Assessment of the Accessibility Level to Available Learning Resources and Their Influence on Performance of Learners with Hearing Impairment in Selected Public Junior Secondary Schools in Kisii, Kenya

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ABSTRACT

The purpose of this study was to investigate dynamics of accessibility to learning resources and their impact on performance among learners with hearing impairment, with special reference to selected public Junior Secondary Schools in Kisii County, Kenya. The study was guided by the Universal Design for Learning (UDL) framework which emphasizes varied methods of engagement, representation, and expression to accommodate diverse learner needs in learning environments. The contention of the study is that despite government efforts to enhance education for learners with hearing impairments (HI) in Kenya, their academic performance remains a significant concern. Many existing studies tend to overlook the unique needs of HI learners, focusing instead on other forms of disability. The study adopted a descriptive research design involving 188 participants. Data collection methods included questionnaires, interviews, and direct observations. Analysis was conducted using both descriptive and inferential statistics. Findings revealed that access to learning resources, particularly reading materials, plays a critical role in improving academic outcomes for HI learners. However, accessibility was hindered by challenges such as frequent power outages, limited availability of textbooks and specialized resources, out-dated materials, and inadequate maintenance of existing tools. To address these barriers, the study recommends investing in reliable electricity infrastructure, regularly updating learning materials, and providing resources in formats accessible to learners with HI. Additionally, equipping schools with adequate reading and writing materials, as well as digital tools such as laptops and tablets, is essential to support technology assisted and inclusive learning. The study also calls for broader research across all educational levels to better inform policy development and strengthen inclusive education initiatives in Kenya.

Keywords: Kenya, Learning resources; Accessibility level; learning resources; performance

INTRODUCTION

Education is a vital human right and a foundation for both economic and social growth in any country in the world. As per Konga and Cheboi (2021), education generates human capital, which is essential for enhancing productivity. To maximize its impact, education must be accessible to everyone, regardless of their abilities. Learning resources are essential in this process, forming the foundation on which the success of any educational system is established (Barrett et al., 2019). Furthermore, transformative power of education cannot be fully realized without adequate learning resources. These resources serve as the pillars for effective teaching and learning, particularly in providing learners with the tools and opportunities they need to acquire knowledge, develop skills, and attain their full potential (Puspitarini & Hanif, 2019).

As per Puspitarini and Hanif (2019), learning resources play an important role in influencing learners' performance, and their impact has been profoundly clear in a variety of countries worldwide. Access to high-quality resources in educational environments, such as textbooks, digital tools, laboratory equipment, assistive

technologies and well-trained educators, has repeatedly been linked to better academic achievements and overall learner success (Kwon, 2021).

Mwita et al. (2022) argues that for the successful implementation of any curriculum, learning resources are very fundamental. Access to teaching and learning resources increases school effectiveness and helps learners achieve academic success. They authors further state that teaching requires the usage of instructional tools which not only captures learners' attention, but also allow them to discover their own interests and skills.

Majority of the countries, including the United States, France, Finland, Hong Kong, Germany, Australia, and the United Kingdom, have invested in learning resources to boost learners' academic achievement (Al-Samarrai et al, 2019). Bischoff and Owens' (2019) study explains that in the United States, substantial funding gaps between affluent and underprivileged communities often lead to unequal resource distribution in schools. Public schools that rely significantly on local property taxes face inequities, and technological gaps. This is particularly noticeable in rural or low-income regions with limited access to high-speed internet and advanced technology.

The study by Chepkonga (2017) indicates that African countries continue to face challenges of inadequate classrooms, chairs, and desks. Adebayo et al., (2020) noted that the South African government has made strides in supporting education by establishing a budget to ensure adequate resource allocation to schools. Despite the government budget for resource allocation, Jojo (2019) discovered that schools in South Africa continue to face challenges of insufficient important materials resulting in poor performance in mathematics. Kiru and Cooc (2018) argue that teachers and learners in South Africa's rural areas also struggle with unstable electricity, poor infrastructure, insufficient school supplies, and shortage of experts including psychologists, occupational therapists, and speech therapists.

