



## BARRIERS TO ACCESSING AND EFFECTIVELY USING ASSISTIVE TECHNOLOGY AMONG LEARNERS WITH LEARNING DISABILITIES IN THE BRAEBURN INTERNATIONAL SCHOOLS

Isaac Yamo<sup>1i</sup>,

Jessina Muthee<sup>2</sup>

Department of Early Childhood and Special Needs Education,  
Kenyatta University,  
Kenya

### Abstract:

Learners with specific learning disabilities (SLDs) often experience significant deficits in executive functioning skills, which can be improved through effective use of assistive technology (AT). Despite having adequate resources and a relatively large population of learners with SLDs, the utilization of assistive technology at the Braeburn International Schools remains below optimal levels. This study, therefore, explored the challenges and barriers faced by learners with SLDs in these schools in accessing and using AT effectively. The study employed a descriptive design, utilizing both qualitative and quantitative methods. The sample included six principals and 34 Special Needs Education teachers. Data collection instruments included interviews with principals and questionnaires for teachers. Quantitative data were analyzed descriptively, while qualitative data were analyzed thematically. Various barriers to effective AT utilization were identified, including inadequate training, limited access to resources, technological challenges, and learner resistance. The Braeburn International Schools should develop policies to ensure equitable access to AT tools for all teachers, not only those in SNE, and to extend the availability of these tools to all learners, not just those with SLDs.

**Keywords:** assistive technology, barriers, Braeburn Schools, use/utilisation, learning disabilities

### 1. Background of the Study

Learners with executive functioning impairments face unique challenges that significantly impact their academic performance and overall educational experience. Executive functioning encompasses cognitive processes crucial for effective learning, including attention regulation, impulse control, and organization (Diamond, 2013).

---

<sup>i</sup> Correspondence: email [yamoisaac@gmail.com](mailto:yamoisaac@gmail.com)

Learners with strong executive functions can effectively plan and manage their activities or tasks, resist distractions, and think critically, leading to enhanced academic and long-term growth. Conversely, learners with impaired executive functions are often deficient in these skills, leading to difficulties in various aspects of their academic life (Diamond, 2013; Barkley, 2012). They may have trouble organizing their thoughts and materials, managing their time effectively, and following instructions, all of which can significantly hinder their ability to succeed in the classroom (Diamond, 2013; Barkley, 2012).

Executive functioning impairments may result from a range of underlying neurological conditions, among them specific learning disabilities (SLDs). According to some estimates, approximately 5% of school-aged children have a learning disability, the most common being dyslexia, dysgraphia, and dyscalculia (Dominguez & Carugno, 2023). Learning disabilities do not always cause executive functioning impairments, but a co-occurrence between the two is a common phenomenon, with many individuals with SLDs also experiencing significant deficits in various executive functions, such as self-regulation, planning, or flexibility between tasks (Khan & Lal, 2023). When executive functioning impairments co-occur with an SLD, their effects on an individual's learning experiences can be highly pronounced (Khan & Lal, 2023). Under such circumstances, educators must devise highly innovative strategies to mitigate the consequences.

An area that educators could explore to enrich the experiences of such learners is the use of assistive technology (AT). Assistive technology comprises devices, tools/equipment, applications, or any product that maintains, improves, or increases the functional capabilities of individuals with a disability. When deployed effectively, AT allows people with disabilities to function and participate more fully in life's activities. However, in many places, learners with SLDs may encounter a wide range of obstacles that limit their access to and effective utilization of AT. In the United States, for example, the introduction and strengthening of various federal laws, such as the Individuals with Disabilities Education Act, have facilitated the integration of AT in schools. Bould et al. (2023) found that AT positively influences executive functioning skills, particularly attention, working memory, and self-regulation, among learners with SLDs. However, in many places, inconsistent implementation and inadequate teacher training remain persistent challenges.

Comparable patterns have been reported in other developed countries, such as Canada, where there has been proactive adoption of AT to support children with SLDs (Vaccarella et al., 2024). Yet, Vaccarella et al. (2024) reported that despite large-scale advancements in AT adoption in schools, there are gaps in accessibility and affordability of these devices, especially in rural and underserved communities. Similarly, Sweden's inclusive education policies have facilitated the widespread use of assistive technology in schools. Gunnars (2023) showed that digital technologies, including AT, significantly enhance executive functioning and academic outcomes for children with SLDs in the country. However, there is a need for continuous professional development for teachers in Sweden to keep up with technological advancements and their application in educational settings. Elsewhere, Grimmer et al. (2023) reported that the UK has made

considerable strides in integrating AT within its educational framework. They also found that AT has a positive impact on the executive functioning of children with learning disabilities, improving their cognitive processes and academic performance. Variabilities in AT provision across different regions and the necessity for comprehensive training for both students and teachers compromise effective implementation.

The above studies were conducted in developed countries with high resources and where the government has invested heavily in education. Hence, their findings may not fully mirror the state in developing countries, such as Kenya, where the current study was conducted. They, however, show that even in developed economies, AT use for learners with SLDs is not at optimal levels. Indeed, similar gaps have been reported in low and middle-income countries, but with higher magnitudes. For instance, in India, the adoption of AT is still in its nascent stages. According to Kundu et al. (2020), while there are positive perceptions of AT for children with disabilities among teachers in India, infrastructural constraints, limited knowledge, and inadequate professional support pose significant barriers. The study pointed out the need for more robust policies and programs to support the integration of AT in schools. Nevertheless, the authors did not report on the use of these technologies to enhance the executive functioning skills of children with learning disabilities, which was the focus of the current study.

