hearing impairment. It was based on the concept of integration strategies with hearing impairment, the integration policy adopted by the Ministry of Education, and provided learners with disabilities with both physical and mental support to cater to their special needs, a theoretical review, an Empirical review, a summary of reviewed literature, and a Knowledge Gap.

2.1 The Concept of Integration Strategies of Learners with Hearing Impairment

Nowadays, the concept of teaching all young children at once is a major concern in early childhood education (Palla, 2020). Numerous international laws and agreements encourage this concept. They declare that the education of early childhood around the world is not sufficient yet. Early childhood is a very critical level. It is the history of a child from birth to the age of eight. This period plays a paramount role in the development of an individual (Balasundaram and Avulakunta, 2021).

Education is offered to all people regardless of their social and economic status, and even people with special needs are not excluded by the government. Education is one of the fundamental requirements of human development (Ainscow, 2020). It assists people the special needs to gain independence. Special schools or units accommodate students with blind and physical, mental, cerebral palsy, gifted, and hearing difficulties. The role of the government is viewed in different programs in special schools, special units, and currently in inclusive classrooms (Madani, 2019).

The special-needs group includes hearing-impaired children. They are unable to hear the sounds around (Lesica, 2018). Through an integration program, they attend the same classroom as hearing children. The concept of integration increased in the early 1980s. The Gachathi Report of 1976 also indicated that the Kenyan government should develop additional services that would take disabled children to ordinary schools (Alkhawaldeh & Khasawneh, 2021).

The integration plan of Kenya was established and advocated in the Gachathi report of 1976. The report also indicated that the curriculum ought to enable such learners to rejoin a hearing society upon schooling. The commission requests all individuals to strive to ensure that disabled persons do not remain isolated from other individuals (Moruri, 2021). The government has made efforts like offering special-needs learners additional grants for the free primary education, depending on the number of learners enrolled in every special school, in order to purchase required teaching resources and equipment. The teachers are also trained in special-needs education on the diploma and degree level at universities like Maseno, Moi, and Kenyatta, such that they may employ varied approaches in teaching and studying to such learners (Masinde, 2018).

2.2 Theoretical Framework

The study was guided by Gross Theory.

2.2.1 Gross Theory

The research was based on Gross Theory by Giaquinta and Bernstein (1971), which examines the spread and implementation of changes in education within the school. According to the theory, we could improve the effectiveness of changes by considering three kinds of factors: the individuals involved in using the change, the attributes of the change itself, and how the change is disseminated. In this research, the most important

individual is the learner with special needs. We are bound to look at how the change is aligned with what the learner requires, as well as what the learner has to offer. When the needs, habits, or resources of the learner do not match the change, the change is not adopted. The third one is to select the appropriate methods of communicating the change. This assists us in knowing how, why, and when the change is used. A school should be prepared and must be willing to embrace the change. Its architecture, legacy, policies, administration infrastructure, and assets have to be reviewed to roll out successfully. This is the reason why the research examines school variables that influence the inclusion process of learners with special needs in the public primary schools.

In the implementation phase, the user experiments with the approach on a trial basis. They can continue to use it in case the experiment is successful and later adopt it as a system norm. Nonetheless, these simplified steps cannot be of much use to educators or change agents who need to determine how best to disseminate new educational concepts. It is necessary to pre-establish the areas of diffusion that you want to achieve before picking the strategies and determining the importance of each objective. In this research, the target is to integrate special needs learners into state primary schools. The observations on how change occurs may be useful influences on the thinking of educational change.

Integration is a multifaceted and elaborate procedure having numerous demands and requirements. The areas of focus of this study include familiarity of the teachers with the process of integrating, availability of physical facilities and resources, integration of strategies used by teachers, preparedness of teachers, and facilitation of school administration.

In this study, the model was adopted to examine integration strategies and the impact of the strategies on the academic achievement of learners with hearing impairment in publicly operated primary schools in Turkana County, Kenya.

2.3 Empirical Review

This section outlines other studies done by other scholars in relation to the study objectives.

2.3.1 Academic Performance of Learners with Hearing Impairments

A review of research in the United States found that deaf and hard-of-hearing students often lag behind their hearing classmates in academic achievement, with particular challenges in literacy and language development. However, some studies have shown that with appropriate accommodations and support, learners with hearing impairments can achieve academic success in integrated settings. A study in India found that when provided with sign language interpretation, note-taking assistance, and other adaptations, students with hearing loss performed comparably to their hearing peers in an inclusive classroom environment. Academic performance in the school setting is called scholastic achievement, and it is concerned with the development of knowledge, right attitudes, and the acquisition of skills. Academic performance is the combination of ability and effort. It refers to identifiable operations a learner is expected to perform on the items at the beginning and end of a course (Onyedikachim & Ezekiel-Hart, 2021). Academic success in a learner depends on various psychological factors, sociological factors like social interaction, social space, social influence, and social support, and environmental factors like relationships, sleep, exercise, and stress, which interact with the learning process of a learner. The academic performance of learners in an integrated setting is at the heart of the educational system. Any institution's

performance is determined by the academic excellence of its learners as calculated by their exam results (Peretomode & Ikoya, 2019).

In Canada, the study done by Barr et al. (2019) noted that hearing-impaired learners' academic performance suffers as a result of their verbal skills gap, poor literal ability, and interactive experiences with other peers. However, the majority of hearing-impaired learners have natural intellectual ability, and many times they do well in non-verbal tests like Canadian Sign Language. Consequently, hearing deficiency is not a limiting factor in assessing their skills. Learners with hearing impairment have natural reasoning abilities, and this has consistently shown that their non-verbal intelligence test scores are nearly identical (Skarżyński et al., 2020). However, the academic performance of hearing-impaired learners is far below their hearing peers. This is highly indicated by the comparison tests administered to such learners in Mathematics as a learning area in the United States, where children with hearing impairment have difficulty in almost all areas of academic performance, especially in reading and Mathematics concepts (Hidayat, Nandiyanto & Maryanti, 2020). Nonetheless, the study failed to indicate how learner integration helps boost learners with hearing impairment.

In Brazil, Silva et al. (2023) cited that the academic performance gap widens as hearing-impaired learners progress through school in these core areas. Their level of achievement is majorly characterized by parental involvement and the quality, quantity, and timing of the support services these learners receive. In essence, hearing-impaired learners' delayed language acquisition in signs, reading, or speech leads to poor reading achievement, which is lower than their literacy levels. To achieve successful reading, better reading achievement, or better sign language should be developed. Incomplete language development delays a learner's ability to understand the actions and motivations of other people. Through interaction hearing hearing-impaired learners are

provided with opportunities so that they can interact purposefully with their mainstream peers, foster better social interaction, and enhance their experience for the children from different school environments, individual conversations, and academic remedial and other forms of purposeful service like remedial lessons for the hearing-impaired counterpart during free lessons (Kang & Martin, 2018).

Su et al. (2020) measured the academic, social, and communication outcomes of hearing-impaired students who were enrolled in regular public schools in Australia. The authors utilized several assessment tools to measure these areas, and results indicated that the hearing-impaired students performed at the same average level as their hearing classmates in academic tests. Nevertheless, the participants in the study had participated in an intensive speaking and listening programs at a very early age. This implies that they might have acquired age-appropriate language skills which helped them to perform the same as their hearing peers. Many factors may justify this high academic performance of hearing-impaired learners in an integrated setting including family support and involvement in their children's academics, high expectations in the general school, extracurricular activities, early intervention programs, and communication skills, which would allow them to fully be integrated with the rest of the non-impaired learners (Zhang, Xiao, Wang, and Du, 2020). The study informed the current study on how integration influences the performance of learners with hearing impairment.

Research from across Africa has highlighted both the challenges and potential for learners with hearing impairments in integrated school settings. A study in Uganda reported that students with hearing impairment often struggled with academic achievement, facing difficulties in areas like reading, writing, and mathematics (Nuwagaba & Joch, 2019).

A study in Ghana reported that the average academic performance of students with hearing impairment was below that of hearing students, with significant gaps in subjects like Mathematics and English Language (Adesokan & Giwa, 2022). Likewise, a study in South Africa found that when provided with appropriate accommodations and support, students with hearing loss were able to achieve academic success in inclusive classrooms.

According to Mohammed (2018), achievement of learners with hearing impairments in integrated settings in public primary schools can be a multifaceted process. When effectively implemented, inclusive education can yield positive outcomes for these students. In such environments, learners with hearing impairments have the opportunity to interact with their peers without disabilities, fostering social inclusion and acceptance. However, the success of these students is heavily dependent on several factors, including the level of support they receive, the quality of specialized services, and the commitment of educators and the broader school community (Bharadwaj and Barlow, 2020).

Inclusive primary schools in Kenya must provide individualized support tailored to the specific needs of students with hearing impairments. This can include the provision of sign language interpreters, speech therapy, and assistive technology to facilitate communication and learning (Wang, 2019). Teachers play a pivotal role in creating an accessible and inclusive learning environment by adapting teaching strategies and materials to accommodate diverse learning needs. Additionally, fostering positive peer relationships and promoting a culture of acceptance can boost the confidence and academic performance of learners with hearing impairments (Kaput, 2018). Monitoring and assessment are crucial components of tracking the achievement of students with hearing impairments in integrated settings in Kenya (Cole & Flexer, 2019). Regular

progress evaluations help identify areas where additional support may be needed and allow for adjustments to instructional strategies and accommodations. Collaboration among teachers, specialists, and families is vital to ensure that learners with hearing impairments receive a well-rounded education that addresses their unique requirements. Ultimately, the achievement of these students in public primary schools is a collective effort that hinges on inclusive practices, dedicated educators, and commitment to providing equal opportunities for all learners (Cook, Rao & Collins, 2017).

2.3.2 Different Teaching Strategies and Academic Performance of Learners with Hearing Impairments

Teaching and learning strategies are crucial in the classroom for both hearing-impaired learners and their hearing counterparts. In their study done in Germany, Resch and Schrittemser (2020) noted that learning strategies help students achieve the desired goal by addressing the specific needs of the target group. They emphasized that assessing students' capabilities is a key pillar in developing successful teaching strategies. Recommended teaching strategies include discussions, field trips, nature walks, cooperative learning, peer teaching, the use of graphics and visual aids, visualizing problems, and modeling. Their study showed that explaining and visualizing problems before solving them step-by-step enhances the problem-solving performance of hearing-impaired learners in an integrated setting. However, Montague and Applegate (2018) noted that communication poses a significant challenge in the education and development of hearing-impaired learners, necessitating tailored instructional strategies.

A study done by Lasanen et al. (2019) in Finland found that for hearing-impaired learners to benefit from mainstream classroom instructions, teachers should adopt appropriate communication strategies that offer a nurturing environment to facilitate

psychosocial adjustment and academic performance. They suggested integrating spoken language with other teaching approaches to enhance concept comprehension through lip reading. Bess, Camarata, and Hornsby (2020) emphasized that teaching methods must be tailored to meet the individual needs of learners with hearing impairments. However, their study did not specify how different strategies influence learners' performance.

In their study done in Turkey, Okyayuz and Kaya (2020) indicated that facilitative strategies for hearing-impaired learners often revolve around communication aspects. Motivation plays a critical role in teaching, and teachers should use praise and rewards to encourage learners. Effective communication with hearing-impaired learners involves controlling attention and concentration through techniques like facial expressions, gestures, and body language. Shivaprakash and Castro (2019) highlighted that most hearing-impaired children have a limited grasp of oral communication unless these techniques are implemented through intensive tutoring and addressing the frustrations of such learners.

A study conducted in Nigeria by MED, Adaka, MED, and Ugwuanyi (2018) examined the effect of three sign language modes, American Sign Language, local sign language, and Total Communication (TC), on the reading comprehension of hearing-impaired learners. The results showed that pupils exposed to the TC mode performed better than those exposed to American Sign Language and Local Sign Language modes in an integrated setting. Swead, Mama, and Icht (2018) suggested that teaching and communication with hearing-impaired learners must be visually oriented and supported by sign language, handouts, multisensory approaches, summary presentations, and clear verbalization. However, this study was conducted in Nigeria, while the current study focuses on Kenya.

In Uganda, a study by Wawire (2023) explored the impact of sign language on the academic performance of hearing-impaired learners in primary schools. The researchers found that the integration of sign language into the curriculum significantly improved the learners' comprehension and participation in class activities. However, the study also noted that there were challenges related to the availability of qualified sign language interpreters and teaching materials. The lack of resources often leads to inconsistencies in the implementation of sign language, thereby affecting the overall effectiveness of the strategy.

In South Africa, Swanepoel, Kuschke, et al. (2022) conducted a study on the use of assistive listening devices and their impact on the educational outcomes of hearing-impaired students. The findings indicated that students who used assistive listening devices such as FM systems and hearing aids showed significant improvements in their academic performance and classroom engagement. The study highlighted the importance of early intervention and the provision of appropriate technological support to enhance learning outcomes for hearing-impaired students.

In Ethiopia, Basha et al. (2020) examined the effectiveness of inclusive education practices for hearing-impaired students in mainstream schools. The study revealed that inclusive education practices, when properly implemented, could significantly enhance the academic and social development of hearing-impaired students. However, the researchers pointed out that the success of inclusive education depended heavily on the attitudes and training of teachers, as well as the availability of supportive resources.

In Kenya, Ogada, Oracha, Kochung, and Matu (2022) examined the teaching strategies used for hearing-impaired learners in Nyanza province. Their study found that repetition, discussion, questioning, guided writing, and demonstration were the most

frequently used strategies for teaching English Composition to these learners. Hao, Lee, Chen, and Sim (2019) revealed that effective strategies like peer learning and dramatization were least used for hearing-impaired learners, which could contribute to poor performance in English composition. This study informs the current research on employing diverse strategies to improve the achievement of hearing-impaired learners.

A study by Rwaimba et al. (2024) investigated the effectiveness of computer-assisted learning for hearing-impaired students in Mombasa County. The results showed that the use of computer-assisted learning tools, such as educational software and multimedia presentations, significantly improved the students' understanding of complex subjects. The study highlighted the potential of technology to bridge the educational gap for hearing-impaired students and called for increased investment in digital learning resources.

Developing an effective communication system is the greatest challenge and most crucial support area for a child with hearing impairments (Cole & Flexer, 2019). Communication is essential for learning and accessing information. Nkyekyer, Meyer, Pipingas, and Reed (2019) noted that hearing-impaired children should maximize their residual hearing, use hearing aids, and enhance understanding through speech or lip reading. However, Nyaata (2018) found that the oral/aural approach, which was used in Kenya until 1988, did not consider the degree of hearing loss and resulted in poor performance among learners.

Hall, Hall, and Caselli (2019) discussed the manual approach, which emphasizes using signs and body language to communicate with deaf children, excluding speech and hearing aids. This approach focuses on sign language acquisition for communication and education, but has limitations, such as the absence of signs for many words. Nyaata

(2018) observed that this approach mainly catered to the profoundly deaf, potentially affecting KCPE performance.

The illustration in Figure 2.1 shows various methods of communication, with their Centre of focus being the child with hearing impairment. The choice of any one method will depend on the sensory organ or channel of communication targeted. It is therefore at the discretion of the user to choose the strategies or combination of strategies to use as an adjective of which communication is achieved.

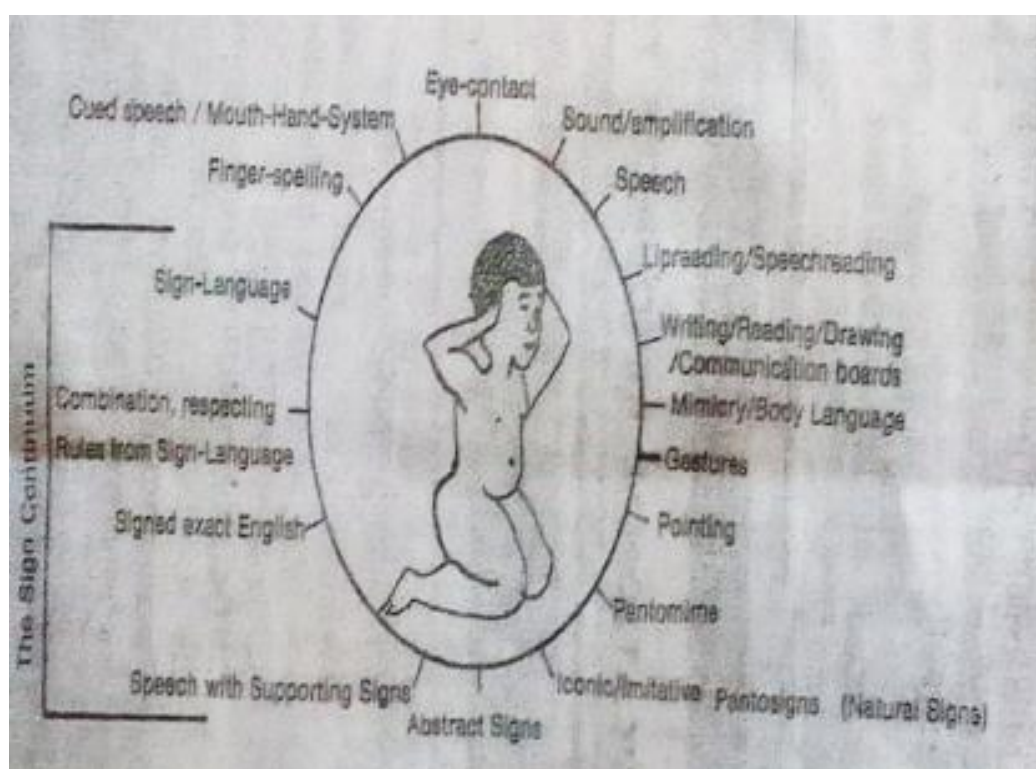


Figure 2 Evans, L. (1982). The Total Communication Circle, Gallaudet College Press. Washington.