The Rwandan government has worked to improve the educational environment for learners with HI. Key initiatives include integrating HI teachers fluent in sign language, providing accessible teaching materials, and training educators to better support learners with HI. Furthermore, community and parental engagement activities have been implemented to foster a supportive learning environment at both school and home. The government also intends to build 20 additional resource rooms for learners with HI, which will provide specialized support such as visual aids for learners with HI (Sibomana et al., 2025).

The studies by Kwizera (2021) argue that despite these efforts, key learning resources continue to be in short supply. There is currently a shortage of certified Rwandan Sign Language teachers, which limits efficient classroom communication. Furthermore, many schools lack adequate instructional aids, assistive devices, and well-equipped resource centers designed to meet the needs of learners with HI. The inadequate utilization of current resources due to a lack of teacher training exacerbates the problem. Furthermore, inadequate infrastructure, including soundproof classrooms and accessible learning spaces, continues to impede academic growth of these learners

The study by Kimaro and Kileo (2023) explains that in Tanzania, the education of learners with HI is influenced by the availability and adequacy of various resources. The country has built specialist schools for learners with HI, with the goal of providing individualized educational support. Furthermore, the government has implemented inclusive education policies to incorporate these learners into mainstream schools, so fostering equal learning opportunities. However, significant obstacles remain. There is a substantial shortage of specialist teaching and learning tools, such as visual alarms, science equipment, and specially designed computers.

Kenya adopted various education systems since its independence in 1963 aimed at generating skilled workers. These education systems include 7-4-2-3, 8-4-4 and currently competency-based curriculum which is characterized as 2-6-3-3-3 (Ogula, 2023). This has been occasioned by many young people who are unemployed thus education reforms remain the way to reach its goals (Mwang'ombe, 2021). The study conducted by Mwita and Onyango (2022) explains that CBC requires that adequate resources be made available to learners with HI in order to improve their academic performance.

Owino et al., (2022) in their study expound that teaching learners with disabilities necessitates careful consideration and adaptation of learning resources to meet their specific learning needs. These resources should be designed to include more visual and tactile elements, such as using visual aids, graphics, diagrams, and hands-on materials to convey information (DeMatthews et al., 2020). Additionally, video and audio materials with closed captions are crucial because they provide a text-based version of the spoken content, allowing individuals with HI to access the information. Furthermore, learning resources may also include adaptive technology such as hearing aids or cochlear implants, to assist learners in accessing auditory information (Mapepa & Magano 2018). Therefore, exploring the accessibility of learning resources and the academic achievement of learners with HI holds considerable significance, as it directly speaks to the inclusive educational requirements of this distinct group of learners.