According to some estimates, about 8% of school-going children and youths in Africa have an SLD (Abosi, 2007). Quality education for individuals with disabilities in the continent is hampered by a range of factors, including inadequately resourced schools, poverty, shortages of experienced and highly trained teachers, and stigma due to traditional beliefs surrounding disabilities (Cortese et al., 2015). Data on the use of AT to improve the executive function of learners with SLDs in Africa is scarce. Visser et al. (2020) reported that in South Africa, the use of AT in education is gradually increasing. They also noted that AT has improved executive functioning of learners with SLDs, but there are significant disparities in access to these technologies between urban and rural areas. The study highlights the need for equitable distribution of resources and better teacher training programs. Still, their sample included learners with attention-deficit/hyperactivity disorder, not learning disabilities.

Similarly, Egypt has recognized the potential of AT to enhance educational outcomes for children with SLDs. Manuel (2020) reported a positive influence of AT on executive functioning skills. However, challenges such as limited access to up-to-date technologies and insufficient training for educators hinder the effective use of AT. According to Chukwuemeka and Samaila (2020), in Nigeria, the lack of funding, inadequate infrastructure, and low awareness among educators and parents are major barriers to AT utilization. Elsewhere, in Tanzania, the use of AT is still developing. Ngonyani and Mnyanyi (2021) noted that AT has the potential to improve the experiences of learners with SLDs, but the lack of resources, training, and awareness is a significant challenge. The study calls for more government support and investment in educational technology. Uganda is also in the early stages of integrating AT into its educational system. According to Tuliwangula and Tumwesigye (2025), while there is evidence of

positive impacts of AT on executive functioning among learners, inadequate teacher training and lack of technological infrastructure need to be addressed. Neither of the studies investigated how educators or parents perceive the use of AT to improve the executive functioning skills of learners with learning disabilities.

In Kenya, access to quality education by learners with disabilities is anchored by several legal and policy frameworks, such as the *National Special Needs Education Policy Framework* (2009), the *2018 Sector Policy for Learners and Trainees with Disabilities*, and the *Persons with Disabilities Act 202*. Both frameworks emphasize the need for such individuals to be provided with need-appropriate AT to improve their access to education and enhance their learning experiences. A 2020 task force appointed by the Ministry of Education (MOE) found that AT contributed to assistive learning for learners who used it. However, not all had optimal access to AT. The task force also underscored that high equipment cost continues to be a hindrance in the provision of AT (MOE, 2020). Mwangi (2025) also established that despite the positive effect of AT on the executive functioning of learners with SLDs, there were notable gaps and disparities in resource allocation and the need for more comprehensive training programs for teachers. Both studies had limited geographical and contextual scopes.

In summary, while AT has been shown globally to enhance executive functioning and academic performance in learners with disabilities, challenges persist in accessibility, affordability, teacher training, and policy implementation. In the Kenyan context, these barriers are compounded by limited research on AT's role in supporting executive functioning in learners with learning disabilities. Besides, the experiences of learners with disabilities in Kenya vary considerably across regions and contexts, emphasizing the need for context-specific analyses. To this end, the Braeburn International Schools provide a unique setting for examining AT utilization to improve the executive functioning of learners with SLDs.

The Braeburn Schools in Kenya boast of nurturing personal learner growth by providing a supportive environment to meet the needs of a diverse range of learner categories (Braeburn Schools, 2024). These diverse categories include those with various forms of SLDs. In efforts to meet this goal, the schools are committed to exploiting various technologies and technological applications to enrich learner experiences. Their policy includes teaching students about information and communication technology, focusing on how to use different technological applications to solve real-life problems (Braeburn Schools, 2024). As a group of international schools, the Braeburn has adequate infrastructure and support systems for implementing AT. Despite having adequate infrastructure and a policy framework supportive of ICT adoption, the use of AT, specifically for learners with SLDs, remains below expected levels. To date, no study has examined how the schools use AT to improve learners' executive functioning skills. This paper is part of a study conducted on the influence of AT on executive functioning performance of learners with SLDs in Braeburn International Schools, Kenya. The objective was to explore the challenges and barriers hindering learners with SLDs in these

schools from accessing and effectively using AT technology to improve their executive functioning skills.

## 2. Literature Review

Vygotsky's (1934) Sociocultural Theory serves as a valuable framework for understanding the influence of AT on the executive functioning performance of learners with SLDs. Proposed in the early 20th century, the theory emphasizes the critical role of social interaction and cultural tools in cognitive development. One of its key concepts is the Zone of Proximal Development (ZPD) or the range of tasks a learner can accomplish with the guidance of more knowledgeable individuals but cannot yet perform independently (Vygotsky, 1934). In learning settings, the role of the teacher is, therefore, to create activities and opportunities that challenge learners appropriately and aid them to perform tasks within their ZPD, ultimately leading to enhanced executive functioning (Shabani, 2016). In this regard, AT may be conceptualized as a tool that operates within this zone, enabling learners with SLDs to undertake tasks that would otherwise exceed their capabilities and enhance their executive functioning skills.