Source: Erbas et al. (2017).

2.3.3 Teaching and Learning Resources Appropriate for Effective Integration

Instructional materials can be defined in different ways depending on the purpose of the scholars. Learning resources are instruments that teachers use to teach and from which students learn (Singh & Thurman, 2019). Hence, we understand that learning

resources are the basis of quality education. A study done in Poland by Tomczyk and Walker (2021) explains that learning resources are designed, modified, and prepared to assist teaching and learning operations. Resource materials are also called assistive technology devices used by learners with hearing impairment to enhance their learning or by teachers to facilitate the learning process of such learners in the mainstream classroom environment. The study summarized some educational resources required for teaching learners with hearing impairment. They comprise graphic design aids, display boards, slide shows, and mockups. They enhance learning because it is through the visual sense, human resources, general educational resources, and hearing aids that they can learn effectively (Winarto, Syahid & Saguni, 2020).

In Japan, Mondelli (2022) noted that assistive technology devices are vital for hearing-impaired learners because such technologies help in improving physical and mental functioning, alleviate disorders, prevent the worsening of the condition, improve their capacity to learn, and even replace missing links in the inclusive learning environment when they are together with other learners. Learners with hearing impairment use their eyes as their ears and their hands as their mouths. Therefore, such learners cannot listen while performing a task. The teacher should always explain the concept while the learner understands what's being put across. They only use visual sense, which facilitates concept understanding and retrieval of information since what is seen can easily be remembered (Ioannou & Andrevva, 2019).

Ovcharuk et al. (2020) carried out a study on the significance of educational technology and resources in promoting the teaching and learning of learners with hearing impairment in France. They reported the following positive effects of resource materials: First, employing the use of educational and assistive technology in the classroom significantly complements the difficulties faced by learners with hearing

impairment in understanding abstract concepts. Secondly, they explained that educational resources, when infused into the education of learners with hearing impairment, facilitate the teaching and learning process, enhance retention, and create opportunities for first encounters with learning objects or materials. The use of such devices greatly increases independence and active participation by hearing-impaired learners in the teaching and learning process (Onuigbo, Osadebe & Achebe, 2020).

In Nigeria, Ariza and Pearce (2022) showed that providing hearing-impaired learners with hearing care after classes through smartphones and the GPRS network can enhance follow-up on what was learned in classroom settings. Their study examined the effectiveness of providing after-class learning care through wireless technology to ascertain the motivational level of students with hearing impairments by applying an experimental design. This study explored a learning care system that utilizes smartphones and the General Packet Radio Service (GPRS) network, incorporating after-class interaction systems and interactive strategies for improving after-class learning participation. The feedback from the investigation revealed that the use of wireless networks and handheld devices can positively improve the learning of learners with hearing impairment (Muñoz-Zambrano & López-Mero, 2021).

In Uganda, Nakayiza (2019) investigated the effectiveness of visual learning aids in teaching hearing-impaired students. The study found that the use of visual aids such as charts, diagrams, and videos significantly improved the students' understanding and retention of information. However, the study also highlighted challenges related to the limited availability of visual aids and the need for teacher training on how to effectively use these resources.

In South Africa, Alkharji (2023) explored the role of interactive whiteboards in teaching hearing-impaired students. The study revealed that interactive whiteboards, which combine visual and tactile learning elements, significantly enhanced student engagement and participation. The researchers emphasized the importance of integrating technology into the classroom to support the diverse learning needs of hearing-impaired students.

Basha et al. (2020) examined the impact of multimedia resources on the learning outcomes of hearing-impaired students in Ethiopia. The study found that the use of multimedia resources, including videos and interactive software, greatly improved the students' comprehension and retention of information. The study recommended the incorporation of multimedia resources into the curriculum to provide a more inclusive learning environment for hearing-impaired students.

In Kenya, Jogada, Oracha, Kochung, and Matu (2022) examined the teaching strategies used for hearing-impaired learners in Nyanza province. Their study found that repetition, discussion, questioning, guided writing, and demonstration were the most frequently used strategies for teaching English Composition to these learners. Hao, Lee, Chen, and Sim (2019) revealed that effective strategies like peer learning and dramatization were least used for hearing-impaired learners, which could contribute to poor performance in English composition. This study informs the current research on employing diverse strategies to improve the achievement of hearing-impaired learners.

In another Kenyan study, Nyambwere (2019) explored the impact of peer tutoring on the academic performance of hearing-impaired students in primary schools in Nairobi County. The findings indicated that peer tutoring significantly improved the students' comprehension and engagement in learning activities. The researcher also noted that

peer tutoring helped to foster a sense of inclusion and collaboration among students, thereby enhancing their social skills.

According to Ismaili and Ibrahim (2018), in institutions where the quality and availability of teaching personnel are less than adequate, the impacts of educational materials appear to be a major source of regional inequalities in learning achievement in integrated settings. This may pose significant negative impacts on the provision of quality education, affecting teachers and their willingness to accept learners with hearing impairment in an integrated setting (Chalise, 2024). Organizations like the American Society for Deaf Children (ASDC) and the National Association of the Deaf (NAD), which represent a high population of deaf people, parents, professionals, and advocates, explain that the regular classroom is not the best learning environment for learners with hearing impairment simply because it may fail to meet their unique communicative, linguistic, and social needs. As a result, the classroom becomes a place of exclusion and is most restrictive rather than least restrictive. It is only when they are taken out to explore and learn from the outside environment (Stone, 2019).

2.3.4 Instructional Strategies Used to Teach Learners with Hearing Impairments

Providing education to students with hearing impairments in regular public primary schools necessitates a thorough and all-encompassing strategy. A vital pedagogical approach involves the utilization of visual aids and materials. Integrating visual elements, such as charts, graphs, diagrams, and written instructions, enhances the comprehension and processing of auditory information (Sheeya, 2018). This approach ensures that students with hearing impairments have multiple means to learn and engage with the topic. Utilizing Visual aids improves understanding for all students and fosters a more inclusive educational setting.

According to Jiang et al. (2019) in their study done in China, modifying communication tactics is essential for delivering effective education. Educators should employ precise and succinct language, leverage facial expressions, gestures, and body language to effectively communicate ideas, and foster active engagement by using visual signals. In addition, the introduction of a buddy system for peer support can cultivate favorable social exchanges, establishing a network of support within the classroom. This not only facilitates the academic advancement of individuals with hearing impairments but also fosters social integration and a feeling of belonging.

Employing assistive technologies is crucial in providing support to kids who have hearing difficulties. A study carried out by Calicchio (2019) in the UAE stated that classroom integration of hearing aids, cochlear implants, and FM systems can significantly enhance auditory experiences. Teachers should undergo training to acquire the necessary skills and knowledge for proficiently utilizing and overseeing these technologies, hence ensuring their successful integration. Inclusive and equitable learning environments can be fostered by offering transcripts, captions, and Sign language interpretation for audiovisual content, which guarantees equal access to information for all students.

In Belgium, Van Praag et al. (2019) indicated that to address the varying learning demands present in a mixed classroom, teachers need to adapt their instructional approaches to cater to the specific strengths and difficulties of each student. This may entail modifying the rate of teaching, offering further assistance, or providing other evaluations to assess comprehension. Collaboration with special education specialists and support workers is crucial in order to create individualized plans that cater to the specific requirements of kids with hearing impairments.

Establishing a favorable and all-encompassing educational environment is essential for the achievement of students with hearing impairments. Educators should cultivate pupils' knowledge of hearing problems, promoting comprehension and compassion (Edmondson & Howe, 2019). Promoting transparent communication and fostering an inclusive atmosphere that embraces inquiries, aids in demystifying hearing difficulties, and diminishes social stigma. Teachers may foster a supportive environment in integrated primary schools by prioritizing teamwork, shared responsibility, and mutual respect. This approach ensures that all students, regardless of their ability, have the opportunity to flourish.

In Zambia, a study by Kaindu (2022) explored the impact of sign language on the academic performance of hearing-impaired learners in primary schools. The researchers found that integrating sign language into the curriculum significantly improved learners' comprehension and participation in class activities. However, the study also noted challenges related to the availability of qualified sign language interpreters and teaching materials. The lack of resources often leads to inconsistencies in the implementation of the sign language, thereby affecting the overall effectiveness of the strategy.

In Tanzania, Basukwa (2023) conducted a study on the use of assistive listening devices and their impact on the educational outcomes of hearing-impaired students. The findings indicated that students who used assistive listening devices such as FM systems and hearing aids showed significant improvements in their academic performance and classroom engagement. The study highlighted the importance of early intervention and the provision of appropriate technological support to enhance learning outcomes for hearing-impaired students.

In Egypt, Ramadan Mohamed Abdel-Wahab et al. (2023) examined the effectiveness of inclusive education practices for hearing-impaired students in mainstream schools. The study revealed that inclusive education practices, when properly implemented, could significantly enhance the academic and social development of hearing-impaired students. However, the researchers pointed out that the success of inclusive education depended heavily on the attitudes and training of teachers, as well as the availability of supportive resources.

The study done by in Kenya by Mweri (2022) notes that instructional strategies for teaching learners with hearing impairments in an integrated public primary school can be enhanced by incorporating Kenyan Sign Language (KSL) as a medium of instruction. This approach has been proposed to improve the educational outcomes of deaf learners in Kenya.

Some key strategies for teaching deaf learners using KSL include implementing early intervention policies that enable deaf children to acquire sign language as early as possible. This can be achieved by providing mandatory leave for parents of deaf children to learn KSL. Adopting a bilingual approach in deaf education, where KSL serves as the dominant medium of instruction in schools for the deaf, teaching subjects such as language, math, and science. Teaching KSL to hearing peers in the class promotes inclusive education and fosters communication between deaf and hearing learners. Ensuring that the curriculum includes teaching academic content in JSL makes it easier for deaf learners to access and understand the material. Providing teachers with training and resources to learn KSL and effectively communicate with deaf learners, such as the "Sign Language is a Visual Language Using Gestures and Facial Expressions to Communicate" book by NDCS. Encouraging parents of deaf children to learn KSL and support their children's education by communicating in KSL at home.

Offering extracurricular activities, such as clubs and sports, where deaf learners can practice and socialize using KSL.

2.4 Summary of Literature Review and Research Gap

Empirical studies showed that there was a link between inappropriate use of right teaching strategies, inadequate learning resources, and instructional strategies used to teach learners with hearing impairment at the public primary school level. Very minimal studies focused on the assessment of effective integration strategies for learners with hearing impairment. The literature review identified the following gaps: previous studies failed to show how instructional strategies used to teach learners with hearing impairment had an impact and influence on their academic performance. Studies reviewed are limited in scope. The research gap in the current study is the lack of specific information on how different strategies influence the academic performance of learners with hearing impairment. While the study mentions various teaching and communication strategies, it does not provide a clear understanding of how these strategies impact the learning outcomes of hearing-impaired students. Additionally, the study focuses on the Kenyan context, so there is a need for research in other countries to determine if similar strategies were effective in different educational settings. Furthermore, there is a lack of information on the specific needs of individual learners with hearing impairment and how teaching strategies can be tailored to meet those needs. Overall, there is a need for more research that explores the influence of different strategies on the academic performance of learners with hearing impairment, which provides specific recommendations for effective teaching and communication approaches. Therefore, in Turkana County, in particular, the researcher felt that very little or nothing had been done in public primary schools to address the issue of

integration strategies despite their implementation. This was the gap that the current study attempted to address.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter presents the research procedures, which are used in the study, focusing on research design, target population, sample size, and sampling procedures, research instruments, validity of instruments, reliability of instruments, data collection procedures, data analysis techniques, and ethical considerations.

3.1 Research Paradigm

A paradigm is a general philosophical orientation about the world and the nature of research that a researcher brings to a study (Creswell, 2018). This study adopted a pragmatic approach, which is the combination of both positivism and constructivism worldviews. This is a philosophical underpinning for mixed methods studies, not committed to any one system of philosophy and reality (Creswell, 2018). hence gave the researcher a liberal ground to draw assumptions from both quantitative and qualitative data.

Mixed-method research was used to develop a more complete understanding of the relationship between the phenomena under study. Quantitative approaches were used to measure relationships among variables in question (Punch, 2009), while qualitative approaches helped to explain the phenomena more deeply and exhaustively, attempting to make sense of it in terms of the meaning people bring. This research paradigm was guided by epistemological assumptions. Epistemology is the study of the nature, scope, and production of knowledge, consisting of two strikingly different approaches: positivism and the constructivist paradigm.

3.2 Research design

Research design refers to the process undertaken by a researcher to determine the relationship between things (Bloomfield and Fisher, 2019).

We adopted a convergent mixed-method design in this study. That is, we used both qualitative and quantitative data to present the entire picture of the research problem (Creswell and 2023). We also adopted a descriptive research design. According to Kim, Sefcik, and Bradway (2017), a descriptive survey presents a picture of what things are like by logically gathering data among the individuals in the target group.

The descriptive design allowed the researcher to gather, summarize, present, and discuss the data on the usefulness of assessments in determining the placement of students with hearing impairment in some primary schools within Turkana County. It also enabled the collection of both qualitative and quantitative data, which enables just to get the feelings, perceptions, and the integration method effectiveness in the academic performance of these students.

A descriptive survey can also enable us to gather mere statistical information, which will be valuable in assessing integration strategies and their influence on the academic performance of the students. Due to the prior research already conducted in the Turkana County, a descriptive survey is most appropriate in this evaluation.

3.2 Study Area

The study was carried out in selected primary schools as a sample in Turkana County. Turkana County is located in Northwestern Kenya and is the largest county in Kenya by land area. It covers an area of about 98,597.8 km², including Lake Turkana, and is bordered by Uganda to the west, South Sudan and Ethiopia to the north and northeast, and Lake Turkana to the east. The county has six sub-counties, namely, Turkana

Central, Turkana North, Turkana East, Turkana West, Turkana South, and Loima. Turkana County is the only county in Kenya that shares international boundaries with three countries. The county's capital and largest town is Lodwar. Turkana County has emerged as Kenya's main source of electricity and the biggest Napuu and Lotikipi aquifers, which can supply water to the entire county for seventy years (Cormack & Kurewa, 2018). However, the county is among the poorest, most marginalized, and most malnourished in the country (Bartenge, 2016). As of 2019, the county had a population of 926,976 with a population density of 9.4/km² (Kenya National Bureau of Statistics, 2019).

3.3 Target Population

Stratton's (2021) target population is a large population from which a sample population is selected. The target population was the Head teachers, trained teachers of SNE, members of the school BOM, and Special Needs Educational Curriculum Support Officers. The target population was drawn from the 24 public primary schools in Turkana County and special schools and units; others were integrated in nature, and the rest are inclusive primary schools. The target population was 100, comprising 24 headteachers, 50 trained teachers of special needs education (SNE), 24 BOM members, and 2 County Special Needs Educational Curriculum Support Officers, as distributed in Table 1.

Table 1. Target Population

Category	Headteachers	Trained Teachers of SNE	BOM Members	County Special Needs Educational Curriculum Support Officers	Total
Turkana Central	4	10	4	1	19
Turkana North	4	10	4	1	19
Turkana East	4	10	4	0	18
Turkana West	4	10	4	0	18
Turkana South	4	5	4	0	13
Loima	4	5	4	0	13
Total	24	50	24	2	100

(Source: Researcher 2025)

3.4 Sampling Procedure and Sample Size

A sample is a small group that is carefully selected from the whole population. Sampling is the method used to select a given number of objects or things from a given population (Mugenda & Mugenda, 2003). Sampling is described under non-probability and probability. Non-probability sampling is a method where the samples are selected based on the subjective judgment of the researcher, rather than random selection. In non-probability sampling, not all members of the population have an equal chance of being selected (Fleetwood, 2018). Probability sampling is a method where the samples are selected randomly from the population, and each member of the population has a known, non-zero chance of being selected (Van Haute, 2021).

However, this study employed non-probability sampling, specifically a systematic purposive sampling technique to select the sample for the study. Systematic Purposive sampling is suitable for the study because it allows for the intentional and strategic selection of headteachers, trained teachers of special needs education (SNE), BOM members and County Special Needs Educational Curriculum Support Officers who have information related to effectiveness of integration strategies (teaching strategies, teaching and learning resources appropriate, instructional strategies used to teach

learners) on academic performance of learners (continuous assessment test, class participation, presentation and practical work and attendance discipline) with hearing impairment in public primary schools in Turkana County, Kenya.