Statement of Problem

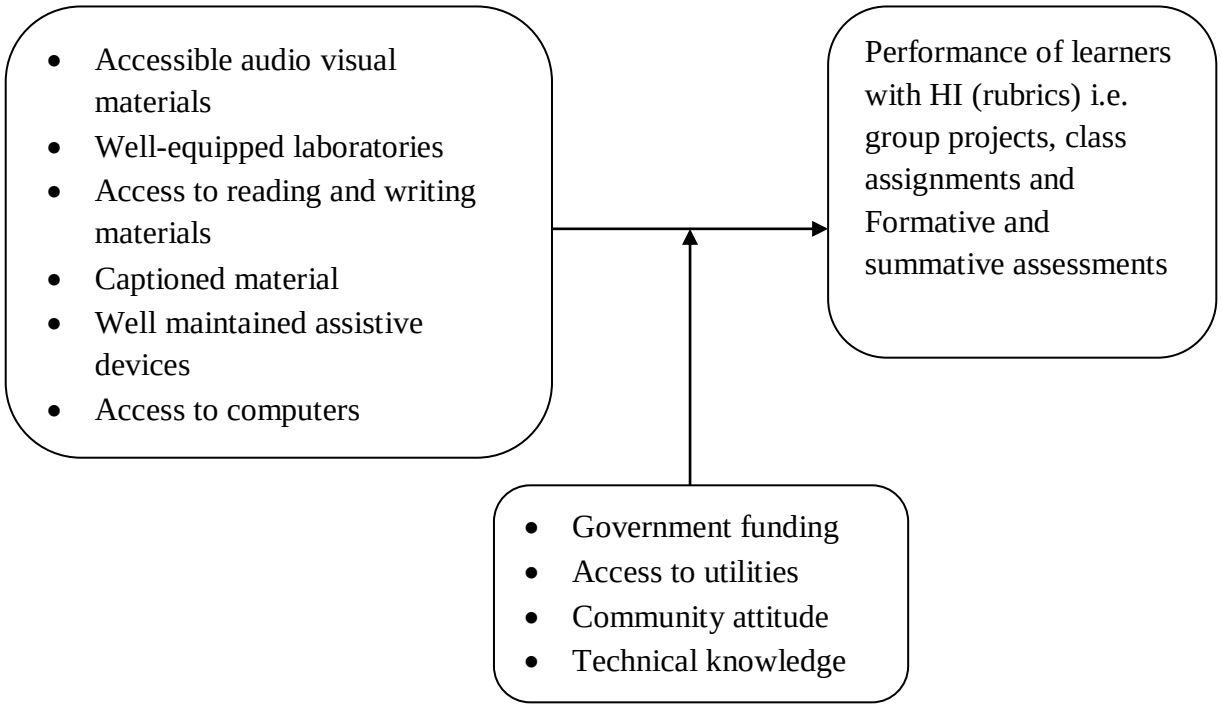
Kenyan government's initiative through legislative frameworks in attempts to promote education for learners with HI has not significantly impacted their academic performance. Various policies and laws aligned to the Constitution of Kenya, 2010 as well as the Persons with Disabilities Act of 2003 were established to ensure equitable education, but their influence is yet to be realized. The persistent poor performance of learners with HI highlights a critical need for tailored learning resources and support. Existing studies have focused on learners with other disabilities, leaving a gap in addressing the specific needs of those with HI. Furthermore, issues such as the accessibility of specialized learning resources remain largely unaddressed. This study aimed at uncovering the challenges that learners with HI face in accessing suitable resources and how these challenges impact their performance.

Conceptual framework

This framework examines how the availability and actual accessibility of learning resources influence the performance of learners with HI. Resources such as audio-visual materials, well-equipped laboratories and captioned content and assistive devices play a vital role in supporting these learners' education. However, simply having these resources is not enough; they must be functional, well-maintained and tailored to meet the specific needs of learners with HI. In many cases, schools possess such resources, but they may be outdated, poorly maintained or not adapted in ways that make them truly accessible to the learners. Therefore, accessibility involves more than just the presence of resources; it requires that learners can effectively use them.

Several other factors also influence whether these resources can make a meaningful difference. Government funding, access to utilities such as electricity and the internet, community attitudes and the technical knowledge of teachers significantly affect how well these resources are utilized. For example, insufficient funding can prevent schools from repairing assistive devices or providing adequate training for teachers. Negative community attitudes may lead to social exclusion or reduced motivation among learners. Moreover, if teachers lack the necessary skills to operate and integrate assistive technologies, these tools will remain underutilized.

Together, these elements impact the performance of learners with HI, measured through group projects, assignments and assessments. When resources are accessible and supported by an enabling environment, learners are more likely to perform well. Conversely, when barriers such as inadequate maintenance, lack of support, or untrained staff exist, the effectiveness of learning resources diminishes, hindering learner achievement. Thus, improving educational outcomes for learners with HI requires not only providing the necessary resources but also ensuring they are accessible, functional, and supported within the school and community.



REVIEW OF RELATED LITERATURE

The accessibility of learning resources is essential for learners with HI under the Competency-Based Curriculum (CBC). Inaccessible resources often result in learners performing below their potential, thereby widening the achievement gap. This study reviewed existing literature to assess the level of accessibility of learning resources available to learners with HI in selected schools in Kisii County, Kenya.
Kigotho (2016) explains that Kenya's education system has made strides in accommodating diverse needs, including those of students with disabilities. However, challenges persist in ensuring equitable access to learning resources for individuals with HI. The availability of specialized educational resources such as sign language interpreters and captioned videos are limited. Although some institutions and organizations are implementing initiatives to enhance accessibility, the overall situation remain constrained by insufficient resources and support networks for learners.