Another important concept is scaffolding, which refers to the temporary support provided by the more knowledgeable other or technological tools to help learners attain a higher level of understanding and skill (Vygotsky, 1934). In this context, AT functions as a scaffold tool, offering the necessary assistance for enhancing the executive functioning skills of learners with learning disabilities. Through this support, learners can gradually achieve greater independence. Vygotsky also emphasized the role of cultural tools in cognitive development, positing that tools, including technological instruments, are crucial for shaping learning experiences (Vygotsky, 1934). Assistive technology can be viewed as a cultural tool that fosters cognitive growth. By integrating these tools into educational settings, the potential for improved learning outcomes increases. To attain this state, teachers should deploy the most appropriate and effective AT according to individual learner needs. Yet, evidence from across the globe suggests that teachers are not utilizing these tools fully to maximize the learning experiences of learners with SLDs.

For instance, Fteiha et al. (2024) examined the barriers to implementing AT in classrooms for students with learning disabilities in the UAE. Using a descriptive approach, the researchers distributed questionnaires to a sample of educators. The findings indicated that while many educators recognized the potential of AT to enrich the learning experiences of such learners, significant barriers included a lack of training, inadequate resources, and limited administrative support. The study revealed a gap in understanding the long-term impact of these barriers on student outcomes, suggesting that more research is needed to evaluate how overcoming these challenges can enhance executive functioning skills among learners. A major strength of the study was its use of multiple techniques to examine the topic from several perspectives. Still, it was

conducted in a highly developed country, and the findings may not mirror the state of AT implementation in a developing country like Kenya.

In Macedonia, Jakovchevska and Jovanova (2024) explored parents' perspectives of the influence of AT on the experiences of children with disabilities in mainstream education. Through a survey of 72 parents of learners with disabilities, the researchers found that while parents recognized the benefits of AT, many struggled with affordability, accessibility, and inadequate training or understanding of how to effectively integrate these tools into their children's daily routines. This study underscored the intersection of home and school support, particularly in how parental involvement could be enhanced to improve the effectiveness of AT. Still, the findings were based on parents' responses only, without integrating views from teachers and learners. In contrast, the current study included perspectives of teachers and learners in a Kenyan school. Integrating views from multiple respondent categories may provide a more comprehensive picture of the barriers to successful AT utilization.

Addis et al. (2016) conducted a systematic review of the barriers and obstacles to effective utilization of AT to support learners with disabilities. Their review included 18 primary studies from 12 sub-Saharan African countries. The findings revealed that in many cases, learners and parents resisted AT due to cultural attitudes toward disability and technology. The authors emphasized the need for culturally sensitive training programs that consider local beliefs and practices in the integration of technology. Nevertheless, they investigated the challenges among individuals with disabilities, not those specific learners with SLDs. There is a need for additional studies targeting this population, considering their unique educational needs.

Dimiri and Sunday (2025) examined teacher perceptions of the availability and use of AT for learners with disabilities in Nigeria. They administered a structured questionnaire to a sample of over 191 teachers from primary schools in Lagos State. From their findings, many teachers lacked sufficient training and faced challenges related to funding and resource allocation. The authors also highlighted the lack of contextualized training programs for educators, suggesting that customized professional development could enhance the use of AT in Nigerian schools. Although the authors integrated views from teachers and school administrators, they did not include learners in their sample. The current study included views from learners as well to provide a broader understanding of the state of AT implementation in a Kenyan school.

In Kenya, Mwangi et al. (2024) assessed the use of digital technologies to enrich the experiences of learners with intellectual disabilities. Through questionnaires and interviews with a total of 130 girls with disabilities and their teachers, the study found that the adoption of AT was hampered by critical resource shortages. The study highlighted the need to equip schools with vital technologies to enrich the learning experiences of learners with disabilities. Still, it assessed the general use of technologies, not specifically to enhance executive functions. Additionally, it focused on girls only, not the general learner population. The current study investigated the barriers to successful AT utilization in Kenyan international schools.

In brief, learners with SLDs encounter multiple challenges in accessing and effectively using AT. The various documented barriers are those related to resource availability, teacher training, administrative support, and parent awareness. These challenges are particularly pronounced in developing countries. No study has investigated the challenges and barriers faced by learners with SLDs at the Braeburn International Schools in accessing and effectively using AT to improve their executive functioning skills, a gap that the current study intends to bridge.

### **3. Materials and Methods**

#### **3.1 Research Design**

The study followed a descriptive design, which, according to Creswell (2022), entails providing a thorough snapshot of a situation or phenomenon. The design was deemed most appropriate for providing a detailed analysis of the experiences of learners with SLDs at the Braeburn International Schools, especially the challenges that hindered them from fully utilising AT to improve their executive functioning. Both quantitative and qualitative techniques were employed to provide a holistic understanding and in-depth analysis of these barriers (Creswell, 2022).

#### **3.2 Setting**

The Braeburn International Schools are 11 co-educational schools offering British/International curricula to thousands of students in three East African countries, namely Kenya, Tanzania, and Rwanda. Learners in these schools are from diverse backgrounds and have diverse characteristics. Many of these exhibit symptoms consistent with various SLDs, such as dyslexia, dysgraphia, and dyscalculia. They also have access to a broad range of AT tools used in educational contexts. At the time of the study, the schools had 11 campuses across the three counties. Seven of these were located in Kenya, three in Nairobi City, and the others in Mombasa, Nanyuki, Thika, and Kisumu.