Purposive sampling enables the collection of specific information from particular audiences, ensuring a laser-focused look at the target population. Researchers have the flexibility to refine the selection criteria during the study, and the method allows for an in-depth and detailed exploration of the subject matter. It tends to yield higher-quality, specific information tailored to the research needs, making it suitable for capturing the diverse perspectives of the different groups within the target population.

Table 2 Sample Size

Category	Target Population
Headteachers	24
Trained Teachers of SNE	50
BOM Members	24
County Special Needs Educational Curriculum Support Officers	2
Total	100

The target population for this study comprised key stakeholders involved in the administration and implementation of special needs education (SNE) programmes in public primary schools within Turkana County. These included headteachers, trained teachers of SNE, members of the Boards of Management (BOM), and County Special Needs Educational Curriculum Support Officers. Their inclusion was based on their direct engagement in the management, instructional delivery, and policy supervision of learners with hearing impairments. The composition of the target population is presented in Table 1 above.

3.5 Research Instruments

The study used questionnaires to collect quantitative data, whereas qualitative data was collected using interview schedules to collect data. Questionnaires are preferred

because they are flexible, quick, and cheap to administer. The questionnaires comprised both open and closed-ended questions designed to answer the research questions indicated in chapter one of this study. They were personally administered by the researcher. Self-administration of data collection instruments is preferred as it allows the researcher to interact and create a rapport with potential participants, resulting in a high response rate. A 5-point Likert scale was used in designing the questionnaire. The sections of questionnaire contained seven sections; Section A contained background information; Section B contained questions on the achievement of learners with hearing impairment. Section C contained questions on the influence of different teaching strategies on the academic performance of learners with hearing impairments. Section D contained questions on the effects of teaching and learning resources appropriate for the effective integration of the academic performance of learners with hearing impairments. Section E contained questions on instructional strategies used to teach learners with hearing impairments in an integrated setting in public primary schools. The use of interview schedules enables the respondents to provide in-depth responses. Questions for interviews were based on research questions.

3.6 Pilot Study

Pilot testing is a rehearsal of the research study whereby the researcher tests the research approach with a small number of test participants outside the target population of the actual study. According to Van Benthem and Herdman (2021), piloting is important as it tests the reliability of the research instruments. The Pilot study was done before the main study. The study used 10 respondents, who were 10% of the sample size. A pilot study was done in 3 public primary Schools in West Pokot County, where 10 respondents were sampled, representing 10% of the study sample size. A pre-test sample of 10% of the sample size is used as advocated by Dankel and Loenneke (2021),

who indicated a sample of 1-10% of the study's sample size is suitable for pilot testing. The validity and reliability of the research tool were ascertained. West Pokot County was chosen because it has similar characteristics to Turkana County in terms of the academic performance of learners with hearing impairment in public primary schools.

3.6.1 Validity of Research Instruments

Instruments for the collection of data underwent validity tests if useful data was to be collected in research. Almanasreh, Moles, and Chen (2019) define validity as the extent to which a test measures what it intends to measure. The content to be measured is the structured questions and interview schedules that aim to answer the problem that the researcher was investigating. In this case, the content validity of the instrument was determined through conducting a test before the time of actual data collection. In this study, the researcher subjected each of the tools to a group of independent experts in education. The experts in this case were teachers, headteachers, the Board of Management, and CSOs, who had experience in educational programs and examined the ambiguity of the questions on the questionnaire and their relevance as regards research questions to ascertain their validity, appropriateness, efficiency, sufficiency, credibility, and freedom from errors of the research tools. To establish the validity of the research instruments, supervisors from the University who are experts in educational management assisted in validation. This is also known as a pilot study or pre-test and was done in West Pokot County. After conducting the pilot study, questions in the instruments that showed elements of ambiguity were refashioned with the help of the supervisors. In this way, the validity of the instrument was ensured.

3.6.2 Reliability of Research Instruments

Reliability refers to the accuracy and precision of a tool (Collis and Hussey, 2009). It examines the issue of data and findings of a study to ascertain their credibility, accuracy,

trustworthiness, and uniformity. We applied Cronbach's alpha to determine internal consistency. Alpha values stand between 0 and 1, and a value above 1 implies a greater reliability. The normal range of the coefficient of reliability is 0.6-0.7, whereas good is 0.8 or more (Kothari, 2014). In this work, we considered a Cronbach's alpha of 0.7 or higher. The pilot study results of internal consistency reliability are presented in Table 3.

Table 3 Reliability Test

Variables	Cronbach's Alpha	N of Items
Academic performance of learners	.758	10
Different teaching strategies	.732	10
Teaching and learning resources	.868	10
Instructional strategies used	.834	10

Sources: Field Data (2025)

The findings in Table 3 indicated that the academic performance of learners with hearing impairments in an integrated setting had a Cronbach's alpha coefficient of 0.758 with 10 items. The influence of different teaching strategies on the academic performance of learners with hearing impairments had a Cronbach's Alpha coefficient of 0.732 with 10 number of items. Effects of teaching and learning resources appropriate for effective integration had a Cronbach's alpha coefficient of 0.868 with 10 items, and finally instructional strategies used to teach learners with hearing impairments in an integrated setting had a Cronbach's alpha coefficient of 0.834 with 10 items. All variables depicted that the value of Cronbach's alpha is above the value of 0.7, thus the study was reliable. A Cronbach's Alpha of 0.7 or higher is commonly used as a threshold for reliability in research because it represents a good level of internal consistency. Adeniran (2019) states that a Cronbach's Alpha of 0.70 is the

minimum acceptable level for preliminary research, indicating that the items measure the same construct reliably.

3.7 Data Collection Procedure

The Graduate School received a letter that assisted the researcher in acquiring research permission at NACOSTI before the collection of data. They subsequently requested permission from selected schools. The researcher administered questionnaires to the participants and retrieved them on the designated day, with subsequent follow-ups to make sure that they were properly filled out. The questionnaires were given to the participants who had ample time to complete the questionnaire before it was given back to the researcher to analyze. The researcher informed them about the purpose of their visit, and this made the participants believe that their information was confidential.

3.8 Data Analysis and Presentation

The quantitative data were analyzed using descriptive and inferential statistics. Data from the questionnaires were coded, and the data was entered into the Statistical Package for the Social Sciences (SPSS version 26) software for analysis. The sort of function was used to perform the initial screening of the data to ensure that was organized and ready for further analysis. Descriptive statistical techniques, including frequency, mean, and standard deviation, were used to analyze the quantitative data collected from the questionnaires. The results were displayed using frequency distribution tables, which tracked the number of times each score or response appeared. To test the study's hypotheses, the study used multiple regression analysis. Regression analysis is a statistical technique used to examine the relationship between a dependent variable and one or more independent variables. The level of significance, also known as the alpha level (α), was set at a commonly used value of 0.05 (5%). This means that the researcher was willing to accept a 5% probability of making a Type I error, which

is the error of rejecting the null hypothesis when it is true. The regression analysis provided information about the strength and direction of the relationship between the variables, as well as the statistical significance of the findings. This allowed the researcher to conclude the hypotheses and the overall research questions.

Equation 1: Regressing the independent variables on the dependent variables.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \dots \dots \dots \text{Equation 3.1}$$

Where:

Y represents academic performance

X_1 Represents Different teaching strategies

X_2 represents teaching and learning resources

X_3 represents instructional strategies

ε represents the Error term (Disturbance factors), which represents residual

β_0 Represents a constant

From β_1 to β_3 represents the regression model's coefficients

The analysed data were presented in the form of frequency tables and percentages.

Qualitative data were analyzed using Thematic analysis by identifying, categorizing, analyzing, and interpreting patterns and themes. The first step is to become thoroughly familiar with the qualitative data. This involves reading and re-reading the transcripts, notes, or other textual data to gain a deep understanding of the content.

The next step is to systematically code the data. Coding involves identifying and labeling interesting features of the data that may be relevant to answering the research question. Labeled features can be descriptive, capturing the content, or more interpretive, capturing the meaning or significance. After coding, the researcher looks

for patterns and themes across the codes. Themes are broader categories that group similar codes and capture something important about the data in relation to the research question. This involves an iterative process of reviewing, refining, and defining the themes. The themes are then reviewed to ensure they are coherent and accurately reflect the data. This may involve collapsing, separating, or discarding themes as needed.

The final step is to clearly define and name each theme, capturing the essence of what it represents. Themes should be concise yet informative. The results of the thematic analysis are then reported, using illustrative quotes from the data to support the themes. The report should provide a rich, detailed, and nuanced account of the patterns and meanings within the data.

3.9 Ethical Consideration

The researcher first obtained informed consent from all respondents, ensuring that they all fully understood the study's purpose, procedures, and potential risks and benefits. In addition, confidentiality and anonymity of participants must be rigorously upheld to protect their privacy and prevent potential stigmatization. Also, particular attention should be given to the cultural and linguistic diversity of the community, ensuring that the study respects and values the local context, customs, and languages of the participants. It is also crucial to prioritize the well-being of the children with hearing impairment, ensuring that their participation in the study does not harm their emotional or educational development. Ethical review and approval from relevant institutional review boards should be sought, and the study should adhere to the principles outlined in international ethical guidelines to promote the rights, dignity, and welfare of the participants throughout the research process.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS.

4.1 Overview

In this chapter, the data collected were analyzed and presented. The purpose of the study was to assess the integration strategies and their effectiveness on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya. The research analysis involved using descriptive statistics, that is, means and standard deviations, to examine the data. The results were then illustrated through the use of tables.

4.2 Response Rate

The study assessed how participants responded in connection with the employed data collection method. The discourse incorporated the proportion of individuals involved in the research and its potential influence on the overall validity of the study. High response rates minimize the risk of response bias, ensuring that the results are representative of the entire population. According to Story and Tait (2019), a response rate above 60% is desirable for survey research, as it enhances the reliability of the data and the credibility of the study's conclusions. The results are outlined in Table 4.

Table 4 Response Rate.

Responses	Frequency	Percentages
Responded	85	85.00
Not responded	15	15.00
Total	100	100.00

Sources: Field Data (2025)

The results presented in Table 4 illustrate the rate at which the instrument received responses. Among the total of 100 respondents, 85(85.00%) actively participated by responding, while 15(15.00%) chose not to take part in the survey. From the study findings, the response rate of 85 percent is recommended and indicates strong engagement from the respondents. This high rate enhances the credibility and reliability of the study's findings, minimizing non-response bias and ensuring a representative sample from the entire population.

4.3 Demographic Information

In this section, an investigation is carried out to explore the demographic information of the respondents. These include gender, education, years of operation or experience, and other pertinent variables.

4.3.1 Gender of the Respondents

The study determined the gender of the respondents as presented in Table 5.

Table 5: Gender of the Respondents

Gender	Frequency	Percent
Males	42	49.4
Females	43	50.6
Total	85	100.0

Sources: Field Data (2025)

The analysis of the data presented in Table 5 reveals that there was a slight difference in the gender distribution among the participants. Out of the total respondents, 85(100%), 42(49.4%) were males, while 43(50.6%) were females, indicating that equal opportunities were provided for their inclusion. It affects research outcomes by guiding participants' experiences and perspectives, which can influence data collection and interpretation. The study by García-González, Forcén, and Jimenez-Sanchez (2019)

found that gender differences impact how individuals perceive and respond to research questions, highlighting the need for balanced gender representation.

4.3.2 Age Bracket of the Respondents

The study aimed to ascertain the age bracket of the respondents as presented in Table 6.

Table 6 Age Bracket of the Respondents

Age Bracket	Frequency	Percentage
18 – 24 years	27	31.8
25 - 31 years	23	27.1
32 – 38 years	20	23.5
39 – 54 years	12	14.1
46 and above	3	3.5
Total	85	100

Sources: Field Data (2025)

According to the data summarized in Table 6, the age distribution of the research participants indicated that the majority of the respondents, 27(31.8%), fall within the age bracket of 18-24, and 23(27.1%) were between 25-31 years old. Additionally, 20(23.5%) were between the age of 32 to 38, 12(14.1%) were between the age of 39 to 45. Lastly, 3(3.5%) of the participants were 55 years of age and older. Age affects the respondents' experience and attitudes toward Special Needs Education, as older individuals might have more traditional views compared to younger ones with more recent training. According to Banks and Banks (2019), different age groups bring diverse experiences and perspectives, which can influence how they perceive and respond to educational practices and policies.

4.3.3 Education level of the Respondents

The respondents were further requested to indicate their highest level of education. The results are shown in Table 7.

Table 7 Education level of the Respondents

Marital status	Frequency	Percentage
Certificate	38	44.7
Diploma	26	30.6
1 st Degree	11	12.9
Masters	6	7.1
PhD	4	4.7
Total	85	100

Sources: Field Data (2025)

The data summarized in Table 7 indicated that 38(44.7%) of the respondents had a certificate level of education, and 26(30.6%) had a diploma. Additionally, 11(12.9%) of the respondents had a first degree, and also 6(7.1%) had a master's level of education, and finally, 4(4.7%) of the participants had a PhD. This is important because it provides insights into their qualifications and ability to effectively contribute to discussions on the effectiveness of integration strategies for learners with hearing impairments. According to Codioli, McMaster, and Cook (2019) varying educational qualifications can shape individuals' understanding and contributions to educational research,

4.3.4 Teaching Experience

The study determined the teaching experience of the respondents, and the results are presented in Table 8.

Table 8 Teaching Experience

Teaching experience	Frequency	Percentage
Below 5 years	32	37.6
6 to 9 years	24	28.2
10 to 14 years	11	12.9
15 to 19 years	9	10.6
20 to 24 years	5	5.9
Over 25 years	4	4.7
Total	85	100

Sources: Field Data (2025)

The data presented in Table 8 revealed that the largest group, comprising 32(37.6%) of the respondents, had teaching experience of below 5 years. Additionally, 24(28.2%)

respondents had teaching experience of 6 to 9 years, and 11(12.5%) had experience of 11 to 14 years. However, 5(5.9%) reported a teaching experience of 20 to 24 years, and finally 4(4.7%) had a teaching experience of above 25 years. For researchers to understand how respondents' experience levels may affect their opinions of and effectiveness of implementing integration strategies to learners with hearing impairments, it is important to examine their teaching experience. Podolsky, Kini, and Darling-Hammond (2019) teachers with more years of experience may have developed more successful teaching strategies and have a greater knowledge of educational processes, which can have an impact on how they evaluate resources and methods of instruction.

4.4 Academic Performance of Learners with Hearing Impairments

The first objective of the study sought to evaluate the academic performance of learners with hearing impairments in an integrated setting in Public Primary Schools in Turkana County, Kenya. The results are presented in Table 9.

Table 9 Academic Performance of Learners with Hearing Impairments

Statement		SA	A	N	D	SD	Mean	Sd
1. Learners feel confident participating in classroom discussions.	F %	21 24.7	39 45.9	5 5.9	10 11.8	10 11.8	3.60	1.30
2. The hearing aids effectively help learners to understand the teacher's lessons.	F %	30 35.3	38 44.7	4 4.7	8 9.4	5 5.9	3.94	1.14
3. The classroom environment is conducive for learning as a hearing-impaired pupil	F %	18 21.2	44 51.8	8 9.4	10 11.8	5 5.9	3.71	1.11
4. Teachers effectively use visual aids and alternative communication methods in their lessons to enhance academic performance	F %	16 18.8	41 48.2	9 10.6	13 15.3	6 7.1	3.56	1.17
5. Learners feel supported by their classmates and teachers in overcoming challenges related to their hearing impairment	F %	20 23.5	44 51.8	3 3.5	13 15.3	5 5.9	3.72	1.16
6. The availability of qualified sign language interpreters in the school improves their understanding of lessons.	F %	27 31.8	34 40.0	7 8.2	8 9.4	9 10.6	3.73	1.29
7. The pace of instruction in class is conducive and allows learners to grasp the material adequately.	F %	23 27.1	36 42.4	5 5.9	10 11.8	11 12.9	3.59	1.35
8. Learners feel motivated and engaged in learning activities the same as their hearing peers	F %	24 28.2	34 40.0	7 8.2	10 11.8	10 11.8	3.61	1.33
9. Academic performance reflects the true potential and effort given their hearing impairment	F %	24 28.2	32 37.6	7 8.2	16 18.8	6 7.1	3.61	1.27
10. Learners believe they have access to the same opportunities	F %	27 31.8	33 38.8	6 7.1	12 14.1	7 8.2	3.72	1.28

Sources: Field Data (2025)

From Table 9, the achievement of learners with hearing impairment shows that 39(46.9%) of the respondents agreed that learners feel confident participating in classroom discussions, while 21(24.7%) of the respondents strongly agreed that learners feel confident participating in classroom discussions. A small proportion, 10 (11.8%) of the respondents disagreed, and also same to strongly disagreed, 10 (11.8%)

of the respondents, that learners feel confident participating in classroom discussions. The study findings further revealed that the respondents agreed that learners feel confident participating in classroom discussions, with a mean rating of 3.60 and a standard deviation of 1.30. According to the study done by Awidi and Paynter (2019) that elements from the model for student learning design presented in this article were correlated with student confidence, motivation, and engagement. Also, Sökmen (2021) found that elements of the student learning design model correlated positively with student confidence and engagement, suggesting that a supportive classroom environment can enhance learners' confidence. This implies that learners with hearing impairments generally feel confident participating in classroom discussions, as evidenced by the majority of respondents agreeing with the statement. These studies suggest that a supportive classroom environment, facilitated by effective learning design, plays a crucial role in enhancing the confidence of learners with hearing impairments. This is needed for implementing such supportive and well-designed learning strategies to improve educational outcomes for these students.