Yerbury and Burridge (2019) discovered that the major barrier to access to learning resources in Australian Universities was lack of social capital. The current research attempts to bridge this gap by exploring financial options that improve resource accessibility and sustainability.

Murithi et al. (2022) investigated the impact of assistive technologies on the performance of students with HI in primary schools in Meru and Tharaka Nithi Counties-Kenya. The findings highlighted several factors contributing to the low adoption of listening assistive technology, including the absence of listening devices, lack of skills to use them, inadequate equipment maintenance, and limited support from the government, families, schools, and the community. The current study intends to cross-examine the listed gaps during the research especially on the lack of skills to adequately exploit the existing resources.

Theoretical Framework

Several theoretical models have been proposed to explain the accessibility level to available learning resources among learners with HI. The study used Universal Design for Learning (UDL) to explain an educational framework that aims to promote accessible and inclusive learning environments for all learners (Boysen, 2021). UDL emphasizes the importance of offering a diversity of expression, engagement and representation mechanisms to meet learners' different learning requirements and preferences. The concept recognizes that learners have various strengths, talents, and origins, and that curriculum and educational practices must be adaptable and attentive to these differences (Beyene et al., 2023).

According to Wang and Lange (2023), by including UDL in a competency-based curriculum, teachers can ensure that knowledge is provided in numerous modalities, including visual, aural, and tactile, for children with special needs. These promote varied learning styles and let learners to better access and absorb knowledge. UDL recognizes that learners with special needs may require additional accommodations and support in order to participate and thrive in their education. Using the Universal Design for learning paradigm to study the influence of learning resources on the performance of learners with HI ensures that educational resources are inclusive, flexible, accessible and responsive to all learners' different needs. It promotes the use of assistive technologies, adaptable assessment methodologies, and personalized supports to improve learners' performance and learning.

MATERIALS AND METHODS

Research design

To analyze the impact of learning resources on the performance of learners with HI; the study adopted mixed mode approach, integrating both qualitative and quantitative techniques, to gain a comprehensive knowledge on how accessibility of learning resources and the performance of learners with HI are related. The quantitative component involved numerical data collection and measurement, such as test scores and attendance records, to analyze trends and relationships. The qualitative component included descriptive data collection through methods like interviews and use of questionnaires aiming to provide contextual insights into the learners' experiences and perceptions.

A descriptive research design was used to explore this relationship. According to Siedlecki (2022), descriptive research describes events, people, and conditions as they naturally occur without manipulating variables. This design is well-suited for identifying trends, generating hypotheses, and providing a snapshot of the educational phenomena under study. By combining both qualitative and quantitative data, the research aimed at offering a holistic view of how learning resources impact the performance of learners with HI.

Target population

This study was conducted in selected Junior Secondary schools for HI learners in Kisii, Kenya. The learners and teachers population involved in the education of HI learners in Kisii County was approximately 285 (Owino, 2020). However, over the past three and a half years, the population has grown to approximately 356, comprising 237 male and 119 female (Source: KNBS, 2022 – Kisii County Government Integrated Development Plan 2023-2027). These school-going children, aged between 5 and 14 years, are in a critical developmental stage where foundational academic, social, and emotional skills are being established. Therefore, learning resources are essential in enhancing their academic journey, providing the necessary support to nurture their growth and potential during these formative years. Yamane (1967) formula determines the sample size ensuring accuracy balance and manageability, ensuring that the results are representative of this population.

Sampling technique and sample size

This research employed purposive sampling to distinguish between public and private institutions, focusing specifically on public schools due to their role in representing the broader public education system for learners with (HI). Four public schools were chosen to take part in the study, as they formed a representative sample of the support structures and educational practices that are available to learners with HI in the government-funded education system.