The target population comprised principals and teachers of Special Needs Education (SNE) in Braeburn International Schools in Kenya. Kenya was specifically targeted because it accounted for the highest proportion of all Braeburn schools. Further, the study purposively targeted SNE teachers because, due to their training, they were expected to have detailed, specific insights into the experiences of learners with SLDs and the use of AT in these schools. The seven campuses had 11 principals and 40 SNE teachers. One of the campuses was used for a pilot study and was excluded. The remaining six had nine principals and 34 SNE. One principal from each campus was included for interviews. For campuses with two principals, a simple random process was used to select one of them. All 34 SNE teachers were included. The study intended to

employ quantitative techniques to analyse data from the teachers. Given their small number, including all SNE teachers helped enhance statistical adequacy.

### **3.3 Data Collection and Analysis**

Data collection involved semi-structured interviews with principals and a questionnaire for teachers, and proceeded after clearances from the National Council of Science and Technology and the Kenyatta University Ethics Review Committee. The interview guide had several questions focusing on the executive function performance of learners with SLDs, the use of AT for this population, and the barriers to successful utilization of these resources. All interviews were conducted within the school's premises and, with respondents' permission, were audio-recorded using a smartphone. The recordings were transcribed verbatim, and the content was examined manually for key themes.

The questionnaire for teachers collected data on their experiences in using AT to support learners' executive functioning skills. It included both closed-ended and open-ended questions to provide a comprehensive understanding of teacher perceptions. The questionnaire had sections to generate data on participants' characteristics and challenges/barriers related to the use of these devices. Both instruments were scrutinized by two independent experts for relevance, ease of understanding, interpretability, and the extent to which they captured the research variables. They were pretested during a pilot study conducted in one randomly chosen campus of the Braeburn International Schools. After appropriate adjustments, high content validity scores (validity index > 0.8) (Yusoff, 2019) were obtained for all items. Reliability assessment involved the use of inter-rater and test-retest criteria. Cohen's Kappa ( $\kappa$ ) values above 0.8, indicating high inter-rater agreements, while Pearson's correlation coefficients for test-retest scores were also high (> 0.7). Teachers completed the questionnaire as per instructions. Raw frequencies and percentages were used to quantify the levels of barriers identified by teachers. All statistical analyses were done in SPSS (IBM, v. 30).

### **3.4 Ethical Considerations**

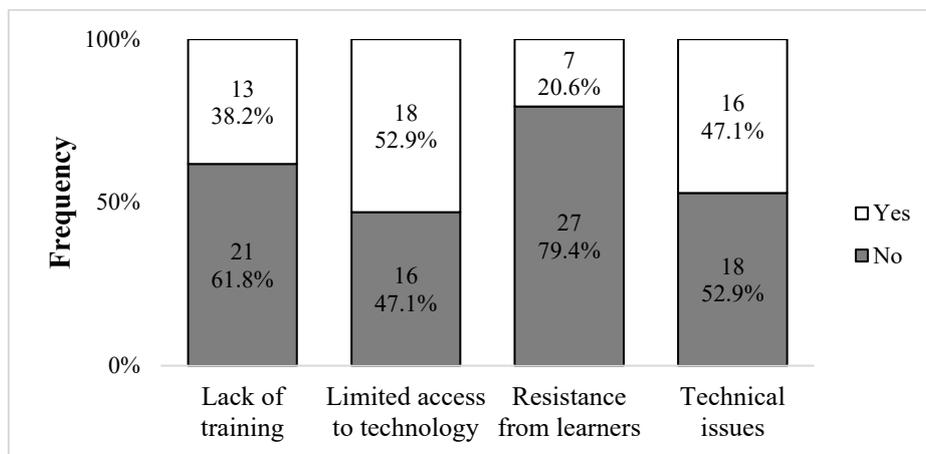
The study adhered to the ethical guidelines of Kenyatta University Graduate School relating to human relations.

## **4. Results and Discussions**

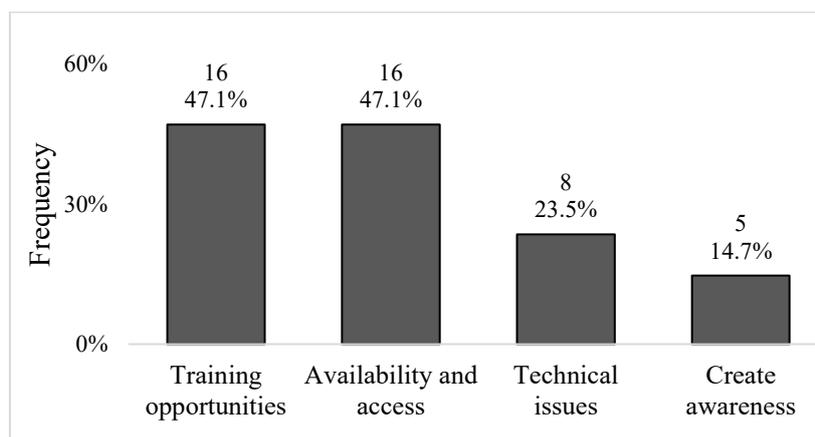
The study explored the challenges faced by learners with learning disabilities in accessing and effectively using AT to improve their executive functioning skills. Data came from teachers and principals. A scrutiny of their responses isolated several obstacles that can be discussed along five broad areas: training, availability and access, technical issues, and resistance from learners.

### **4.1 Training and Development**

Issues with training and professional development emerged repeatedly from both SNE teachers and principals. Teachers were presented with two questions to generate their views on the challenges they faced regarding AT utilization. The first question prompted them to indicate the barriers to effective use of AT for learners with learning disabilities. Specifically, they were asked whether they or learners in their schools encountered issues with teacher training, access to technology, resistance from learners, and technical issues. The second question was an open-ended item that asked them for suggestions or recommendations to improve the utilization of these tools. Their responses to this item were as depicted in Figures 1 and 2.