Furthermore, 68 (79.0%) of the respondents agreed, and 13 (15.3%) of the respondents disagreed that the hearing aids effectively help learners to understand the teacher's lessons. However, respondents agreed that the hearing aids effectively help learners to understand the teacher's lessons with a mean rating of 3.94 and a Standard deviation of 1.15. Aljedaani, Krasniqi, Aljedaani, Mkaouer, Ludi, and Al-Raddah (2023) call for investigating broader and yet more effective teaching and learning strategies for deaf and hard-of-hearing students so that they can benefit from a better online learning experience. Also, a study done by Soetan, Onojah, Alaka, and Aderogba (2020) found that the respondents find more functional phone adaptations, TV decoders, computers, personal amplifiers, Telecommunication Devices for the Deaf (TDD), hearing aids, and

audiometers. The attitudes of male and female hearing-impaired students about using adaptive devices for learning were not significantly different. This implies that a significant percentage of respondents agreed that learners are more capable of following teachers' lessons when they use hearing aids, emphasizing the importance of adaptive technology in the learning environment. To enhance deaf and hard-of-hearing students' online learning experiences, more comprehensive and efficient teaching and learning techniques are also required. These students benefit from a variety of functional adaptive equipment, such as hearing aids.

Head teacher [1] said that:

Effective use of hearing aids significantly improved their ability to understand and engage with the teacher's lessons, ensuring they can follow along in real-time with minimal difficulty, hence improving comprehension, participation, and performance in their studies

Further, 62 (73.0%) of the respondents agreed that the classroom environment is conducive for learning, as hearing-impaired pupils and those who disagreed are 15 (17.7%) disagreed. The study findings revealed that participants agreed with the statement that the classroom environment is conducive for learning as a hearing-impaired pupil, with a mean rating of 3.71 and a standard deviation of 1.11. This study is consistent with the study by Onuigbo, Osadebe, and Achebe (2020) identified sign language interpreters, note takers, overhead projectors, telecommunication devices for the deaf, and hearing aid-compatible sound systems as very highly needed resources in an inclusive university classroom. Similarly, the study done by Mumba (2022) demonstrated that learners' academic performance was significantly influenced by hearing impairment. It was also discovered that educators and students thought that the following factors affected the academic performance of HI learners: teachers believed that students with disabilities had a poor academic background, that schools had inadequate resources, that the curriculum was confusing, that students believed teachers

were not well-prepared (had insufficient language skills), and that schools had inadequate learning infrastructure. The study implies that while the current classroom environment is generally seen as supportive for hearing-impaired pupils, there are significant areas needing improvement. Essential resources like sign language interpreters and hearing aid-compatible systems are important for creating an effective learning environment, and there is a clear need for better infrastructure and teacher preparedness.

Similarly, 57 (67.0%) of the participants agreed that teachers effectively use visual aids and alternative communication methods in their lessons to enhance academic performance. However, 19(23.4% of the respondents disagreed that teachers effectively use visual aids and alternative communication methods in their lessons to enhance academic performance. Further, the study findings revealed that participants agreed with the statement that teachers effectively use visual aids and alternative communication methods in their lessons to enhance academic performance, with a mean rating of 3.56 and a standard deviation of 1.17. However, the study by Agwu and Ogochi (2019) showed that students taught with visual aids performed better than those taught with the traditional method. Also, Jutiyatno (2018) reveals that based on the conclusion of research results, which show the significant role of verbal and non-verbal communication in the teaching and learning process, teachers need to maintain and develop effective communication in order to successfully transmit learning materials to students. The results simply that expanding the application of these strategies could improve hearing-impaired learners' achievement in J-school further. Previous study shows the importance of effective visual and change communication instruments; however, further work is required to improve and strengthen these techniques in the classroom.

Head teacher [2] said that:

Our teachers utilize a variety of visual aids and alternative communication methods, such as Sign language, written instructions, and visual presentations, to enhance academic performance. These strategies ensure that all students can access the curriculum fully and participate actively in class.

Moreover, 64 (75.3%) of the respondents agreed that learners feel supported by their classmates and teachers in overcoming challenges related to their hearing impairment, and on the other hand, 18 (21.2%) of the respondents disagreed that learners feel supported by their classmates and teachers in overcoming challenges related to their hearing impairment. Additionally, the study results further revealed that the respondents agree that learners feel supported by their classmates and teachers in overcoming challenges related to their hearing impairment, with a mean rating of 3.72 and a standard deviation of 1.16. According to Khalid, Asghar, Masri, and Akhter (2021) revealed that teachers at inclusive schools had insufficient knowledge about hearing impairment and integration of these learners in inclusive classrooms. Additionally, Farid, Fatima, and Jahanzaib (2023) showed that children with hearing impairment have no type of problem in their cognition. These findings simply that while most learners with hearing impairments feel supported by their classmates and teachers, there are still some who do not experience sufficient support. The study suggests that while the current support systems are generally effective, there is a need for improvement. It is also important to increase teacher training and awareness about hearing impairments to ensure that all students receive adequate support.

Head teacher [5] said that:

Our School provides a supportive and inclusive environment where learners feel supported by their colleagues and teachers in overcoming challenges related to their hearing impairment. Through this support, it helps students build confidence, engage more fully in

their education, and develop strong social connections, hence contributing to their overall success.

Further, 61 (71.8%) of the participants agreed that the availability of qualified sign language interpreters in the School improves their understanding of lessons. Conversely, 17(20.0%) disagreed that the availability of qualified sign language interpreters in the school improves their understanding of lessons. On the contrary, the findings revealed that the respondents agreed to the statement that the availability of qualified sign language interpreters in the school improves their understanding of lessons, with a mean rating of 3.73 and a standard deviation of 1.29. The study done by Humphries, Kushalnagar, Mathur, Napoli, Rathmann, and Smith (2019) Deaf children cannot wait for accessible language input. The whole family must learn simultaneously as the deaf child learns. Even moderate fluency on the part of the family benefits the child enormously. Nkhululeko (2018) shows that deaf people are being provided with support and training Sign Language service. This implies that the availability of qualified sign language interpreters is important for enhancing the understanding of lessons for hearing-impaired students, as most participants believe it significantly benefits their learning. The results suggest that while qualified interpreters are generally seen as effective, there is still room for improvement in ensuring that all students have access to these vital resources.

Conversely, the findings revealed that 59 (69.5%) of the respondents agreed that the pace of instruction in class is conducive and allows learners to grasp the material adequately. However, 21(24.7% of the respondents disagreed that the pace of instruction in class is conducive and allows learners to grasp the material adequately. Similarly, the respondents agreed that the pace of instruction in class is conducive and allows learners to grasp the material adequately, with a mean rating of 3.59 and a standard deviation of 1.35. These findings are consistent with the study done by Kim

(2020) that online teaching experiences provided these preservice teachers with opportunities to interact with children, as well as to encourage reflection on how best to promote young children's development and learning with online communication tools.

Ndjangala, Jabah, and Mashebe (2021) revealed that upper primary learners' performance in NS at the selected schools is affected by challenges such as the medium of instruction, inequitable teaching resources, the absence of laboratories, sensitive topics, overcrowded classrooms, student indiscipline, absenteeism, a poor teaching environment, hunger, and insufficient guidance from subject advisory teachers. This implies that the researcher found that most respondents believe the pace of instruction in the classroom is conducive to learning, indicating an overall positive perception. These findings suggest that while the current instructional pace is generally effective, there are still some challenges and differences in individual experiences that need to be addressed to ensure all learners can grasp the material adequately.

Head teacher [6] said that:

Teachers adjust the speed of their lessons to ensure that all students have ample time to process and understand the material being presented. This allows learners to ask questions, participate in discussions, and fully engage with the content without feeling rushed.

In addition, 58(68.2% of the respondents agreed that learners feel motivated and engaged in learning activities, the same as their hearing peers. However, 20(23.6% of the respondents disagreed that learners feel motivated and engaged in learning activities the same as their hearing peers. However, the study results also showed that the mean rating of 3.61 and a standard deviation of 1.33 indicate that the respondents agreed with the statement that learners feel motivated and engaged in learning activities, the same as their hearing peers. Alkathiri (2019) demonstrated that the use of YouTube in the

English language classroom represents an engaging method, and this motivates students to participate in these lessons. Also, Moriña (2019) states that students with disabilities are more motivated than their classmates, meaning that very few extra actions need to be taken to engage them in the learning process. The study suggests that most respondents believe learners with disabilities are as motivated and engaged in learning activities as their hearing peers, although a notable minority disagrees. This indicates varying perceptions of engagement among educators. The researcher's perspective is that inclusive teaching methods and digital tools, such as YouTube, can effectively engage all students, including those with disabilities, ensuring equitable participation in learning activities. This implies that while most educators see the potential for equal engagement, some may need further support or training to achieve this goal.

Additionally, 56 (65.8%) of the participants agreed that academic performance reflects the true potential and effort given their hearing impairment. However, 22 (25.9%) of the respondents disagreed that academic performance reflects the true potential and effort given to their hearing impairment. Further, the study findings revealed that participants agreed with the statement that academic performance reflects the true potential and effort given to their hearing impairment, with a mean rating of 3.61 and a standard deviation of 1.27. McGarrigle, Gustafson, Hornsby, and Bess (2019) reveal that verbal RTs were generally slower in the more challenging SNR conditions. However, there was no effect of SNR on dual-task visual RT. Also, a study by Tomblin, Oleson, Ambrose, Walker, McCreery, and Moeller, (2020) children with mild and moderate HL have good outcomes with regard to language and academic performance. Children with moderately severe losses were less skilled in language and reading than the CNH and CHH children with mild and moderate losses. Audibility provided by hearing aids was found to moderate the effects of HL with respect to these outcomes.

Indicates that most participants believe academic performance accurately reflects the potential and effort of learners with hearing impairments, despite some differing opinions. This suggests a consensus that performance assessments are fair, though challenges remain for those with more severe impairments. The researcher's view is that while hearing impairments can impact academic performance, effective support and tailored interventions can help bridge gaps and ensure that performance reflects true potential. This implies that educational strategies need to address individual needs to support equitable outcomes for all learners.

Finally, 60(70.6%) of the participants agreed that learners believe they have access to the same opportunities and resources for learning as their hearing peers. However, 19(22.3%) of the respondents disagreed that learners believe they have access to the same opportunities and resources for learning as their hearing peers. Further, the study findings revealed that participants agreed with the statement that learners believe they have access to the same opportunities and resources for learning as their hearing peers, with a mean rating of 3.72 and a standard deviation of 1.28. However, the study by Alshawabkeh, Woolsey, and Kharbat (2021) online distance learning was described as a difficult and challenging experience that lacked efficient communication channels and failed to address the needs of the deaf with respect to the communication medium. Cook-Sather (2020) reveals how participating staff and students can develop voices that both speak respectfully and are self-respecting and that can, in turn, contribute to the development of more equitable classroom practices. The study shows that most participants believe learners with hearing impairments have access to the same opportunities and resources for learning as their hearing peers. This implies that creating more effective and inclusive learning environments is crucial for ensuring that

all students, regardless of their hearing abilities, have equal access to educational resources and opportunities.

4.5 Different Teaching Strategies

The study sought to evaluate the influence of different teaching strategies on the academic performance of learners with hearing impairments, and the results are shown in Table 10.

Table 10 Different Teaching Strategies

Statement		SA	A	N	D	SD	Mean	Sd
1.	The use of visual aids (pictures, diagrams, charts) improved learners understanding	F %	27 31.8	29 34.1	2 2.4	18 21.2	9 10.6	3.55 1.40
2.	Interactive learning tools and technology (videos, apps, simulations) enhanced learners' engagement and learning.	F %	22 25.9	41 48.2	4 4.7	10 11.8	8 9.4	3.69 1.24
3.	Working in small groups or with a partner helped learners learn from others and clarify their understanding	F %	25 29.4	39 45.9	2 2.4	14 16.5	5 5.9	3.76 1.21
4.	Learners are given opportunities to learn independently through self-paced activities	F %	17 20.0	41 48.2	4 4.7	15 17.6	8 9.4	3.52 1.26
5.	The teacher's use of cued speech (visual cues to support spoken language) made it easier for learners to follow the lesson	F %	20 23.5	41 48.2	5 5.9	7 8.2	12 14.1	3.59 1.32
6.	The teacher provides guidance and support for effective note-taking,	F %	23 27.1	38 44.7	3 3.5	11 12.9	10 11.8	3.62 1.33
7.	The teacher uses different teaching materials to cater for learner's individual learning needs and style.	F %	25 29.4	35 41.2	4 4.7	10 11.8	11 12.9	3.62 1.36
8.	Learners received regular and encouraging feedback from the teacher	F %	33 38.8	33 38.8	3 3.5	11 12.9	5 5.9	3.92 1.22
9.	The classroom environment is conducive to communication, with minimal distractions and good access to the teacher	F %	22 25.9	44 51.8	5 5.9	11 12.9	3 3.5	3.84 1.07
10.	The assessments used are fair and accurate, reflecting the true understanding	F %	18 21.2	41 48.2	7 8.2	13 15.3	6 7.1	3.61 1.19

Sources: Field Data (2025)

According to Table 10.1, 27(31.8%) of the respondents strongly agreed that the use of visual aids (pictures, diagrams, charts) improved learners' understanding of the content,

while 29(34.1%) of the respondents agreed that the use of visual aids (pictures, diagrams, charts) improved learners' understanding of the content. A small proportion, 18(21.2%) of the respondents disagreed, and 9(10.6%) of the respondents strongly disagreed that the use of visual aids (pictures, diagrams, charts) improved learners' understanding of the content. Moreover, the study findings revealed that the respondents agreed with the statement that the use of visual aids (pictures, diagrams, charts) improved learners' understanding of the content, with a mean rating of 3.55 and a standard deviation of 1.40. The previous research by Pateşan, Balagiu, and Alibec (2018) specialists, as well as teachers, agrees on the important role of visuals that can significantly enhance the learning of students who belong to a generation familiar with the visual interface of multimedia and internet technologies. Also, a study by Wiley (2019) showed that both photographic images and relevant animations could lead to illusions of understanding, whereas sketching did not. The results suggest that even images that are relevant for instructional goals may sometimes result in judgment effects that deceive readers when judging their own understanding. This shows that, despite some reservations about their effects, there is a consensus regarding the usefulness of visual aids in enhancing comprehension. This suggests that although visual aids can be effective tools, to really help students' learning, their use and design must be carefully considered.

Head teacher [9] said that;

Interactive whiteboards with captioning capabilities and FM systems amplify instruction.

Similarly, the majority of the respondents, 63(74.1%) of the participants, agreed that interactive learning tools and technology (videos, apps, simulations) enhanced learners' engagement and learning. However, 18(21.2%) of the respondents disagreed that

interactive learning tools and technology (videos, apps, simulations) enhanced learners' engagement and learning. Further, the study findings revealed that participants agreed with the statement that interactive learning tools and technology (videos, apps, simulations) enhanced learners' engagement and learning, with a mean rating of 3.69 and a standard deviation of 1.24. The study done by Donkin, Askew, and Stevenson (2019) showed that students who participated in the online video format had statistically better practical examination scores and final grades compared to the control group. Also, Bains, Kaliski, and Goei (2022) demonstrated that perceived engagement was greatest with the non-digital supplemental learning tool compared with the two technology-enhanced learning tools. Study shows that a majority of respondents believe interactive learning tools and technology, such as videos, apps, and simulations, significantly enhance learners' engagement and learning. This reflects a strong consensus on the effectiveness of these tools in improving educational experiences. The researcher's view is that while interactive tools are generally seen as beneficial for engaging students, there are varying opinions about their effectiveness compared to non-digital resources. This implies that while technology-enhanced learning tools can be highly effective, it is important to balance their use with other methods to optimize student engagement and learning outcomes.

Moreover, 64 (75.3%) of the respondents agreed that working in small groups or with a partner helped learners learn from others and clarify their understanding, and on the other hand, 19(22.4% of the respondents disagreed that working in small groups or with a partner helped learners learn from others and clarify their understanding. Additionally, the study results further revealed that the respondents agreed that working in small groups with a partner helped learners learn from others and clarified their understanding, with a mean rating of 3.76 and a standard deviation of 1.21. These

findings are consistent with Lumpkin, Ache, and Dodd (2015) revealed that students valued participating in engaging learning activities. Students also affirmed how active engagement positively impacted their learning. Van de Pol, Mercer, and Volman (2019) also reveal that the premature disappearance of the support frequently affected students' adoption of contingent support. Furthermore, we found that the most effective strategy to encourage students to accept a teacher's support was to provide contingent support that was subsequently progressively reduced. Study results imply that most respondents believe that working in small groups or with a partner helps learners learn from others and clarify their understanding. The report reveals that while small group work is generally recognized as an effective learning strategy, it is important to manage the support provided to maximize its benefits and address potential challenges. This implies that effective group work requires thoughtful facilitation and the gradual reduction of support to encourage independent learning and sustain student engagement.