Purposive sampling was used to select four head teachers, who play critical roles in resource management and administrative oversight within schools. Their perspective was critical for understanding the institutional support and challenges faced by HI learners. Basic random sampling technique was used to select 188 respondents' learners from the chosen schools. This approach ensured that every teacher and learner in the

chosen schools was given an equal chance of participating in the study, thereby increasing sample representativeness and reducing selection bias.

Research Instruments

The study consisted of three types of research instruments which included questionnaire, interview and observation. Informed consent was obtained from each participant, and to protect their anonymity, respondents were not required to provide their names on any research instruments. Further, content validity was done to test the validity of the research instruments, the researcher systematically reviewed the items and questions in the instrument to ensure they comprehensively covered the study's subject matter. The review focused on relevance, clarity, and comprehensiveness.

The researcher consulted the supervisor and a team of experts, who provided feedback that, guided the refinement of the research instruments. This process involved modifying and redesigning the questions to enhance their relevance and accuracy. Difficult questions were restructured using simpler language to improve clarity, while ambiguous ones that could cause confusion were either revised or eliminated. Additionally, new questions were incorporated where necessary to ensure the instrument effectively captured all essential aspects of the study. The refined instruments underwent a final review before being administered.

Statistical Methods

Data analysis in this study entailed carefully reviewing, organizing, interpreting, and presenting both qualitative and quantitative data in order to derive significant findings. Data were obtained via interviews, questionnaires, and observation to ensure a thorough grasp of the research problem (Praveena & Sasikumar, 2021). The analysis method began with data cleaning, which detected and corrected inconsistencies and flaws to improve accuracy. Quantitative data was analyzed using SPSS program to discover trends, connections, and patterns, while qualitative data were evaluated thematically to capture essential viewpoints and insights. The results were then organized and presented in tabular format, allowing for simple comparison, interpretation, and readability. This analytical technique ensured that the study's findings were both reliable and instructive, resulting in a well-supported conclusion based on empirical data.

RESULTS

Gender distribution of the teachers

The study analyzed the gender distribution among teachers handling learners with (HI). Table 4.1 displays the gender of the teachers.

Table 4. 1: Frequency distribution on gender of the teachers

Gender	Frequency	%
Male	10	41.67
Female	14	58.33
Total	24	100.00

Source: Field Data, 2025

From the findings the female teachers constituted the majority, accounting for 58.33% (14 out of 24) of the total respondents. In comparison, male teachers represent 41.67% (10 out of 24). This distribution highlights a higher representation of female teachers in this specialized area of education. This balance suggested that both male and female teachers contributed diverse perspectives to the learning environment, which could have positively impacted the support provided to HI learners**.**

Gender distribution of the learners with HI

The study analyzed the gender distribution of learners to assess enrollment trends and identify any disparities in access to education among boys and girls. The gender distribution is shown in table 4.2.

Table 4. 2: Frequency distribution of the gender of learners

Gender	Frequency	%
Male	63	55.26
Female	51	44.74
Total	**114**	**100.00**

Source: Field Data, 2025

The findings revealed that male learners represent the majority, accounting for 55.26% (63 out of 114) of the total, while female learners make up 44.74% (51 out of 114). This suggests a slightly higher proportion of male learners in grades 7 and 8 within the sample.
This data provides comprehensions into gender dynamics in education for learners in these grades. Further analysis could explore whether this distribution is consistent across different regions or schools, or whether there are specific factors influencing the gender split in the learning environment for these grades.

Assessment of access levels to available learning resources for learners with HI

This objective aimed at examining the extent to which available learning resources were accessible to learners HI, identifying potential barriers and areas for improvement to increase inclusive education.

Response by learners on the accessibility of the available learning resources

Learners were asked to give feedback on the accessibility of the available learning resources. Table 4:3 shows the accessibility level of the available learning resources.