**Figure 1:** Challenges in Using Assistive Technology. The figure presents both raw frequencies and corresponding percentages in the lower line



**Figure 2:** Recommendations for Increased Use of Assistive Technology. The figure presents both raw frequencies and corresponding percentages in the lower line

In Figure 1, the ‘yes’ category indicates those who identified an item as a major barrier to AT use. For example, over a third (38.2%) indicated that they lacked adequate training on AT use. Similarly, when asked for recommendations for improved AT utilization, 47.1% mentioned the need for the schools to increase training opportunities. The interpretation is that a sizable proportion of teachers at Braeburn International

Schools have inadequate access to training on AT use for learners with learning disabilities. A scrutiny of the responses to open-ended questions and interviews with head teachers identified four specific areas where there were training gaps: how to use AT, current/latest technology, training for all teachers, and training for both teachers and students. Many teachers suggested the need for increased training on how to use AT, Current or latest technologies and how to explore more alternative software. For example, when asked for a suggestion, a teacher stated,

*“There should be more training sessions for teachers on the currently invented assistive devices for efficient implementation. ... There should also be annual training on how to explore more alternative software used for parents/teachers.”* (Teacher, Campus 5)

The above teacher emphasized the need for training that targets “currently invented” technology and “more alternative” applications. Consistent with present findings, past studies have identified inadequate teacher training as among the key obstacles to effective AT utilization (Dimiri & Sunday, 2025; Fteiha et al., 2024). In Sweden, for example, Gunnars (2023) noted that while the country’s inclusive education policies have facilitated the widespread use of digital technologies in schools, there is a need for continuous professional development for teachers to help them keep up with technological advancements and their application in educational settings. The reference to “more alternative” technologies also suggests an overreliance on a few AT types. In other words, while AT tools were available in these schools, they were mostly limited to a few types.

From informal interactions with learners and teachers, the researcher identified four AT types used in these schools: text-to-speech software, speech-to-text software, organizational apps, and visual aids. Of these, the most used technologies were visual aids and text-to-speech software. Speech-to-text software and organizational apps were only moderately used. The current findings suggest that the overreliance on visual aids and text-to-speech software could have been partly due to limited training on other alternatives. Interviews with head teachers also revealed that many teachers in their campuses had no adequate training on assistive technologies. All three interviewees highlighted issues with training as a major barrier to effective AT utilization. One of them, for example, commented,

*“The lack of training for teachers in the effective use of AT hinders the integration of these tools in the classroom.”* (Head Teacher, Campus 1)

Teachers emphasized the need for training programs that include all teachers, not just those specializing in SNE, which, according to some, was currently missing. The teachers provided no particular reasons for including all teachers in training programs for AT use. However, there have been increasing calls for all teachers, including those not specializing in SNE, to be trained in AT (Gunnars, 2023). While AT is often associated

with special education, there is sufficient evidence that all students can benefit from these tools, such as by enhancing access to information and overall learning experiences (Hayes & Bulat, 2017). Besides, training all teachers and learners in AT is a way of increasing inclusivity (Hayes & Bulat, 2017). Such benefits may explain why teachers felt all teachers should be trained in these technologies.

#### **4.2 Availability and Access to Assistive Technology**

Inadequate availability and access to AT emerged as the most recurring obstacle to effective utilization of these tools at Braeburn International Schools. Over half (53%) of the teachers indicated that they or learners with SLDs encountered issues with access to resources (Figure 1). Further, when asked for recommendations for increased implementation of AT, close to half mentioned the need for the management to increase the availability and access to assistive technology (Figure 2). Thus, according to these teachers, the availability and access to AT tools on their campuses were not adequate. Comparable findings were reported by Dimiri and Sunday (2025) and Fteiha et al. (2024), who isolated resource inadequacies as a key barrier to AT utilization for learners with learning disabilities.

Notably, only one principal mentioned issues with resources. The others did not consider resources as a challenge, suggesting that from their perspectives, such tools were either adequate or not a major barrier to AT utilization in their schools. The exact reasons for the discrepancies in their views were not evident in their responses. A scrutiny of teachers' responses to the open-ended question, however, offers some insight into the discrepancy. Teachers highlighted three specific issues related to resource availability: the need for the schools to invest in modern technology, expand access to all learners and teachers, and increase the range of AT tools.

The following responses captured their views on the issue:

*"We need a whole-school policy change that will make all students access Assistive Technology devices provided by the school and make all teachers learn how to use assistive technology, not just special needs teachers."* (Teacher, Campus 1)

*"The school should invest in modern devices frequently. They should also provide access to assistive technology to all teachers, not just special needs. There should be inclusion of all teachers."* (Teacher, Campus 2)

*"There should be more options of Assistive Technology to cater to different learning disabilities, as most only target dyslexia children."* (Teacher, Campus 3)

What stands out from such responses is that while AT tools could have been available in the schools, to many teachers, they did not meet their expectations for at least one of the three factors mentioned. Firstly, the tools were not accessible to all teachers and students. Instead, they were used only for learners with special needs and their

teachers. As stressed previously, while mostly used for learners with special needs, AT tools are highly beneficial for regular learners as well (Gunnars, 2023; Hayes & Bulat, 2017). There is a need for the management of Braeburn International Schools to create policies that allow all teachers and learners in their campuses to have access to AT.