Also, 58(68.2%) of the respondents agreed, and 23(27.0%) disagreed, that learners are given opportunities to learn independently through self-paced activities. Further, the study results also showed that the respondents agree with the statement that learners are given opportunities to learn independently through self-paced activities, with a mean rating of 3.52 and a standard deviation of 1.26. These study results are consistent with the study done by McClure and Williams (2021). Students and demonstrators provide their opinions on the effectiveness of the platform and identify its benefits, preferring it to alternative online systems such as MS Teams for their educational sessions. Kim, Jung, Yoon, Chang, Park, Kim, and Demir (2021) found that the transactional distance between learners and content was associated with students' self-directed learning. Course structure and organization predicted both students' self-directed learning and commitment to the MOOC. The respondents simply stated that while self-paced

activities are seen as valuable for fostering independent learning, there is a need to ensure that these opportunities are well-structured and supported to maintain student motivation and engagement, and also implies that effective independent learning requires careful course design and organization to build the relationship between learners and content.

Further, 61(71.7%) of the respondents agreed that the teacher's use of cued speech (visual cues to support spoken language) made it easier for learners to follow the lesson. On the contrary, 19(22.3% of the respondents disagreed that the teacher's use of cue speech (visual cues to support spoken language) made it easier for learners to follow the lesson. Further, the mean rating of 3.59 and standard deviation of 1.32 indicate that the respondents agreed that the teacher's use of cue speech (visual cues to support spoken language) made it easier for learners to follow the lesson. According to Hafidz Zaid (2020), confirmed that picture media is an indispensable component in improving Arabic speaking skills immensely. Also, he revealed that the subjects of this study reported better results after pictures were used. Simamora, Sembiring, and Pangaribuan (2018) show that using picture-cued media can improve students' speaking skills. The study shows that a majority of respondents believe that the teacher's use of cue speech, which involves visual cues to support spoken language, helps learners follow the lesson, though a minority disagrees. This implies that while visual support methods like cue speech can significantly aid understanding, they must be used in conjunction with other strategies to meet diverse learner needs. This reflects a general agreement on the effectiveness of cued speech as a supportive teaching tool.

Head teacher [8] said that;

Qualified Sign language interpreters, assistive listening devices, and real-time captioning for clear communication access.

However, 61(71.8%) of the respondents agreed that teachers provide guidance and support for effective note-taking, which boosted learners' comprehension and recall. On the contrary, 21 (23.7%) of the participants disagreed that the teacher provides guidance and support for effective note-taking, which boosted learners' comprehension and recall. Further, the study results also showed that the respondents agreed that the teacher provides guidance and support for effective note-taking, which boosted learners' comprehension and recall, with a mean rating of 3.62 and a standard deviation of 1.32. According to the study done by Luo, Kiewra, and Samuelson, (2016), suggested that revision is a new student-centered means to boost lecture note-taking and achievement. Soumokil, Nikijuluw, and Lekatompessy (2021) demonstrated that the recall advantages associated with taking longhand notes are processed by mental wandering. Learners who took handwritten notes showed better recall of the content of the lecture compared to those who took pictures or did not take any notes at all. A study however shows that the majority of respondents believe that the teacher's guidance and support for effective note-taking enhances learners' comprehension and recall. Providing structured note-taking support is widely recognized as beneficial for student comprehension and recall, it should be complemented by other effective learning techniques. This implies that while note-taking support is valuable, educators should also explore diverse strategies to further enhance students' learning and retention.

Conversely, the findings revealed that 65 (70.6%) of the respondents agreed that teachers use different teaching materials to cater to learners' individual learning needs and styles. However, 21 (24.7%) of the respondents disagreed that teachers use different teaching materials to cater to learners' individual learning needs and styles. Similarly, the respondents agreed that teachers use different teaching materials to cater to learners' individual learning needs and styles, with a mean rating of 3.62 and a standard deviation

of 1.36. These findings are consistent with the study done by Cabual (2021). Students' learning styles and preferred learning modalities are closely linked, but there are no substantial differences when classified by sex and area or major of specialization. Also, Ginja and Chen (2020) indicated that teacher educators recognized the differentiated instruction approach as essential to use in a diverse classroom. Increased motivation, improved relationship between learners and teacher, and narrowed the achievement gap of learners were some reported attainments. The results simply that employing a range of teaching materials is crucial for addressing individual differences in learning styles and enhancing educational effectiveness in diverse classrooms.

In addition, 66 (77.6%) of the respondents agreed that learners received regular and encouraging feedback from the teacher, which motivated them to learn and improve. However, 16 (18.8%) of the respondents disagreed that learners received regular and encouraging feedback from the teacher, which motivated them to learn and improve. However, the study results also showed that the mean rating of 3.92 and a standard deviation of 1.22 indicate that the respondents agreed with the statement that learners received regular and encouraging feedback from the teacher, which motivated them to learn and improve. Licorish, Owen, Daniel, and George, (2018) suggest that the use of educational games in the classroom is likely to minimize distractions, thereby improving the quality of teaching and learning beyond what is provided in conventional classrooms. According to Yu, Jiang and Zhou, and Zhou (2020) found that expressive feedback turned out to be the most frequently used type of L2 writing feedback, and written corrective feedback (WCF) as the least frequently used one. The findings indicate that a majority of respondents believe that learners receive regular and encouraging feedback from the teacher. The results simply that providing consistent,

positive feedback is essential for student motivation and growth, and that this practice should be emphasized in teaching strategies to support learner development.

Head teacher [5] said that;

Regular, specific, and encouraging feedback is provided through multiple channels, like written notes, signed comments, or video feedback with captions.

Similarly, 66(77.7%) of the participants agreed and 14(16.4%) disagreed that the classroom environment is conducive to communication, with minimal distractions and good access to the teacher. Further, the study results also indicate that the respondents agreed that the classroom environment is conducive to communication, with minimal distractions and good access to the teacher, with a mean rating of 3.84 and a standard deviation of 1.07. According to Mu'awanah, Sumardi, and Suparno (2021), reveals that learning English via Zoom helps students to practice English, makes the teaching-learning process more effective, and facilitates the teacher-student interaction and communication. The study done by Nyabando and Evanshen (2022) believed that classroom physical learning environments that were best for them were meaningful, offered easy access to resources and materials, and provided active learning and social engagement opportunities. The findings show that a significant majority of participants agree that the classroom environment effectively supports communication, with minimal distractions and good access ot the teacher. The results imply that creating and maintaining a conducive classroom environment is crucial for promoting effective communication and enhancing the overall learning experience for students.

Head teacher [6] said that;

Curriculum materials are provided in advance with clear visuals, and alternative assessments are offered. We also foster an inclusive environment with peer collaboration and social-emotional support services.

Finally, it was noted that 59 (69.4%) of the participants agreed that the assessments used are fair and accurate, reflecting the true understanding of the material. Conversely to that, it was noted that 19 (22.4%) of the respondents disagreed that the assessments used are fair and accurate, reflecting the true understanding of the material. The study results further revealed that the respondents agreed with the statement that the assessments used are fair and accurate, reflecting the true understanding of the material, with a mean rating of 3.61 and a standard deviation of 1.19. However, the study by Henry, Tomaszewski, Ramakrishnan, Roy, Vikse, Loukas, and Walocha (2017) on the development of the Anatomical Quality Assessment (AQUA) Tool for the quality assessment of anatomical studies included in meta-analyses and systematic reviews shows that each domain was set to end with a risk of bias question. Following round 1, some of the items underwent major revision, although agreement was reached regarding the inclusion of all the domains and signaling questions in the preliminary tool.

Also, Meijer, Hoekstra, Brouwer and Strijbos, (2020). Collaborative learning is frequently employed in higher education and can be used for developing cognitive outcomes, social outcomes, and motivational outcomes. Findings reveal that a majority of participants perceive the assessments used as fair and accurate in reflecting the true understanding of the material. The results simply that while assessments are generally viewed as effective, there is a need for ongoing review and improvement to address any biases and enhance their role in accurately measuring student understanding.

4.6 Teaching and Learning Resources Appropriate for Effective Integration

The study sought to determine the effects of teaching and learning resources appropriate for effective integration of the academic performance of learners with hearing impairments using a 5-point Likert scale, as shown in Table 11.

Table 11 Teaching and Learning Resources Appropriate for Effective Integration

Statement		SA	A	N	D	SD	Mean	Sd
1. Special needs teachers are effective in teaching methods for hearing-impaired learners	F %	24 28.2	35 39.8	6 7.1	13 15.3	7 8.2	3.66	1.27
2. Available visual and tactile learning materials significantly enhance understanding for hearing-impaired learners	F %	25 29.4	41 48.2	2 2.4	9 10.6	8 9.4	3.78	1.25
3. Interactive technology (for example, assistive listening devices, captioning software) improves engagement and learning outcomes	F %	24 28.2	36 42.4	2 2.4	18 21.2	5 5.9	3.66	1.25
4. Regular use of sign language, gestures, and clear facial expressions facilitates effective communication.	F %	18 21.2	43 50.6	6 7.1	13 15.3	5 6.9	3.66	1.15
5. Personalized learning plans and differentiated instruction cater to the specific needs and learning styles of hearing-impaired learners	F %	28 32.9	37 43.5	4 4.7	7 8.2	9 10.6	3.80	1.28
6. Opportunities for collaborative learning within inclusive classrooms promote social and academic success for hearing-impaired learners	F %	28 32.9	31 36.5	6 7.1	14 16.5	6 7.1	3.71	1.28
7. Accessible classrooms with reduced noise levels and optimized acoustics support optimal learning for hearing-impaired learners.	F %	34 40.0	37 43.5	1 1.2	9 10.6	4 4.7	4.04	1.13
8. Strong parental involvement in the learning process contributes positively to the academic performance of hearing-impaired learners	F %	30 35.3	38 44.7	1 1.2	9 10.6	7 8.2	3.88	1.24
9. Collaboration with external resources (for example, audiologists, specialized programs) provides additional support and strengthens learning outcomes.	F %	31 36.5	34 40.0	6 7.1	7 8.2	7 8.2	3.88	1.23
10. With appropriate teaching and resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers	F %	24 28.2	32 37.6	3 3.5	16 18.8	10 11.8	3.52	1.39

Sources: Field Data (2025)

The study results in Table 11 indicated, 59 (69.4%) of the participants agreed that special needs teachers are effective in teaching methods for hearing-impaired learners. However, 20 (23.5%) of the participants disagreed that special needs teachers are effective in teaching methods for hearing-impaired learners. Further, the study findings indicated that the respondents agreed with the statement that special needs teachers are effective in teaching methods for hearing-impaired learners, with a mean rating of 3.66 and a standard deviation of 1.27. Mumba et al (2022) revealed a wide range of opinions about the factors that teachers and students believed affected the academic performance of HI students. These included a lack of teaching and learning resources, teachers' incapacity to use Sign language to teach, a lack of resources for learning, a clouded curriculum, a lack of hearing aids, a shortage of special education teachers, and a lack of infrastructure, including desks and classrooms. Also, Uçar, Yılmaz, Uçar, and Bekar (2021) revealed that the fact that teachers serve out of the field, they graduated, led them to feel insufficient in terms of professional knowledge and competency. The findings show that a majority of participants agree that special needs teachers are effective in their teaching methods for hearing-impaired learners. However, there is some dissent, with a minority expressing concerns about the adequacy of these methods. Challenges faced by special needs teachers such as insufficient resources and training, and the need for ongoing professional development to address these issues. The results simply that while special needs teachers are generally seen as effective, there are still significant areas for improvement in resources and training to enhance their teaching methods and support for hearing-impaired learners.

Ongoing workshops for teachers on incorporating Sign language and Visual elements across diverse subjects would further strengthen their ability to support all students.

Secondly, 66(77.6%) of the participants agreed that available visual and tactile learning materials significantly enhance understanding for hearing-impaired learners. Conversely, 17(20.0%) disagreed that available visual and tactile learning materials significantly enhance understanding for hearing-impaired learners. On the contrary, the findings revealed that the respondents agreed to the statement that available visual and tactile learning materials significantly enhance understanding for hearing-impaired learners, with a mean rating of 3.78 and a standard deviation of 1.25. The previous research by Azeem, Thakur, and Nadar (2021) visual and kinesthetic/tactile learning modalities for executing teaching and learning processes were practiced in all schools for The teaching and learning processes and socioeconomic status did not reflect any key concern in determining the learning modalities. Luangrungruang and Kokaew (2022) showed a positive correlation with adaptive students' achievement and engagement based on their different learning styles, namely kinesthetic, visual, reading/writing, and Thai sign language. The results simply that incorporating diverse, accessible learning materials is important for improving educational outcomes for these learners and should be a key focus in developing effective teaching strategies.

Conversely, the findings revealed that 60 (70.6%) of the respondents agreed that interactive technology (for example, assistive listening devices, captioning software) improves engagement and learning outcomes. However, 23(27.1%) of the respondents disagreed that interactive technology (for example, assistive listening devices, captioning software) improves engagement and learning outcomes. Similarly, the respondents agreed that interactive technology (for example, assistive listening devices, captioning software) improves engagement and learning outcomes with a mean rating of 3.66 and a standard deviation of 1.26. These findings are consistent with the study done by Kent, Ellis, Peaty, Latter, and Locke (2017) that the expected' benefits to

disabled and NESB students' there were three further benefits noted: Lecture captions are also beneficial to students without disabilities, assisting them to absorb and review educational materials. McDonnell, Liu, Goodman, Kushalnagar, Froehlich, and Findlater (2021) found that our participants' experiences of captioned small-group conversations are shaped by social, environmental, and technical considerations (e.g., interlocutors' pre-established relationships, the type of captioning displays available, and how far captions lag behind speech). The findings show that a majority of respondents believe that interactive technology, such as assistive listening devices and captioning software, enhances engagement and learning outcomes. The results simply that incorporating interactive technologies into educational settings is essential for boosting engagement and effectiveness in learning, though there are nuances related to their implementation and impact.

In addition, 61 (71.8%) of the respondents agreed that regular use of sign language, gestures, and clear facial expressions facilitates effective communication. However, 18(21.2%) of the respondents disagreed that regular use of sign language, gestures, and clear facial expressions facilitates effective communication. However, the study results also showed that the mean rating of 3.66 and a standard deviation of 1.15 indicate that the respondents agreed with the statement that regular use of sign language, gestures, and clear facial expressions facilitates effective communication. Aloysius and Geetha (2020), in the challenge of identifying Movement Epenthesis (ME) segments in continuous utterances, were handled explicitly with these traditional methods. Also, Behera, Matthew, Keidel, Vangorp, Fang, and Canning (2020) found that there is a significant increase in head and eye movements as time progresses, as well as with the increase in difficulty level. This implies that incorporating consistent use of sign

language and non-verbal communication techniques is important for improving communication and learning outcomes for hearing-impaired students.

Similarly, 65(76.4%) of the participants agreed and 16(18.7%) disagreed that personalized learning plans and differentiated instruction cater to the specific needs and learning styles of hearing-impaired learners. Further, the study results also indicate that the respondents agreed that personalized learning plans and differentiated instruction cater to the specific needs and learning styles of hearing-impaired learners, with a mean rating of 3.80 and a standard deviation of 1.28. The study done by Oyawole(2021) reveals that learning style, self-efficacy, and ICT use enhanced biology learning outcomes of students with hearing impairment in Oyo State, Nigeria. Teachers should take cognizance of these factors during the teaching and learning process. According to Mwanga et al (2021) found that generally in both schools, only special teachers apply cooperative learning, and through this method, both students with hearing impairment and hearing students improve their understanding in some of the subjects taught by special teachers. This implies that implementing personalized and differentiated instructional strategies is essential for meeting the diverse needs of hearing-impaired learners and improving their educational experiences.

The study further revealed that a vast majority, 59(69.4%) of the participants agreed that opportunities for collaborative learning within inclusive classrooms promote social and academic success for hearing-impaired learners. On the contrary to that the 20 (23.6%) of the respondents disagreed that opportunities for collaborative learning within inclusive classrooms promote social and academic success for hearing-impaired learners. Further, the study results indicate that the respondents agreed with the statement that opportunities for collaborative learning within inclusive classrooms promote social and academic success for hearing-impaired learners, with a mean rating

of 3.72 and a standard deviation of 1.28. The study done by Mwanga et al (2021) revealed that cooperative learning is usually utilized by special teachers in both schools, and that by using this technique, hearing students and students with hearing impairments can more fully understand some of the respondents who are taught by special teachers. The study by Alias and Ramly (2021) found that special education teachers preferred to use two co-teaching approaches, which are parallel teaching, which teaches two groups in a class simultaneously, and one teacher assists the approach, which is where the general education teacher teaches, and the special education teacher assists in the teaching process., The findings show that most participants believe that opportunities for collaborative learning within inclusive classrooms significantly contribute to the social and academic success of hearing-impaired learners. This implies that fostering collaborative learning environments in inclusive classrooms is important for achieving social and academic success for hearing-impaired learners and should be actively promoted in educational practices.