Table 4. 3: Accessibility level of the available learning resources

Mean	1.05
Median	1.00
Std. Deviation	.224
Variance	.050
Skewness	4.061
Std. Error of Skewness	.226

Source: Field Data, 2025

The findings revealed a mean accessibility score of 1.05, a median of 1.00, and a skewness of 4.061, indicating significant challenges in accessing learning resources for learners with HI. The low mean and median suggest that most learners face severe limitations in obtaining essential educational materials. The small difference between the mean and median implies that while accessibility is generally poor, a few learners may have slightly better access, though not enough to impact the overall distribution. The highly positive skewness confirms that most responses are concentrated at the lower part of the scale, with only a few reporting better accessibility.

There are several factors which explain these findings such as limited availability of specialized learning resources; such as sign language videos, poorly equipped laboratories power outage and inadequate computers which restrict access. The study by Murithi (2022) argue that inadequate institutional support, including insufficient policies, funding, and assistive technologies like hearing aids or speech-to-text software, further worsens the situation.

The minimal use of these assistive devices confirms the findings of (Akungu, 2014), which attributed the minimal use of facilities to poor equipment in the laboratory and computer rooms thus teachers finding them of little relevance in improving the mode of instruction.

The study by Aruldas et al., (2023) explains that technological and infrastructural barriers, such as poor internet access, outdated equipment and classrooms with poor acoustics, also limit accessibility. Socio-economic challenges further compound the issue, as learners from low-income backgrounds may struggle to afford assistive devices and discrimination which leads to inadequate support.

Policy and implementation gaps mean that even where inclusive education policies exist, weak execution and monitoring prevent them from benefiting learners with HI. These factors collectively contribute to the low accessibility of the learning resources, highlighting the urgent need for targeted interventions to improve learning conditions for learners with HI.

Teacher's response on the accessibility of learning resources

Findings from the questionnaire revealed several challenges affecting the accessibility and utilization of learning resources for learners with HI. A significant concern raised by teachers was the poor state of digital learning resources. Many respondents indicated that computers in their schools were either broken or outdated, limiting their effectiveness in supporting learners with HI. One respondent noted, *"Computers were broken down, and some of the resources were never updated."* Furthermore, the limited number of available digital devices posed an additional challenge, as some schools had only a few functional laptops and tablets, making it difficult for all learners to access them. As one teacher stated, *"The school has a few laptops, which makes it difficult for learners to access."*

Another major issue highlighted was the impact of frequent power outages on the usability of digital learning tools. Schools that relied on electricity to power assistive technologies, such as computers and multimedia learning aids, often experienced disruptions due to unreliable power supply. This further restricted learners' ability to engage with technology-based educational resources.

In addition to technological barriers, the inadequacy of reading and writing materials was identified as a significant limitation. Many teachers reported that the number of available textbooks and specialized learning materials was insufficient to meet the needs of all learners. The study by Musa (2022) argues that inadequate learning resources such as the use of technology and other audiovisual resources hinders learners' ability to engage fully with the curriculum, affecting their literacy development and overall performance.

Head teacher's response on the accessibility of the learning resources

Interviews with head teachers revealed significant challenges in both the accessibility and utilization of learning resources for learners' with HI. Many head teachers reported that essential resources were either unavailable or not effectively used, despite being present in some schools. One head teacher stated, *"Most of the resources are not accessible, and even when available, they are not always effectively used."* This highlights an issue where the presence of resources does not necessarily translate into meaningful support for learners with HI.

The study by Alam, (2023) explains the major factor contributing to these challenges is the shortage of trained personnel. Many schools lack teachers proficient in sign language or trained in using assistive learning technologies, making it difficult to implement inclusive teaching strategies. Additionally, there is limited awareness among teachers regarding the importance of specialized learning materials, which often leads to their neglect or improper use in classroom instruction.

Infrastructure challenges further hinder the accessibility of learning resources. Some head teachers reported that schools lacked basic facilities such as electricity, which is essential for running assistive technologies like speech-to-text software, computers, and digital learning tools. The absence of well-equipped laboratories also

limits hands-on learning experiences for learners, making it difficult for them to fully engage with subjects that require practical application. Furthermore, schools often struggle with inadequate essential equipment, such as hearing aids, visual aids, and specialized teaching resources tailored for learners with HI.