Secondly, the existing AT tools were not consistent with modern trends. As a result, teachers called on the management to “invest in modern devices.” The technology landscape is rapidly changing, and this change comes with new demands (Gunnars, 2023). The implication is that previously useful technologies may not adequately meet today’s demands. Therefore, schools should ensure that they update their technological resources to match the ever-changing learner and teacher demands. From teachers’ responses, however, the AT tools available at Braeburn International Schools are not “modern.” The third issue was about expanding the range of the AT tools. As one teacher stressed, currently, the available tools mostly target learners with dyslexia. The implication is that the needs of learners with other learning disabilities, such as dysgraphia, are not adequately addressed. Creating and fostering a supportive and inclusive educational landscape for learners with learning disabilities requires AT tools that account for their individual needs and differences (Anderson & Marino, 2023).

As a suggestion, one teacher stated,

*“The school should allow students to use and experience mobile-friendly software platforms in both the Apple Store and Google Play to see which best suits them before adopting a particular application.” (Teacher, Campus 3)*

Such an approach could ensure that all learners’ needs regarding AT are catered. Overall, these findings underscore the need for Braeburn International Schools to invest in up-to-date technologies and ensure that resources are accessible to all learners/teachers, while also accounting for all learning disability categories.

### **4.3 Technical Issues**

From Figure 1, about half (47.1%) of teachers mentioned technical issues as a major barrier for them or learners to utilize AT tools effectively. Further, from the open-ended question, about a quarter (23.5%) recommended that the schools address technical issues. Responses to the open-ended questions isolated two technical challenges: issues with maintenance and software updates.

As one of them stated,

*“There should be regular updates of [the] software needed to make Assistive technology function. They should conduct frequent scheduled maintenance and updates of Assistive technology devices.” (Teacher, Campus 2)*

All the principals concurred that technological issues were a major concern in the implementation of AT in the sampled schools. Representing their views on this issue, an interviewee commented,

*“Compatibility of assistive technology and existing school technology is a major problem. We also have issues with the maintenance of devices and software.”* (Head Teacher, Campus 4)

In addition to maintenance and updates, this respondent also highlighted issues with compatibility. Technical issues can be a major barrier to effective AT utilization. For example, in a study conducted in Canada, 45% of students with learning disabilities in grades 7-10 reported encountering technical barriers in their efforts to use AT (Vaccarella et al., 2024). Among the issues highlighted were unreliability (such as malfunctions, slow speed, and unresponsiveness) and incompatibility between the available AT tools and educational materials. The above results call for strategies that the management of Braeburn International Schools could employ to minimize technical barriers to AT use among teachers and learners.

#### **4.4 Resistance from Learners**

About 20% of the teachers indicated that they had encountered learner resistance to the use of AT (Figure 1). A scrutiny of their responses to the open-ended item revealed that this resistance was mostly due to perceived stigmatization, which was, in turn, linked to low awareness of the benefits of AT. As can be seen in Figure 2, 14.7% identified creating awareness as a way of encouraging AT use.

They said,

*“We should encourage learners through guiding and counselling on why using Assistive Technology is helpful to them and not an issue to make them feel stigmatized.”* (Teacher, Campus 3).

*“The management should consider appointing Assistive Technology leads or champions within the school. This will help with sensitization and professional development programs concerning AT.”* (Teacher, Campus 5).

From such responses, it was apparent that some learners who could benefit from AT resisted them. Instead, they considered AT as a tool for discrimination and stigmatization. Consequently, teachers felt that increasing AT awareness could help counter such resistance. Learner resistance and stigmatization also appeared to be key drivers in the push for policies that ensure all learners and teachers use AT, not just those with special needs. Confirming teachers' concerns, all but one head teacher mentioned issues with learner resistance and stigmatization as a key barrier to AT utilization.

In Campus 1, for example, the principal said,

*“Some students may feel embarrassed using Assistive Technology, leading to underuse.”*

Similarly, in Campus 6, the interviewee stressed,

*“Other learners may sometimes resist some devices.”*

Thus, it was evident that learner resistance was a key obstacle to successful AT implementation. These results draw support from similar findings reported elsewhere (Addis et al., 2016; Vaccarella et al., 2024). Vaccarella et al. (2024), for example, observed that a perceived ‘difference from the others’ due to the use of AT makes some students feel embarrassed, feeling that something is wrong with them. Addis et al. (2026) also found that teachers encountered significant resistance both from learners and parents due to cultural attitudes toward disability and AT. There is a need for school-wide policies and interventions aimed at addressing stigmatization and the resulting resistance to AT among learners at Braeburn International Schools.

## **5. Recommendations**

The above findings emphasize the need for AT tools to be accessible and used by all teachers and learners for at least two reasons. Firstly, AT tools are beneficial to all learners irrespective of their disability status. Secondly, ensuring that AT is used by all teachers and students could be a way of combating the stigmatization associated with these tools. Consequently, the management of Braeburn International Schools should consider increasing access to AT tools by all teachers, not only those in SNE. Equally, the management should ensure these tools are accessible to all learners, not only those with SLDs or other special needs. The management of Braeburn International Schools should also ensure that all teachers and learners have regular access to effective training and awareness programs on AT use and the benefits of these tools. Such programs could be instrumental in increasing AT utilization, especially in campuses with only moderate usage levels, as well as combating the stigma associated with these tools.