Head teacher [7] said that;

Collaborative learning encourages interaction and communication among all students, fostering a sense of community and belonging. For hearing-impaired learners, this interaction helps improve their social skills and confidence as they engage with their peers in group activities and discussions.

Similarly, 71(83.5%) of the respondents agreed and 13(15.3%) disagreed that accessible classrooms with reduced noise levels and optimized acoustics support optimal learning for hearing-impaired learners. The study results also showed that the respondents agreed with the statement that accessible classrooms with reduced noise levels and optimized acoustics support optimal learning for hearing-impaired learners, with a mean rating of 4.04 and a standard deviation of 1.13. The previous research done by Uzeyirli and Ozcevik Bilen (2019) identified that an inclusive classroom (A) (without

acoustical arrangement) and a special classroom (B) (acoustically arranged) for hearing-impaired individuals, and found that the class (B) is more comfortable and quieter than the inclusive class (A), as expected. Jüzeyirli and Özüevik Bilen (2021) observed that the speech intelligibility percentage of normal hearing individuals increased as expected, while in hearing-impaired individuals, contrary to expectations, the percentage differed from one another, and there was no increase. This implies that creating such supportive classroom environments is crucial for improving educational outcomes for these learners and should be a priority in classroom design and management strategies.

Head teacher [10] said that;

Individual amplification systems with noise cancellation would further empower students.

Furthermore, 68 (79.0%) of the participants agreed that strong parental involvement in the learning process contributes positively to the academic performance of hearing-impaired learners. In contrast to those findings, 16 (18.8%) of the respondents disagreed that strong parental involvement in the learning process contributes positively to the academic performance of hearing-impaired learners. Further, the study results indicate that the respondents agree with the statement that strong parental involvement in the learning process contributes positively to the academic performance of hearing-impaired learners, with a mean of 3.88 and a standard deviation of 1.24. A study done by Paskaran and Yasin (2020) found that parents need to pay close attention to providing a home-based learning environment, social interaction, communication, and academic support to help children develop their potential, self, and achieve better academic achievement. Also, Parveen, Kashif, and Abbas (2023) showed a positive correlation between parental involvement and student motivation, interest, and achievement, and

developed strategies focusing on communication, emotional support, parental involvement with teachers, and a conducive learning environment at home. This suggests that fostering effective parental engagement is crucial for supporting these learners' academic success. This implies that educational strategies should emphasize and facilitate strong parental involvement to improve outcomes for hearing-impaired students.

The study further revealed that, vast majority, 65(76.5%) of the participants agreed that collaboration with external resources (for example, audiologists, specialized programs) provides additional support and strengthens learning outcomes. On the contrary to that the 14(16.4%) of the respondents disagreed that collaboration with external resources (for example, audiologists, specialized programs) provides additional support and strengthens learning outcomes. Further, the study results indicate that the respondents agreed with the statement that collaboration with external resources (for example, audiologists, specialized programs) provides additional support and strengthens learning outcomes, with a mean rating of 3.88 and a standard deviation of 1.23. The study done by Ronney and Kirby (2021) indicated the benefits of service-learning to student clinicians. However, evidence for the transfer of service-learning benefits to organizational or departmental practice and the benefit to patients or clients was lacking. Secora and Shahan (2023) integrate best practices for educating preservice professionals in effective collaboration strategies to make evidence-based recommendations on implementing effective collaboration-focused IPE for preservice SLPs and TODs. The findings suggest that collaboration with external resources, such as audiologists and specialized programs, is widely viewed as beneficial for improving learning outcomes. Despite some disagreement, the overall positive perception

indicates the value of such partnerships. This implies a need for educational and professional institutions to prioritize and foster these collaborations.

Finally, 56(65.8%) agreed that with appropriate teaching and resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers. However, 26 (30.6%) of the respondents disagreed that, with appropriate teaching and resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers. Further, the study results also indicate that the mean rating of 3.52 and a standard deviation of 1.39, the respondents agreed with the statement that with appropriate teaching and resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers. According to the study done by Ngandu and Mandyata, (2022) revealed that the use of sign language as a mode of communication significantly impaired the exchange of knowledge and skills at the classroom level and also found that pupils with HI faced many challenges, such as; a negative attitudes towards their academic work, poor pre-academic readiness skills, insufficient resources, a clouded school curriculum, inappropriate instructional methodologies, and assessment approaches that had affected their academic performance. The study done by Owuor, Awori, and Otieno (2020) found that modes of communication among learners with hearing impairment, hearing learners, and teachers create social and educational change for the improvement of academic standards in the school and narrow the gap between those with hearing impairment and their hearing counterparts.

Head teacher [11] said that;

At our institution, we employ advanced hearing aids and assistive listening devices, alongside visual aids and alternative communication methods such as sign language and written instructions.

Head teacher [12] said that;

A wider range of curriculum materials specifically designed for these learners, such as multimedia resources with embedded captions and sign language integration, would be invaluable.

From the study, the researcher suggests a general optimism about the potential for equity in academic achievement with the right support. Additionally, effective teaching methods and adequate resources are important for the success of hearing-impaired learners. There are still barriers, such as communication issues, negative attitudes, and insufficient resources, that need to be addressed.

4.7 Instructional Strategies Used to Teach Learners with Hearing Impairments

The study sought to determine the instructional strategies used to teach learners with hearing impairments in an integrated setting in Public Primary Schools. The study results are shown in Table 12.

Table 12: Instructional Strategies Used to Teach Learners with Hearing Impairments

Statement			SA	A	N	D	SD	Mean	Sd
1.	Use of clear and uncluttered visual aids (pictures, diagrams, graphs) enhance learning for learners.	F	28	32	3	13	9	3.67	1.35
		%	32.9	37.6	3.5	15.3	10.6		
2.	Frequent integration of multimedia resources (videos, animations)	F	28	33	3	12	9	3.69	1.35
		%	32.9	38.8	3.5	14.1	10.6		
3.	Clear and concise verbal communication with slow, exaggerated speech	F	31	35	2	9	8	3.84	1.29
		%	36.5	41.2	2.4	10.6	9.4		
4.	Regular use of facial expressions and gestures	F	28	41	4	8	4	3.95	1.09
		%	32.9	48.2	4.7	9.4	4.7		
5.	Implementation of alternative and augmentative communication (AAC) systems	F	25	34	3	13	10	3.60	1.34
		%	29.4	40.0	3.5	15.3	11.8		
6.	Encouragement of peer tutoring and collaborative learning activities	F	30	32	3	11	9	3.74	1.35
		%	35.3	37.6	3.5	12.9	10.6		
7.	Formation of diverse working groups with hearing and deaf learners.	F	30	41	2	4	8	3.95	1.19
		%	35.3	48.2	2.4	4.7	9.4		
8.	Provision of varied learning materials and activities to cater for different learning styles	F	27	41	1	5	11	3.80	1.31
		%	31.8	48.2	1.2	5.9	12.9		
9.	Individualized learning plans tailored to the specific needs of each learner	F	26	33	3	10	13	3.57	1.43
		%	30.6	38.8	3.5	11.8	15.3		
10.	Use of multiple assessment methods, including visual and non-verbal approaches	F	28	33	3	10	11	3.67	1.38
		%	32.9	38.8	3.5	11.8	12.9		

Sources: Field Data (2025)

The study findings in Table 12 showed that 60 (70.5%) of the participants agreed that the use of clear and uncluttered visual aids (pictures, diagrams, graphs) enhances learning for learners. However, 22 (25.9%) of the respondents disagreed that the use of clear and uncluttered visual aids (pictures, diagrams, graphs) enhances learning for learners. On the other hand, the mean rate and standard deviation of 3.67 and 1.36, respectively, indicate that the respondents agreed that the use of clear and uncluttered visual aids (pictures, diagrams, graphs) enhances learning for learners. According to Abdi, Murphy and Seale, and Seale (2020) suggest that there are currently not many refugee-specific resources on immunization. Also, Nyavor (2020) revealed that teachers provide teaching and learning materials of all kinds during teaching and

learning. However, clear and well-organized visual aids are broadly recognized as beneficial for learning; there is a need for ongoing development and provision of diverse teaching materials to meet specific educational needs. This implies that educators should focus on creating and using effective visual aids while also exploring new resources and materials to support diverse learning contexts.

Similarly, 61(71.7%) of the respondents agreed and 21(24.7%) disagreed that frequent integration of multimedia resources (videos, animations). The study results also showed that the respondents agreed with the statement that frequent integration of multimedia resources (videos, animations) with a mean rating of 3.69 and a standard deviation of 1.35. The previous research done by Artal-Sevil, Romero, and Artacho (2018) indicates that the technological possibilities are endless, allowing for to generation of even virtual reality and augmented reality environments in the classroom. The study done by Barut Tugtekin and Dursun (2022) determined that animation and interactive video materials did not cause a higher level of cognitive load in the participants, and both groups had higher material motivation. The researcher views that multimedia resources are effective for learning; it is important to manage their use carefully to avoid cognitive overload and ensure they contribute positively to the learning experience. This implies that educators should incorporate multimedia thoughtfully to maximize its benefits for learners.

Head teacher [5] said that.

Our institution could improve its frequent integration of multimedia resources, such as videos and animations, specifically designed for hearing-impaired learners.

Furthermore, 66(77.7%) of the respondents agreed, and 17(19.0%) of the respondents disagreed that clear and concise verbal communication with slow, exaggerated speech.

However, respondents agreed that clear and concise verbal communication with slow, exaggerated speech, with a mean rating of 3.85 and a standard deviation of 1.29. Grimstvedt, Miller, Van Walsem, and Feragen (2021) reveal that most individuals with HD were aware of having communication difficulties, struggling with understanding others, as well as being understood. According to Grimstvedt, Miller, Van Walsem, and Feragen (2021), most individuals with HD were aware of having communication difficulties, struggling with understanding others, as well as being misunderstood. This was confirmed by professional caregivers, who also raised ethical issues encountered when patients struggled with communication. Clear and deliberate verbal communication is widely recognized as beneficial; it is also crucial to address the broader communication challenges faced by individuals with hearing difficulties. This implies that educators should use clear communication techniques and remain aware of ongoing challenges in the communication process to better support learners with hearing impairments.

Further, 69 (81.1%) of the respondents agreed that regular use of facial expressions and gestures, and those who disagreed are 12 (14.1%) disagreed. The study findings revealed that participants agreed with the statement that regular use of facial expressions and gestures, with a mean rating of 3.95 and a standard deviation of 1.09. This study is consistent with the study by Behera, Matthew, Keidel, Vangorp, Fang, and Canning (2020) demonstrated that there is a considerable occurrence of hand-over-face gestures (on average 21.35%) during the 40-minute session, and is explored in the education domain. Behera et al (2020) found that there is a significant increase in head and eye movements as time progresses, as well as with the increase of difficulty level. The statement implies a commitment to creating a more accessible and inclusive

learning environment for students with hearing impairments by actively seeking resources that enhance communication.

Similarly, 59(69.4%) of the participants agreed on the implementation of alternative and augmentative communication (AAC) systems. However, 23 (27.1%) of the respondents disagreed with the implementation of alternative and augmentative communication (AAC) systems. Further, the study findings revealed that participants agreed with the statement that implementation of alternative and augmentative communication (AAC) systems, with a mean rating of 3.60 and a standard deviation of 1.36. However, the study by Quinn, Kurin, Atkins, and Cook, (2023) a range of implementation strategies to increase AAC use during typical classroom activities, which were organized into seven themes: distribute modern AAC equipment, provide foundational training, share video examples, develop a systematic plan for adoption, deliver practice-based coaching, alter personnel job responsibilities to provide protected time, and connect with professionals. Behera et al, (2020) found that there is a significant increase in head and eye movements as time progresses, as well as with the increase of difficulty level. AAC systems are widely recognized as beneficial for enhancing communication. It is important to implement these systems thoughtfully, including providing proper training and support for their effective use. This implies that while AAC systems can greatly aid communication, their successful implementation requires careful planning and ongoing professional development.

Head teacher [8] said that;

Systems that include tools like communication boards, speech-generating devices, and dedicated AAC apps provide essential support for students who have difficulty with verbal communication.

Moreover, 62 (72.9%) of the respondents agreed that encouragement of peer tutoring and collaborative learning activities, and on the other hand, 20(23.5%) of the respondents disagreed that encouragement of peer tutoring and collaborative learning activities. Additionally, the study results further revealed that the respondents agreed that encouragement of peer tutoring and collaborative learning activities, with a mean rating of 3.74 and a standard deviation of 1.35. According to Bugaj, Blohm, Schmid, Koehl, Huber, Huhn, and Nikendei (2019) revealed that all student tutors showed great enthusiasm and motivation for their jobs as peer teachers. The study done by Topping (2020) reveals that peer tutoring usually involves pairs of students, one in the role of the tutor and the other as the tutee, with the more able or experienced member helping the other to learn material that is new to the tutor but not to the tutee. Peer tutoring and collaborative activities are generally seen as valuable for fostering learning and engagement. Successful implementation requires careful planning and support. This implies that while these strategies are effective for promoting learning, educators should ensure that they are structured well and that both tutors and tutees are adequately prepared for their roles.

Head teacher [9] said that;

We currently have some opportunities for peer support, but expanding these initiatives with dedicated resources, such as training for peer tutors and structured collaborative projects, would be highly beneficial.

Further, 71 (83.5%) of the participants agreed that the formation of diverse working groups with hearing and deaf learners. Conversely, 12(14.1%) disagreed that the availability of qualified sign language interpreters in the school improves their understanding of lessons. On the contrary, the findings revealed that the respondents agreed to the statement that the formation of diverse working groups with hearing and

deaf learners, with a mean rating of 3.95 and a standard deviation of 1.19. The previous research by Snoddon and Murray (2019), the right of deaf learners to education in Jinja National Sign Language, and the suggested greater suitability of deaf schools for congregated programmers for many deaf learners. Huyck, Anbuhl, Buran, Adler, Aitcherson, Cakmak, and Steyger (2021). Individuals with disabilities are underrepresented in STEM, and the professional organizations can address this underrepresentation by recruiting individuals with disabilities for leadership opportunities, easing financial burdens, providing equal access, fostering peer-mentor groups, and establishing a culture of equity and inclusion spanning all facets of diversity. This implies that creating diverse learning environments should be complemented with adequate support systems to ensure the success of inclusive education practices.

Head teacher [2] said that;

We need resources such as training programs for students and teachers on effective communication strategies, as well as structured group activities designed to promote collaboration and teamwork.

Conversely, the findings revealed that 68 (80.1%) of the respondents agreed that the provision of varied learning materials and activities to cater to different learning styles. However, 15% (18.8%) of the respondents disagreed that the provision of varied learning materials and activities to cater to different learning styles. Similarly, the respondents agreed that the provision of varied learning materials and activities to cater for different learning styles, with a mean rating of 3.80 and a standard deviation of 1.31. These findings are consistent with the study done by Cimermanová (2018) indicates that the learning styles and form of teaching do not affect academic achievement. However, Boelens, Voet, and De Weve's (2018) results show that half of the instructors considered a transformation of their blended learning arrangements in response to

student diversity. This implies that successful teaching requires both a variety of resources and a flexible approach to adapt to different learning styles.

In addition, 59 (69.5%) of the respondents agreed that individualized learning plans were tailored to the specific needs of each learner. However, 23% (26.1%) of the respondents disagreed that individualized learning plans were tailored to the specific needs of each learner. However, the study results also showed that the mean rating of 3.56 and a standard deviation of 1.43 indicate that the respondents agreed with the statement that individualized learning plans are tailored to the specific needs of each learner. Shemshack and Spector, (2020) learning is a personalized experience that allows one to expand their knowledge, perspective, skills, and understanding. Lee, huh, Lin, and Reigeluth, (2018) indicate that only 12% of teachers responded that they had a technology system that integrated the four major functions. Among the rest, 21% reported that they had no such systems. Technology was most widely used for planning and instruction, but not for recordkeeping and assessment. Individualized learning plans are generally seen as effective for addressing diverse student needs. there is a need for ongoing development of technology and systems to support these personalized approaches. This implies that creating effective individualized learning plans involves both commitment to personalized education and the development of robust systems for planning, instruction, and assessment.

Lastly, 61(71.7%) of the respondents agreed that use of multiple assessment methods, including visual and non-verbal approaches. In contrast to those findings, 21 (24.7%) of the respondents disagreed that the use of multiple assessment methods, including visual and non-verbal approaches. Further, the study results indicate that the respondents agree with the statement that the use of multiple assessment methods, including visual and non-verbal approaches, with a mean of 3.67 and a standard

deviation of 1.38. A study done by Del Giacco, Salcuni, and Anguera, (2019) our main dimensions were elaborated (Verbal Mode-Structural Form, Verbal Mode-Communicative Intent, Vocal Mode, and Interruption Mode) according to the agency role of communication components. Chadwick, Buell, and Goldbart, (2019) revealed that the Preverbal Communication Schedule, the Affective Communication Assessment and the Checklist of Communication Competence were the most frequently used published assessments. Multiple assessment methods are generally considered effective; careful planning and implementation are crucial to ensure these methods meet the diverse needs of learners. From the results, it can be concluded that successful assessment involves both the use of varied approaches and thoughtful consideration of how they are applied to achieve accurate evaluations of student learning.