The findings affirms the study by Kamau (2015) which explains that lack of power significantly hinders digital learning opportunities, limiting the educational experience for learners with HI.

Relationship between accessibility of learning resources and performance

The logistic regression analysis was conducted to examine the influence of various learning resource on learner's performance. The variables considered in the analysis included reading materials, hearing aids, captions, textbooks, sign language, real-life instructional aids and visual learning aids. Among these, three variables emerged as statistically significant predictors of learner's performance. Table 4.4 shows the results.

Table 4.4: Regression analysis of accessibility of learning resources and performance

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Reading materials	1.512	0.601	6.336	1	0.012	4.538
Hearing aids	-0.235	0.758	0.096	1	0.757	0.790
Captions	0.789	0.652	10.121	1	0.001	2.206
Textbooks	-2.234	0.980	5.272	1	0.021	0.107
Sign language	0.431	0.536	3.241	1	0.072	1.539
Realia materials	-1.720	0.800	4.717	1	0.030	0.179
Visual aids	-0.600	0.697	2.830	1	0.092	0.548
Constant	1.723	1.522	1.237	1	0.267	5.604

Source: Field Data, 2025

From the results reading materials showed a strong positive relationship with performance, with a p-value of 0.012 and an odds ratio (Exp (B)) of 4.538. This suggests that learners who had access to reading materials were more than four times as likely to perform well compared to learners without access to such resources. This finding highlights the critical role that accessible and diverse reading materials play in supporting learners learning outcomes, especially for learners with HI who may require tailored resources (Mwangi, 2015).

Further, textbooks were found to have a significant negative impact on performance, with a p-value of 0.021 and Exp (B) = 0.107. This indicates that learners that were lacking access to textbooks were significantly less likely to perform well. The negative association suggests that textbooks, being fundamental learning resources are essential for academic success and inadequate of these resources can severely hinder learner's performance. These findings resonate with Otieno, (2024) who also identified reading materials as pivotal in enhancing academic success among learners with HI in Kisumu County

Additionally, the presence of real-life instructional aids was also a significant negative predictor of performance, with a p-value of 0.030 and Exp (B) = 0.179. This implies that learners who did not have access to practical and hands-on learning resources were less likely to perform well. The study by Lehloa, (2019) explains that the use of real-life aids is particularly important in enhancing the learning experience by providing learners with tangible ways to understand and apply theoretical concepts.

Conversely, other variables such as hearing aids, captions, sign language and visual learning aids did not show statistically significant relationships with performance in this analysis. While these supports are critical for creating inclusive educational environments, their effects on learners' performance were not strong enough in this sample to be deemed statistically significant. However, the study by Magongwa, (2024) in South Africa

found sign language availability to be the strongest determinant suggesting regional differences in the implementation of inclusive education. A divergence emerged with the work of Kofi & Owusu (2018) in Ghana, where infrastructure was less of a barrier due to strong government investment. This suggests that policy support plays a critical role in mitigating resource-related challenges.

DISCUSSION

The findings of this study indicate persistent and multifaceted barriers to the accessibility of learning resources for learners with (HI), despite national and institutional efforts to promote inclusive education. Learners' responses showed an extremely low level of resource accessibility, as reflected in the mean score (M = 1.05), median (1.00), and the highly positive skewness (4.061). These statistics suggest that most learners encounter significant difficulties in accessing essential educational materials, with very few reporting even moderate access.

Teachers pointed to broken or out-dated computers, limited availability of devices, and frequent power outages factors that severely limit the use of technology-based supports. These challenges resonate with previous research (Musa, 2022; Kamau, 2015), which emphasizes the pivotal role of infrastructure in the effective delivery of inclusive education.

However, while these structural limitations are important, they are part of a larger ecosystem of constraints. Head teachers particularly highlighted the shortage of trained personnel, including teachers fluent in sign language and those capable of operating assistive technologies. This recommends that even where resources exist, the inadequacy of human capacity impedes their optimal use. As Alam (2023) notes, accessibility must be understood not only as the presence of materials, but as the integration of those materials into pedagogical practices in ways that benefit learners with disabilities.