## **6. Conclusion**

The most salient barriers and challenges to effective AT utilization for learners with learning disorders at Braeburn International Schools are issues related to teacher training, availability and access to technology, technical issues, and learner resistance due to perceived stigmatization. These factors were highlighted by both teachers and head teachers. As long as these issues exist, learners with SLDs in these schools may not fully exploit the available AT resources to enhance their executive functions.

### **Acknowledgements**

The authors wish to express their gratitude to Mathias Otero for his assistance with the data analysis.

### **Creative Commons License Statement**

This research work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0>. To view the complete legal code, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode.en>. Under the terms of this license, members of the community may copy, distribute, and transmit the article, provided that proper, prominent, and unambiguous attribution is given to the authors, and the material is not used for commercial purposes or modified in any way. Reuse is only allowed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

### **About the Author(s)**

**Mr. Isaac Yamo** is a master's (Special Needs Education) finalist at Kenyatta University, Kenya. He holds a bachelor's degree in education from Kenyatta University, Kenya. He currently teaches learners between 7-16 years in an inclusive International School.

**Dr. Jessina Jessica Muthee** is a Senior Lecturer in the Department of Early Childhood and Special Needs Education at Kenyatta University, Kenya. She is a specialist in psychology, with strong expertise in learning disabilities, psychological testing and assessment, and quantitative research methods. She holds a Doctor of Philosophy (PhD) from the University of Kerala, India, and earned both her Master's and Bachelor's degrees from Kenyatta University. Her academic training and professional experience position her as a quantitative research expert with a strong grounding in educational and psychological assessment. Dr. Muthee teaches at both master's and doctoral levels, where she also supervises postgraduate research. She has mentored numerous graduate students and contributed significantly to capacity building in research design, data analysis, and psychometric evaluation. She has published extensively in national and international peer-reviewed journals, contributing to scholarly discourse in education and psychology. Her work is recognized for its rigor, relevance, and impact in advancing inclusive and evidence-based educational practices. Her research interests focus on inclusive education and the psychological foundations of learning and development, with particular emphasis on learning disabilities such as dyscalculia, dyslexia, dysgraphia, and dyspraxia, as well as attention-deficit/hyperactivity disorder (ADHD). She has a strong interest in cognitive psychology and mental health education, alongside research in communication disorders. Her scholarly work also extends to psychometrics

and educational measurement, quantitative research methods, consulting psychology, and abnormal psychology.

ORCID: <https://orcid.org/0000-0002-5666-6018>

## References

- Abosi O, 2007. Educating children with learning disabilities in Africa. *Learning Disabilities Research and Practice*, 22: 196-201. <https://doi.org/10.1111/j.1540-5826.2007.00242.x>
- Addis BM, Britton J, Davies C, 2016. Challenges and barriers to the use and provision of assistive technology in Africa: A Systematic Review. Queen's University. [https://www.resna.org/sites/default/files/conference/2021/InternationallyAppropriateTechnology/90\\_Addis/90\\_Addis.pdf](https://www.resna.org/sites/default/files/conference/2021/InternationallyAppropriateTechnology/90_Addis/90_Addis.pdf). Accessed 14 April 2025
- Anderson K, & Marino MT, 2023. Using technology as a compensatory technique for executive function skill deficits during the coaching process. *Journal of Special Education Technology*, 38: 539-546. <https://doi.org/10.1177/01626434221146765>
- Barkley, R, 2012. *Executive functions: What they are, how they work, and why they evolved*. The Guilford Press, New York, NY, USA.
- Bould E, Tate R, Simpson G, Brusco N, Licciardi L, Callaway L, 2023. Evaluation of the effectiveness of assistive technology for executive function support for people with acquired brain injury: Protocol for single-case experimental designs. *JMIR Research Protocols*, 12: e48503. <https://doi.org/10.2196/48503>
- Braeburn Schools, 2024. Overview. Braeburn International Schools, Nairobi, Kenya. <https://braeburn.com/schools/>. Accessed 14 April 2025
- Chukwuemeka EJ, Samaila D, 2020. Teachers' perception and factors limiting the use of high-tech assistive technology in special education schools in North-West Nigeria. *Contemporary Educational Technology*, 11: 99-109. <https://doi.org/10.30935/cet.646841>
- Cortese S, Ferrin M, Brandeis D, et al., 2015. Cognitive training for attention-deficit/hyperactivity disorder: Meta-analysis of clinical and neuropsychological outcomes from randomized controlled trials. *Journal of the American Academy of Child and Adolescent Psychiatry*, 54: 164-174. <https://doi.org/10.1016/j.jaac.2014.12.010>
- Creswell JW, Creswell JD, 2022. *Research design: Qualitative, quantitative, and mixed methods approach* (6th edition). SAGE Publications, Thousand Oaks, CA, USA.
- Diamond A, 2013. Executive functions. *Annual Review of Psychology* 64: 135-168. <https://doi.org/10.1146/annurev-psych-113011-143750>
- Dimiri E, Sunday EM, 2025. Teachers' perceptions on the availability and utilization of assistive technology for pupils with learning disabilities in Eti-Osa, Lagos State. *Nusantara Journal of Behavioral and Social Science*, 4: 1-8. <https://doi.org/10.47679/njbss.202572>