4.8 Inferential Analysis

Inferential analysis used in this section was correlation and multiple regression models. Correlation and multiple regression analysis showed the relationship between independent variables and the dependent variable.

4.8.1 Correlation Analysis

Correlation analysis was done to determine the direction and strength of the correlation between the study variables. The findings are presented in Table 13.

Table 13 Correlation Analysis

		Academic performance of learners with hearing impairment	Different teaching strategies	Teaching and learning resources	Instructional strategies
Academic performance of learners with hearing impairment	Pearson Correlation	1			
	Sig.				
Different teaching strategies	Pearson Correlation	.440**	1		
	Sig.	.000			
Teaching and learning resources	Pearson Correlation	.402**	.434**	1	
	Sig.	.000	.000		
Instructional strategies	Pearson Correlation	.388**	.369**	.306**	1
	Sig.	.000	.001	.004	

Sources: Field Data (2025)

The Table 13 showed that different teaching strategies were moderate and statistically significantly correlated to the academic performance of learners with hearing impairment ($r=0.440^{**}$, $p < 0.01$). Furthermore, the study findings revealed that teaching and learning resources were positively and moderately correlated with the academic performance of learners with hearing impairment ($r=0.402^{**}$, $p < 0.01$). Instructional strategies were positive and moderately correlated with the academic performance of learners with hearing impairment ($r=0.388^{**}$, $p < 0.01$). A number of -1.00 indicates a perfect negative correlation, whereas a value of +1.00 indicates a perfect positive correlation. Therefore, if the value is 0.00, there is no association between the two variables (Orodho, 2003).

4.9 Regression Analysis Results

Multiple regression analysis was utilized to look at how each variable in the study related to the others. Tables summarizing the findings are provided below.

4.9.1 Model Summary

The correlation coefficient (R) and the coefficient of determination (R^2) illustrated the extent to which the independent variable explained the variance in the dependent variable. In contrast, the coefficient of determination (R^2) demonstrated the strength of the relationship between the dependent and independent variables. Table 14 presents regression model summary findings.

Table 14 Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.539 ^a	.290	.264	.69503

Sources: Field Data (2025)

Table 14 shows that the R value of 0.539, the R-squared of 0.290, and the adjusted R-squared is 0.264. In addition, the results demonstrated that different teaching strategies, teaching and learning resources, and instructional strategies account for 29% of the variation in the academic performance of learners with hearing impairment.

4.9.2 Model Fitness

Table 15 displays the findings of an analysis of variance performed to assess the model fitness.

Table 15 Results of Model Fitness

	Sum of Squares	df	Mean Square	F	Sig.
Regression	16.019	3	5.340	11.054	.000
Residual	39.129	81	.483		
Total	55.148	84			

The study findings revealed that there was a statistical significance between the independent variables and the dependent variable ($F=11.054$; $p = 0.000 < 0.05$), as shown in Table 15. Since the multiple regression models fit the data well, this means that it was chosen. Different teaching strategies, teaching and learning resources, and instructional strategies all play a role in the academic performance of learners with hearing impairment.

4.9.3 Regression Coefficients

The study's primary objective was to determine the study variables' respective coefficients. The study findings are presented in Table 16.

Table 16 Regression Analysis Coefficient

	Unstandardized Coefficients		Standardized Coefficients	t	sig
	B	Std. Error	Beta		
(Constant)	1.029	.455		2.262	.026
Different teaching strategies	.260	.107	.262	2.427	.017
Teaching and learning resources	.208	.100	.219	2.078	.041
Instructional strategies	.229	.104	.224	2.194	.031

Sources: Field Data (2025)

Study findings reveal that the regression coefficient results, a positive and statistically significant relationship between different teaching strategies and academic performance of learners with hearing impairment ($\beta_1=.260$, $p=.017$). The study findings revealed that there was a statistically significant effect of teaching and learning resources on the academic performance of learners with hearing impairment ($\beta_2=.208$, $p=.041$). The study findings further revealed that instructional strategies have a positive and significant effect on the academic performance of learners with hearing impairment ($\beta_3=.229$, $p=.031$). Thus, the total regression results indicate a positive and significant

effect of different teaching strategies, teaching and learning resources, and instructional strategies on the academic performance of learners with hearing impairment.

The resultant equation becomes:

The formula then becomes

$$Y = 1.029 + 0.260X_1 + 0.208X_2 + 0.229X_3 \dots \dots \dots \text{Equation 4.1}$$

Where;

Y represents the academic performance of learners with hearing impairment, which is the dependent variable.

X_1 Different teaching strategies

X_2 Teaching and learning resources

X_3 Instructional strategies

4.10 Hypotheses Test Results

The research hypotheses were assessed using the significance level of the coefficients from the regression model derived in Table 17. The objective of the study was to see if the hypothesis could be tested without rejecting or rejecting the relationship between the independent and dependent variables. The following research hypotheses were tested in the study:

4.10.1 Hypothesis Testing for Different Teaching Strategies

Hypothesis H_{01} stated that there is no significant influence of different teaching strategies on the academic performance of learners with hearing impairments in public primary schools. Results revealed that different teaching strategies have a positive and significant effect on the academic performance of learners with hearing impairment

($\beta_1=0.260$, $p<0.05$), hence rejecting the null hypothesis H_{01} , indicating that different teaching strategies had a significant effect on the academic performance of learners with hearing impairment.

4.10.2 Hypothesis Testing for Teaching and Learning Resources

Hypothesis H_{02} stated that teaching and learning resources have no significant effect on the academic performance of learners with hearing impairments in an integrated setting in public primary schools. Findings revealed that teaching and learning resources have a positive and significant effect on the academic performance of learners with hearing impairment ($\beta_2=0.208$, $p<0.05$). The null hypothesis H_{02} was rejected, indicating that teaching and learning resources had a significant effect on the academic performance of learners with hearing Impairment.

4.10.3 Hypothesis Testing for Instructional Strategies

Hypothesis H_{03} stated that instructional strategies used to teach have no significant influence on learners with hearing impairments in an integrated setting in public primary schools. The findings revealed that instructional strategies have a positive and significant effect on the academic performance of learners with hearing Impairment ($\beta_3=.229$, $p<0.05$). The results showed that instructional strategies had a significant effect on the academic performance of learners with hearing Impairment, rejecting the null hypothesis H_{03} .

Table 17 Summary of Hypotheses Test Results

Hypothesis	β-value	p-value	Decision rule
H ₀₁ . There is no significant influence of different teaching strategies on academic performance of learners with hearing Impairments	$\beta_1=0.260$	$p=0.000<0.05$	Rejected the null hypothesis
H ₀₂ . Teaching and learning resources have no significant effect on academic performance of learners with hearing impairments	$\beta_2=0.208$	$p=0.000<0.05$	Rejected the null hypothesis
H ₀₃ . Instructional strategies used to teach have no significant influence on learners with hearing impairments	$\beta_3=0.229$	$p=0.000<0.05$	Rejected the null hypothesis

Sources: Field Data (2025)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section provides a summary of the study's discoveries, draws conclusions, and offers recommendations. Additionally, it proposed potential avenues for future research in the subsequent sections.

5.2 Summary of the Study Findings

This part outlines the study's results in accordance with the research objective as ascertained.

5.2.1 Academic Performance of Learners with Hearing

The first research question of the study specifically sought to evaluate the academic performance of learners with hearing impairment in the entire county. Based on the key findings, the study concluded that the academic performance of learners with hearing impairment in Public primary schools in Turkana County, Kenya, was enhanced by the effective use of visual aids, alternative communication methods, and hearing aids, which help learners understand teachers' lessons, and a conducive classroom environment for learning for those learners. Also, the availability of qualified sign language interpreters in schools improves learners' understanding of lessons.

The findings implied that learners feel motivated and engaged in learning activities, the same as their hearing peers, and also agreed that academic performance reflects the true potential and effort given their hearing impairment, and finally agreed that learners believe they have access to the same opportunities and resources for learning as their hearing peers.

5.2.2 Different Teaching Strategies

The second objective of the study was to assess the integration strategies and its effectiveness on academic performance of learners with hearing impairment in public primary schools and respondents were asked to give their view on the statement that The use of visual aids (pictures, diagrams, charts) improved learners understanding of the content, interactive learning tools and technology (videos, apps, simulations) enhanced learners engagement and learning, working in small groups or with a partner helped learners learn from others and clarify their understanding, The study further established that use of different teaching strategies made it easier for learners to follow the lesson, boosted learners comprehension and recall, motivated them to learn and improve on weak areas.

Further, the study concluded that the classroom environment is conducive to communication, with minimal distractions and good access to the teacher, and that the assessments used are fair and accurate, reflecting the true understanding of the material.

5.2.3 Teaching and Learning Resources Appropriate for Effective Integration

The third objective of the study was to establish the effects of teaching and learning resources appropriate for effective integration on the academic performance of learners with hearing impairments in public primary schools. Based on the findings, the study concluded that the use of different resources, for instance, visual and tactile learning materials, interactive technology, significantly enhances understanding, improves engagement, and learning outcomes of those learners.

The study established that Collaboration with external resources (for example, audiologists, specialized programs) provided additional support and strengthened

learning outcomes. With appropriate teaching and resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers.

Further, the study established that strong parental involvement in the learning process contributes positively to the academic performance of hearing-impaired learners and that collaboration with external resources (for example, audiologists, specialized programs) provided additional support and strengthened learning outcomes and finally the study established that with appropriate teaching and learning resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers.

5.2.4 Instructional Strategies used to Teach Learners with Hearing Impairment

The fourth objective of the study was to establish instructional strategies used to teach learners with hearing impairments in an integrated setting in public primary schools.

Additionally, the study established that the use of clear and uncluttered visual aids (pictures, diagrams, graphs) enhances learning for learners and the Collaboration of frequent integration of multimedia resources (videos, animations). Moreover, the study established that provision of varied learning materials and activities to cater for different learning styles and individualized learning plans tailored to the specific needs of each learner, and finally, the study concluded that use of multiple assessment methods, including visual and non-verbal approaches, is more effective in teaching learners with hearing impairment.

5.3 Conclusions of the Study

This study investigated the integration strategies and their effectiveness on the academic performance of learners with hearing impairment in public primary schools in Turkana County, Kenya. It was intended to establish whether the use of various

integration strategies has a significant influence on the academic performance of learners with hearing impairment in Public primary Schools.

5.3.1 Academic Performance of Learners with Hearing Impairment

The first research objective of the study specifically sought to evaluate the academic performance of learners with hearing impairment in an integrated setting. Based on the key findings of the study, it was concluded that learners with hearing impairment in Turkana County, Kenya, benefit from a range of supportive measures that significantly contribute to their academic achievement. The results reveal that these learners feel confident participating in classroom discussions and that hearing aids effectively facilitate their understanding of the teacher's lessons. Additionally, learners feel supported by both their classmates and teachers in overcoming challenges related to their hearing impairment. The presence of qualified sign language interpreters is also recognized as an important factor in improving lesson comprehension, and the pace of instruction is viewed as adequate for learners to grasp the material.

5.3.2 Different Teaching Strategies

The second objective sought to assess the influence of the use of different teaching strategies on academic performance in the County. Based on the key findings, it can be concluded that various teaching strategies significantly influence the academic performance of learners with hearing impairments in public primary schools.

5.3.3 Teaching and Learning Resources Appropriate for Integration

The third research objective of the study established the effects of teaching and learning resources appropriate for effective integration on academic performance. Based on the key findings, it was concluded that the use of visual aids such as pictures, diagrams, realia, and charts improves learners' understanding of the content. The study further

concluded that Interactive learning tools and technology, including videos, apps, and simulations, are viewed as enhancing learners' engagement and learning. It can also be concluded that appropriate teaching and learning resources play a crucial role in the academic performance of learners with hearing impairment.

5.3.4 Instructional Strategies Used to Teach Learners with Hearing Impairment

The fourth research objective sought to establish instructional strategies used to teach learners with hearing impairment. It was concluded that working in small groups or with a partner is seen as beneficial for learners to learn from others and clarify their understanding, while self-paced activities provide opportunities for independent learning. The study also concluded that the use of cued speech and effective note-taking strategies by teachers is also recognized as methods that facilitate better comprehension and recall.

Finally, the study's findings indicate that various instructional strategies are effective in teaching learners with hearing impairments in integrated settings. The regular use of facial expressions and gestures, as well as the implementation of alternative and augmentative communication (AAC) systems, further supports effective teaching. Encouragement of peer tutoring and collaborative learning activities is seen as beneficial for both academic and social development, while the formation of diverse working groups with hearing and deaf learners promotes inclusivity.

5.4 Recommendations of the Study

Based on the findings and conclusions of this study, it was recommended that;

Encourage the creation of a supportive classroom environment that fosters the active involvement of learners with hearing impairments in discussions. Schools should prioritize the availability and effective use of hearing aids, ensuring they contribute

significantly to the students' understanding of lessons. Additionally, the provision of qualified sign language interpreters should be prioritized to further enhance comprehension and participation.

Emphasize the implementation of diverse teaching strategies, such as visual aids, interactive learning tools, and small group activities. Educators should continue to use effective methods like cued speech, guidance in note-taking, and varied teaching materials to cater to the specific needs of learners with hearing impairments. This approach helps ensure a more inclusive and engaging learning experience.

Maintain fairness in assessments and provide regular, constructive feedback to students. This ensures that the evaluation process accurately reflects the students' understanding and allows for continuous improvement. A conducive classroom environment, coupled with fair assessments and feedback, contributes significantly to the overall academic success of learners with hearing impairments.

5.5 Suggestions for Further Study

The researcher invites fellow researchers to conduct similar studies in Turkana County, Kenya, so as to provide a broader understanding of the effectiveness of integration strategies (teaching and learning resources, teaching and instructional strategies used to teach learners) on the academic performance of learners with hearing impairment in Public primary Schools.

The study recommends that:

1. Explore and compare the academic performance and experiences of students with hearing impairments across different educational settings, such as mainstream public schools, specialized schools, and inclusive classrooms. This

comparative analysis can highlight the effectiveness of various approaches and interventions.

2. Undertake qualitative studies, including in-depth interviews and focus group discussions, to gather broad perspectives from students, teachers, and parents. Understanding the lived experiences and challenges faced by individuals with hearing impairments can inform targeted interventions for improving academic outcomes.
3. Investigate the specific impact of various assistive technologies, such as captioning software, assistive listening devices, and communication apps, on the academic performance of students with hearing impairments. Assess how these technologies contribute to a more inclusive learning environment.
4. Evaluate the effectiveness of teacher training programs in equipping educators with the necessary skills to support students with hearing impairments. Explore the correlation between teacher training, instructional strategies, and academic outcomes for these students.

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APPENDICES

Appendix I: Questionnaire For Teachers

I am a student undertaking a master's degree in educational administration. In order to complete this program, I am required to research on **“INTEGRATION STRATEGIES AND ITS EFFECTIVENESS ON ACADEMIC PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENT IN PUBLIC PRIMARY SCHOOLS IN TURKANA COUNTY, KENYA.”** Therefore, I humbly request for your participation to fill the questionnaire below, do not indicate your name. Your honest response will be very useful for the success of this study. Kindly answer all questions in all the sections by filling in the blank spaces at the end of each question or statement or simply put a tick (✓) where appropriate.

Part A: Background information

1. Gender: Male [] Female []

2. Indicate your age

18- 24 years []

25- 31 years []

32- 38 years []

39- 45 years []

46 years and above []

3. What is your highest academic level?

Certificate []

Diploma []

1st Degree []

Masters []

PhD []

Other (specify)

4. How many years have you taught since training?

Below 5 years []

5-9 years []

10-14 years []

15-19 years []

20-24 years []

Above 25 years []

Section B: Achievement of learners with hearing impairment

The following statements are about Achievement of learners with hearing impairment.

Please tick the response which match your opinion. Key: 1=(SD)- Strongly disagree, 2=(D)- Disagree, 3=(UD)-Undecided, 4=(A)- Agree, 5=(SA)- Strongly agree).

Item	Statement	SA	A	UD	D	SD
1.	Learners feel confident participating in classroom discussions.					
2.	The hearing aids effectively help learners to understand the teacher's lessons.					
3.	The classroom environment is conducive for learning as a hearing-impaired pupil.					
4.	Teachers effectively use visual aids and alternative communication methods in their lessons to enhance academic performance					
5.	Learners feel supported by their classmates and teachers in overcoming challenges related to their hearing impairment.					
6.	The availability of qualified sign language interpreters in the school improves their understanding of lessons.					
7.	The pace of instruction in class is conducive and allows learners to grasp the material adequately.					
8.	Learners feel motivated and engaged in learning activities the same as their hearing peers.					
9.	Academic performance reflects the true potential and effort given their hearing impairment.					
10.	Learners believe they have access to the same opportunities and resources for learning as their hearing peers.					