The regression analysis further revealed a statistically significant association between the accessibility of specific learning resources and learners' performance. Access to reading materials ($p = 0.040$) was positively associated with better performance outcomes, highlighting the foundational importance of these resources in supporting comprehension and curriculum engagement. Similarly, the inadequacy of textbooks ($p = 0.048$) and real-life instructional aids ($p = 0.019$) emerged as strong negative predictors of performance. These findings align with previous research (Mwangi, 2015; Lehloa, 2019), which emphasizes the value of both traditional and experiential learning tools in supporting learners with disabilities.

Variables such as hearing aids, sign language, captions and visual learning aids did not show statistically significant relationships with performance. While these are commonly regarded as essential supports in inclusive settings, their lack of statistical significance in this context warrants closer analysis. One possible explanation is the inconsistent availability or use of these tools. For instance, sign language might be present in policy but not effectively practiced in the classroom due to teacher shortages or lack of training. Similarly, hearing aids may be available but poorly maintained, underused, or incompatible with the learners' needs. These findings suggest that the mere presence of assistive devices is insufficient; their functionality, appropriateness and integration into daily instruction are equally critical.

Moreover, the discussion of policy implementation reveals a critical disconnect between inclusive education policy and practice. Although inclusive education frameworks exist in many schools, weak implementation, lack of monitoring and limited teacher support reduce their effectiveness. This is consistent with the findings of Murithi (2022), who identifies policy-practice gaps as a major barrier to educational equity for learners with disabilities.

CONCLUSION

The findings show that assistive learning resources play an important role in shaping performance for learners with HI. Reading materials were especially influential, with access to diverse and structured resources strongly linked to better learner outcomes. Textbooks also proved essential, as learners without them performed poorly.

Similarly, inadequacy of real-life instructional aids that promote practical and hands-on learning was connected to lower performance, highlighting their value in deepening understanding.

However, assistive devices and certain technologies such computers have not yielded the expected improvements in performance due to factors like improper usage, power outage, outdated learning resources, poor resource maintenance, lack of training or insufficient integration into teaching practices. The government policies and regulations, while impactful, have shown some negative effects, which calls for a reevaluation of educational policies to better cater to the needs of learners with HI.

In conclusion, the performance of learners with HI can significantly improve with focused efforts to address these barriers. By enhancing access to quality resources, improving teacher preparedness and better integrating assistive technologies, a more supportive educational environment can be created.

RECOMMENDATIONS

1. Schools must ensure that adequate resources, mainly reading materials, textbooks and assistive devices, are available to learners with HI. These resources should be regularly updated and accessible in formats that cater to the specific needs of learners.
2. Schools should be equipped with more laptops and tablets to ensure that all learners have adequate access to technology-assisted learning.
3. Reliable power supply solutions, such as backup generators or solar energy, should be considered to address frequent power outages and this will enhance accessibility.

Policy recommendations

Review and refine policies to ensure that they support the educational needs of Learners with HI. This includes allocating resources for specialized teaching and learning resources such as; well-equipped laboratories, assistive technologies, and infrastructure that supports an inclusive environment.

Recommendations for further research

Future studies should aim to include a broader range of learners with HI across various educational levels to gain a more comprehensive understanding of the educational needs at each stage of learning. This would help create a continuum of support systems that can be adapted and scaled across different educational contexts.
Future studies should explore how cultural and linguistic differences impact the learning outcomes of HI learners. In particular, research could focus on the effectiveness of sign language in different cultural contexts, and how variations in language and communication styles affect performance and social inclusion.

Research could focus on the social and emotional factors affecting learners with HI. Peer relationships and emotional well-being including family involvement influence learner success and would provide valuable insights into creating a more holistic approach to education for students with disabilities.

Research should investigate how contextual factors, such as the availability of resources, the quality of implementation, and the frequency of usage, affect the performance of learners with HI. It would be useful to understand how these factors interact in diverse settings (urban vs. rural schools, for example) and how they might affect the effectiveness of assistive tools.

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