- Dominguez O, Carugno P, 2023. Learning disability. StatPearls. StatPearls Publishing, Treasure Island, FL, USA. <https://www.ncbi.nlm.nih.gov/books/NBK554371/>. Accessed 14 April 2025
- Fteiha M, Al-Rashaida M, ElSORI D, Khalil A, Al Bustami G, 2024. Obstacles for using assistive technology in centres of special needs in the UAE. *Assistive Technology*, 19: 2934-2944. <https://doi.org/10.1080/17483107.2024.2323698>
- Grimmett LC, Tan D, Walker Z, 2023. Higher education and disability: Digital accessibility and assistive technology in the UK. *Handbook of higher education and disability* (pp. 338-350). Edward Elgar Publishing, Cheltenham, England, United Kingdom. <https://doi.org/10.4337/9781802204056.00037>
- Gunnars F, 2023. A systematic review of special educational interventions for student attention: Executive function and digital technology in primary school. *Journal of Special Education Tech*, 39: 264-276. <https://doi.org/10.1177/01626434231198226>
- Hayes AM, Bulat J, 2017. Disabilities inclusive education systems and policies guide for low-and middle-income countries (occasional paper). RTI International. Research Triangle Park, NC, USA. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK554622/>
- Jakovchevska A, Jovanova NC, Macedonia, N, 2024. Exploring parental perspectives: The impact of assistive technologies on inclusive education for children with disabilities. *Multidisciplinarni Pristupi u Edukaciji i Rehabilitaciji*, 6: 148-160. <https://doi.org/10.59519/MPER6114>
- Khan K, Lal P, 2023. Executive dysfunctions in different learning disabilities: A review. *Journal of Indian Association for Child and Adolescent Mental Health* 6: 126-142. <https://doi.org/10.1177/09731342231179614>
- Kundu A, Bej T, Dey KN, 2020. Indian educators' awareness and attitude towards assistive technology. *Journal of Enabling Technologies*, 14: 233-251. <https://doi.org/10.1108/JET-04-2020-0015>
- Manuel BR, 2025. Assessing the role of assistive technology tools in enhancing learning outcomes for students with disabilities: Basis for instructional plan. *International Journal of Research and Innovation in Social Science*, 9: 1342-1352. <https://dx.doi.org/10.47772/IJRISS.2025.906000106>
- MOE, 2020. Report by the Taskforce on Enhancing Access, Relevance, Transition, Equity And Quality For Effective Curriculum Reforms Implementation. <https://www.education.go.ke/sites/default/files/2024-01/TASKFORCE%20REPORT%20-%20CHANGES%20ACCEPTED%20-%20SPELL%20CHECK%20ENGLISH%20UK%2012-08-21%20%281%29.pdf>. Accessed 14 April 2025
- Mwangi LW, 2021. Effectiveness of using Assistive Technology on Academic Performance among Secondary School Students with Hearing Impairment in Kenya. *East African Journal of Education and Social Sciences*, 5: 98-112. <https://doi.org/10.59765/jriie.9.3.26>

- Mwangi S, Lusweti S, Mwambi J, Abwalaba A, 2024. Final report of the project: application of digital technologies in enhancement of learning experiences for girls with disabilities in Kilifi County, Kenya. Code. [https://code.ngo/wp-content/uploads/2025/06/Mwangi\\_Context-Matters\\_Final-Paper.pdf](https://code.ngo/wp-content/uploads/2025/06/Mwangi_Context-Matters_Final-Paper.pdf). Accessed 14 April 2025
- Ngonyani JC, Mnyanyi C, 2021. Assessing the relevance of assistive technologies for persons with disabilities in higher learning institutions: a case of university of Dar Es Salaam in Tanzania. *European Journal of Special Education Research*, 7: 52-70. <https://doi.org/10.46827/ejse.v7i2.3712>
- Shabani K, 2016. Applications of Vygotsky's sociocultural approach for teachers' professional development. *Cogent Education*, 3: 1-11. <https://doi.org/10.1080/2331186X.2016.1252177>
- Tesemma ST, 2011. Educating children with disabilities in Africa. *The African Child Policy Forum*. Addis Ababa, Ethiopia. <https://www.eenet.org.uk/resources/docs/6519.pdf>. Accessed 14 April 2025
- Tuliwangula P, Tumwesigye K, 2025. The impact of assistive technology on learners with visual impairment in Uganda. *Asian Journal of Education and Social Studies* 51: 531-42. <https://doi.org/10.9734/ajess/2025/v51i51938>
- Vaccarella P, Goodman-Vincent E, Cheng H, Cunningham T. 2024. Barriers and facilitators of assistive technology use among adolescent students with learning disabilities: A mixed methods comparison of daily and less frequent users. *Research in Developmental Disabilities*, 165: 10508. <https://doi.org/10.1016/j.ridd.2025.105088>
- Visser M, Nel M, De Klerk M, Ganzevoort A, Hubble C, Liebenberg A, Snyman M, Young M, 2020. The use of assistive technology in classroom activities for learners with motor impairments at a special school in South Africa. *South African Journal of Occupational Therapy*, 50: 11-22. <https://doi.org/10.17159/2310-3833/2020/vol50no2a3>
- Vygotsky, L. S. (1934). *Thought and language*. MIT Press. Cambridge, MA, USA. Retrieved from <https://archive.org/details/thoughtlanguage0000vygo>
- Yusoff MS, 2019. ABC of content validation and content validity index calculation. *Education in Medicine Journal*, 11: 49-54. <https://doi.org/10.21315/eimj2019.11.2.6>