Section C: Influence of different teaching strategies on academic performance of learners with hearing impairments.

The following statements are about influence of different teaching strategies on academic performance of learners with hearing impairments in public primary schools. Please tick the response which matches your opinion. Key: 1=(SD)- Strongly disagree, 2=(D)- Disagree, 3=(UD)-Undecided, 4=(A)- Agree, 5=(SA)- Strongly agree).

Statement	SA	A	UD	D	SD
1. The use of visual aids (pictures, diagrams, charts) improved learners understanding of the content.					
2. Interactive learning tools and technology (videos, apps, simulations) enhanced learners' engagement and learning.					
3. Working in small groups or with a partner helped learners learn from others and clarify their understanding.					
4. Learners are given opportunities to learn independently through self-paced activities.					
5. The teacher's use of cued speech (visual cues to support spoken language) made it easier for learners to follow the lesson.					
6. The teacher provides guidance and support for effective notetaking, which boosted learners' comprehension and recall.					
7. The teacher uses different teaching materials to cater for learner's individual learning needs and style.					
8. Learners received regular and encouraging feedback from the teacher, which motivated them to learn and improve.					
9. The classroom environment is conducive to communication, with minimal distractions and good access to the teacher.					
10. The assessments used are fair and accurate, reflecting the true understanding of the material.					

Section D: Effects of Teaching and Learning Resources Appropriate for Effective Integration on Academic Performance of Learners with Hearing Impairments

The following statements are about effects of teaching and learning resources appropriate for effective integration on academic performance of learners with hearing impairments. Please tick the response which matches your opinion. *Key: 1=(SD)- Strongly disagree, 2=(D)- Disagree, 3=(UD)-Undecided, 4=(A)- Agree, 5=(SA)- Strongly agree).*

Statement	SA	A	UD	D	SD
1. Special needs teachers are effective in teaching methods for hearing-impaired learners.					
2. Available visual and tactile learning materials significantly enhance understanding for hearing-impaired learners.					
3. Interactive technology (for example, assistive listening devices, captioning software) improves engagement and learning outcomes.					
4. Regular use of sign language, gestures, and clear facial expressions facilitates effective communication.					
5. Personalized learning plans and differentiated instruction cater to the specific needs and learning styles of hearing-impaired learners.					
6. Opportunities for collaborative learning within inclusive classrooms promote social and academic success for hearing-impaired learners.					
7. Accessible classrooms with reduced noise levels and optimized acoustics support optimal learning for hearing-impaired learners.					
8. Strong parental involvement in the learning process contributes positively to the academic performance of hearing-impaired learners.					
9. Collaboration with external resources (for example, audiologists, specialized programs) provides additional support and strengthens learning outcomes.					
10. With appropriate teaching and resources, hearing-impaired learners can achieve similar academic performance levels as their hearing peers.					

Section E: Instructional Strategies Used to Teach Learners with Hearing Impairments in An Integrated Setting in Public Primary Schools

The following statements are about instructional strategies used to teach learners with hearing impairments in an integrated setting in public primary schools. Please tick the response which matches your opinion. *Key: 1=(SD)- Strongly disagree, 2=(D)- Disagree, 3=(UD)-Undecided, 4=(A)- Agree, 5=(SA)- Strongly agree).*

Instructional Strategy	SA	A	UD	D	SD
1. Use of clear and uncluttered visual aids (pictures, diagrams, graphs) enhance learning for learners.					
2. Frequent integration of multimedia resources (videos, animations)					
3. Clear and concise verbal communication with slow, exaggerated speech					
4. Regular use of facial expressions and gestures					
5. Implementation of alternative and augmentative communication (AAC) systems					
6. Encouragement of peer tutoring and collaborative learning activities					
7. Formation of diverse working groups with hearing and deaf learners					
8. Provision of varied learning materials and activities to cater for different learning styles					
9. Individualized learning plans tailored to the specific needs of each learner					
10. Use of multiple assessment methods, including visual and non-verbal approaches					

Appendix II: Interview Schedule For Head Teachers

- i. What are the achievements of learners with hearing Impairment in your Institution?
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.....
- ii. How can you rate the performance of the learners with hearing impairment compared with the normal learners?
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.....
- iii. In your own opinion suggest ways in which the performance of learners with hearing impairment can be improved in an integrated setting.
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.....
.....
- iv. What strategies has your institution established and employed to ensure effective Academic Performance of learners with hearing impairment
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.....
.....
- v. From your own observation, have those strategies yielded good performance?
.....
.....
.....
.....
- vi. How have use of appropriate resources and materials improved performance among learners with hearing impairment?
.....
.....
.....
.....

- vii. Which material and resources are lacking in your institution that would have improved the performance of learners with hearing impairment in integrated setting.

.....
.....
.....
.....

- viii. What is the teacher's perspective on the use of Kenyan sign language in teaching learners with hearing impairments in your institution

.....
.....
.....
.....

Appendix III: University Letter



MOI UNIVERSITY
Office of the Dean School of Education

Tel. Eldoret (053) 43001-8/43620
Fax No. (053) 43047

P.O. Box 3900
Eldoret, Kenya

REF: EDU/PGA/1002/19

DATE: 9th January, 2024

THE EXECUTIVE SECRETARY

National Council for Science and Technology
Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH PERMIT IN RESPECT OF ACHWA
ELIZABETH NAKOEL - EDU/PGA/1002/19

The above named is a 2nd year Master of Education Student at Moi University, School of Education, Department of Educational Management & Policy Studies.

It is required of her M.Ed studies to conduct a research project and produce a research report. Her research topic is entitled:

“Assessment of Effectiveness of Integration Strategies on Academic Performance of Learners with Hearing Impairment in Public Primary Schools in Turkana County, Kenya.”

Any assistance given to enable her conduct research successfully will be highly appreciated.

Yours faithfully,

PROF. ANNE S. KISILU
DEAN, SCHOOL OF EDUCATION



(ISO 9001:2015 Certified Institution)

Appendix IV: Research Permit From Nacosti

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 142291	Date of Issue: 18/January/2024
RESEARCH LICENSE	
	
This is to Certify that Ms. ACHIWA ELIZABETH NAKOEL of Moi University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Turkana on the topic: ASSESSMENT OF EFFECTIVENESS OF INTEGRATION STRATEGIES ON ACADEMIC PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENT IN PUBLIC PRIMARY SCHOOLS IN TURKANA COUNTY, KENYA for the period ending : 18/January/2025.	
License No: NACOSTI/P/24/32518	
Applicant Identification Number 142291	<i>Walter</i>
Director General	NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	
See overleaf for conditions	

Appendix V: Research Permit From County Commissioner



**OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION**

Telegraphic address "COMMISSIONER" LODWAR
TURKANA COUNTY Telex:

COUNTY COMMISSIONER Telephone: LODWAR

Fax: P.O BOX 1-30500

LODWAR.

REF: ADM.15/29 VOL.111 (143)

19TH JULY, 2024.

DEPUTY COUNTY COMMISSIONER

TURKANA COUNTY

RE: RESEARCH AUTHORIZATION: MS. ACHWA ELIZABETH NAKOEL

LICENCE NO: NACOSTI/P/24/32518

The above mentioned person is a student from Moi University and has been authorized to carry out research on "ASSESSMENT OF EFFECTIVENESS OF INTERGRATION STRATEGIES, ON ACADEMIC PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENT IN PUBLIC PRIMARY SCHOOLS IN TURKANA COUNTY, KENYA". The research period ends on 18th January, 2025.

Any assistance accorded to her will be appreciated.



PATRICK O. O. O.
FOR: COUNTY COMMISSIONER

TURKANA COUNTY

Appendix VI: Research Permit From Ministry Of Education

MINISTRY OF EDUCATION

Telegram "Elimu" Lodwar
Telephone: +2540710990748

OFFICE OF



TURKANA
P.O BOX 16-30500

COUNTY

EDUCATION

Fax No.....

LODWAR

Email: elizabethachwa@gmail.com

19th JULY, 2024

RE: TC/CONF./ED.12/1/VOL.111/248

ALL DEPUTY COMMISSIONERS

TURKANA COUNTY

RE: RESEARCH AUTHORIZATION: MS. ACHWA ELIZABETH NAKOEL LICENCE NO:

NACOSTI/P/24/32518.

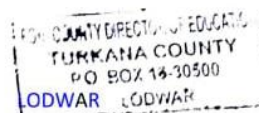
This is to authorize the above-named researcher to carry out research on assessment of effectiveness of integration strategies on academic performance of learners with hearing impairment in public primary schools on Turkana county Kenya. As for the letter reference no. NACOSTI/P/32518 Dated 18th January, 2024 from the national commission for Science Technology and innovation the research period ends on 18th January 2025.

Any assistance accorded to her will be highly appreciated

Thanks in advance

tpu

MR. HENRY A. LUBANGA



COUNTY DIRECTOR OF EDUCATION

TURKANA COUNTY

CC.

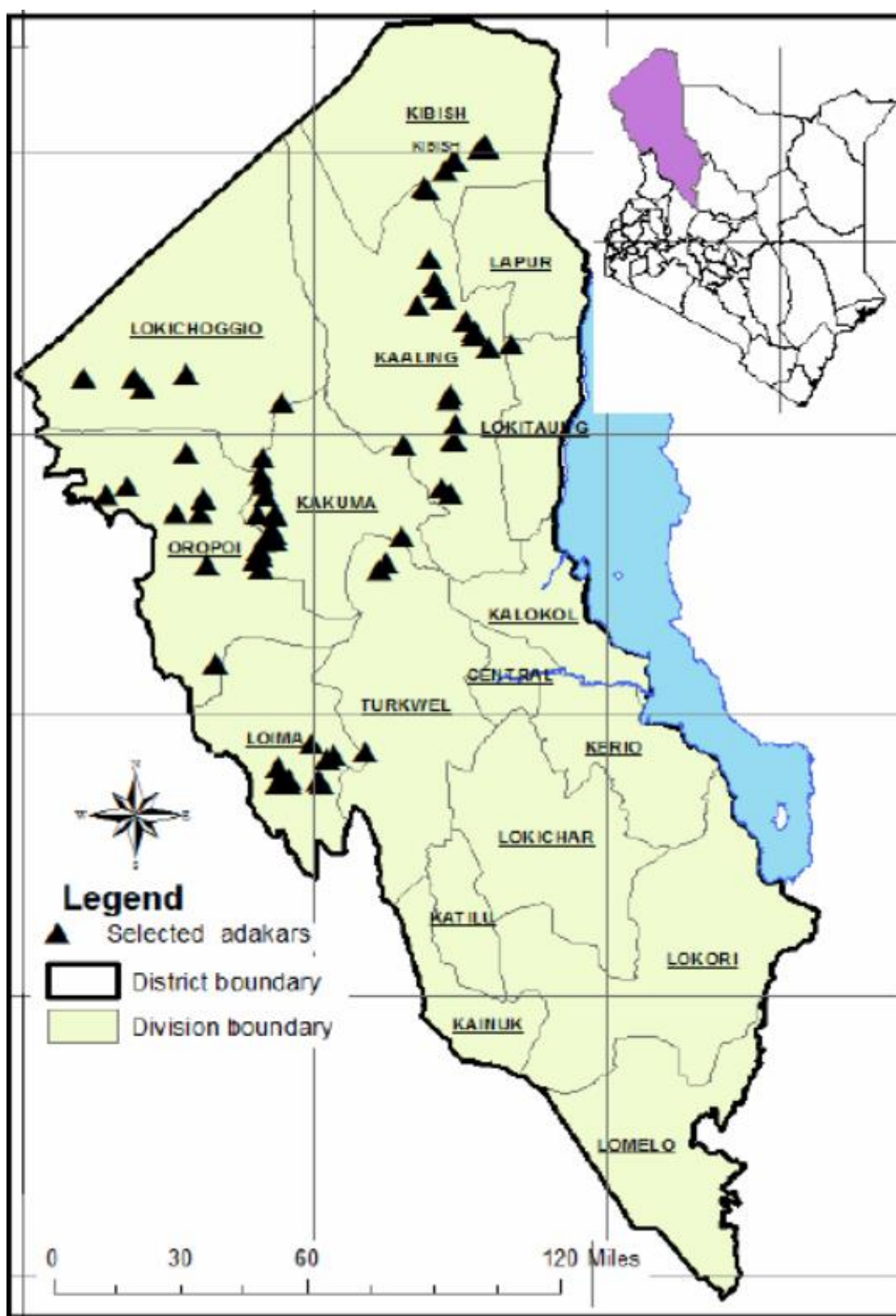
1. THE COUNTY COMMISSIONER

TURKANA COUNTY

2. ALL DEPUTY COUNTY COMMISSIONERS

TURKANA COUNTY

Appendix VII: Map Of Turkana County



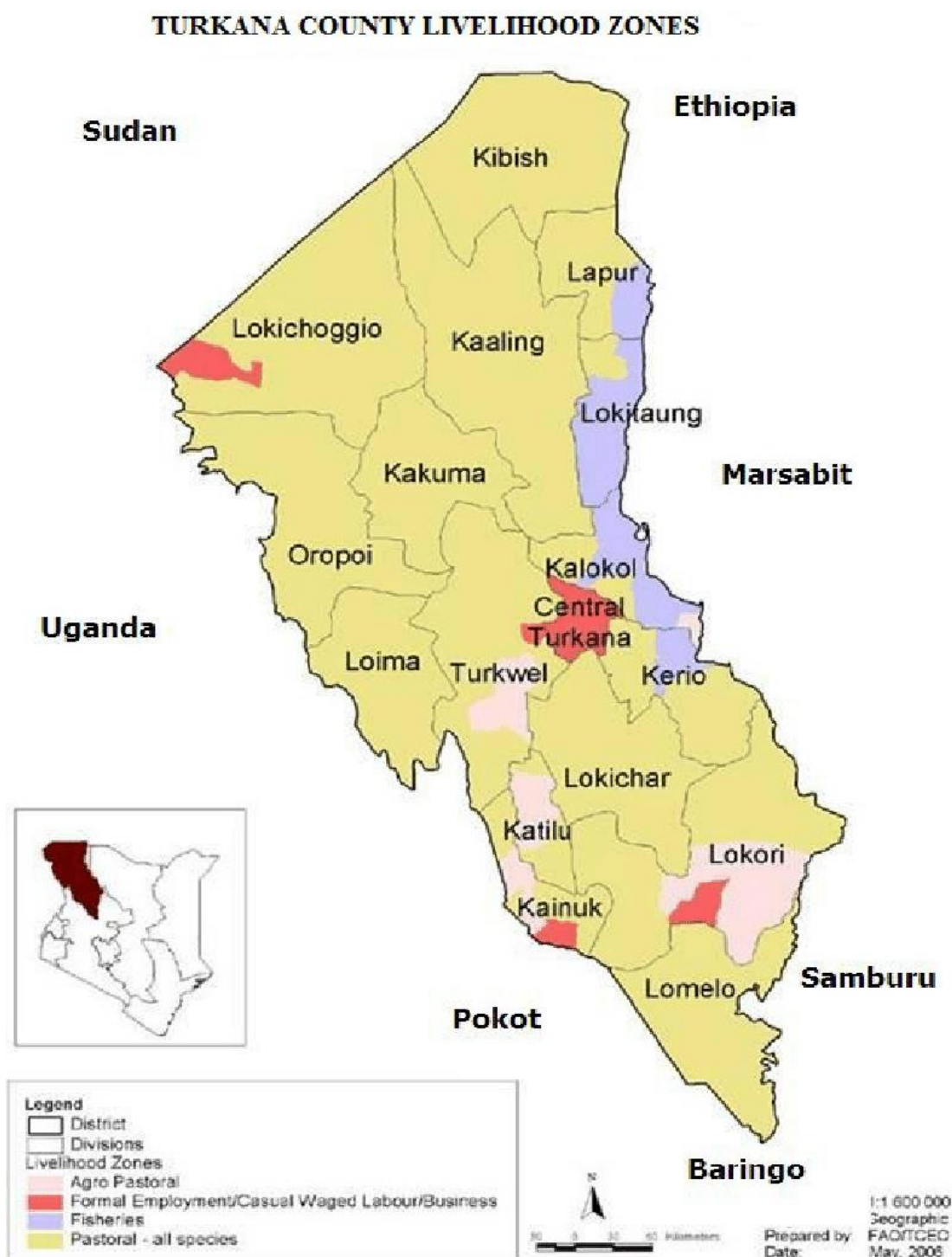


Figure 3. Map of Turkana County FAO (2006)

Appendix VIII: Plagiarism Awareness Certificate



ISO 9001:2019 Certified Institution

THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

This certificate is awarded to

ACHWA ELIZABETH NAKOEL

EDU/PGA/1002/19

In recognition for passing the University's plagiarism

Awareness test for Thesis entitled: **INTEGRATION STRATEGIES AND ITS EFFECTIVENESS ON ACADEMIC PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENT IN PUBLIC PRIMARY SCHOOLS IN TURKANA COUNTY, KENYA** with similarity index of 4% and striving to maintain academic integrity.

Word count:27235

Awarded by

Prof. Anne Syomwene Kisilu

CERM-ESA Project Leader Date: 03/09/2025