



# The Influence of Assistive Technology on Learners' Performance in English in Selected Primary Schools in Ikumbya Sub-County, Luuka District

Francis Kamyuka  
Busoga University, Uganda  
Email: [kamyukaafrancis@gmail.com](mailto:kamyukaafrancis@gmail.com)

**Abstract:** This study examined the influence of assistive technology in teaching on learners' English performance in selected primary schools in Ikumbya Sub-County, Luuka District. It used a cross-sectional design with quantitative data analysis on a representative sample of 24 respondents from three primary schools in Ikumbya Sub-County, Luuka District. Questionnaires were used, and findings were presented in summary tables using frequencies and percentages. Conclusively, assistive technology greatly enhances learners' English performance, especially for learners with hearing impairment. It promotes improved communication skills, better hearing and comprehension in noisy environments, and greater participation in classroom discussions. It also enhances listening and comprehension through tools such as speech-to-text software, boosts self-esteem and confidence, and supports learners who struggle with traditional learning methods. Further, assistive technology was commended for enabling full participation in social interactions, promoting equitable access to education, improving quality of life, facilitating peer connections, and fostering independence in children while maintaining daily routines. By recommendation, the findings underscore the importance of incorporating assistive technology in educational settings to create inclusive environments that benefit all learners.

**Keywords:** Luukla District, Ikumbya Sub-County, Assistive Technology, Performance in English

## How to cite this work (APA):

Kamyuka, F. (2026). The Influence of Assistive Technology on Learners' Performance in English in Selected Primary Schools in Ikumbya Sub-County, Luuka District. *Journal of Research Innovation and Implications in Education*, 10(3), 115 – 124. <https://doi.org/10.59765/bxgf9>

## 1. Introduction

Research has shown a positive correlation between the usage of assistive technology and improved student outcomes in English (Harper et al., 2021). Students who struggle with traditional learning methods often find new motivation and confidence when using these technologies. Tools like spell-checkers and grammar assistance can reduce anxiety about writing, leading to more methodical practices and overall language proficiency (Nadejde & Tetreault, 2020). Many applications allow students to work at their own pace, providing a sense of ownership over their education. This independence is especially empowering for young learners facing challenges, as it fosters self-esteem and

promotes a positive attitude toward learning. (Bednorz & Bruhn, 2023)

In addition to enhancing individual performance, assistive technology can improve collaboration among students. Many tools foster interactive group activities and encourage peer learning. Through collaborative platforms, learners can share their work and provide feedback to one another, reinforcing their learning and language skills in a supportive environment (Yuan, 2023, pp. 6774-6789). Despite these advantages, it is crucial for educators and schools to approach the integration of assistive technology thoughtfully. Proper training for teachers and awareness of the available tools are essential for maximizing the benefits. Moreover, ongoing assessment of students' progress is necessary to ensure that the chosen technologies meet learners'

evolving needs (Park et al., 2024). English performance in primary schools is transformative. By accommodating different learning styles and encouraging independence, these tools significantly enhance student engagement and achievement (Assistive technology for the inclusion of students with disabilities: a systematic review, 2022). It is imperative for educators and publishers to advocate for and facilitate the adoption of assistive technology within the primary education framework, ensuring that all students have the opportunity to thrive in their English language learning journey.

In Uganda, while the adoption of such technologies is gradually increasing, several challenges hinder their effective use, particularly in rural areas like Luuka District. A critical issue is the limited availability of resources. Schools in Luuka District often face financial constraints that limit their ability to acquire and maintain assistive technology tools (Ramirez et al., n.d.). This scarcity not only limits access to necessary devices but also impedes educators' training in using these tools effectively (Taremwa, 2022). As a result, learners with special needs may not receive the full benefits of modern educational technologies designed to enhance English language proficiency (Otyola et al., 2023). The lack of funding and infrastructural support remains a significant barrier to the widespread implementation of assistive technologies in Ugandan schools.

Furthermore, cultural attitudes towards disability can impact the adoption of assistive technology. In some communities, there is limited awareness and understanding of the potential benefits of these tools, leading to underutilization (Edema, 2025). Societal perceptions often influence the decision-making processes of school administrators and parents, thereby affecting the allocation of resources toward assistive technologies.

## 1.2 Purpose

This study established the influence of using assistive technology in teaching on learners' performance in English in selected primary schools in Ikumbya Sub County, Luuka District.

## 2. Literature Review

According to Alexander (2021), hearing assistive technology, such as hearing aids and cochlear implants, can significantly improve communication skills in children with hearing impairments by enhancing their ability to hear and process sounds. By providing clearer auditory input, these devices help children better understand speech, language, and environmental sounds, supporting communication and social interactions. Additionally, hearing assistive technology can help children with hearing impairments access important auditory information in educational settings, allowing them to fully participate in classroom discussions and activities.

Furthermore, Al-Karawi (2023) states that hearing assistive technology, such as FM systems and cochlear implants, can significantly improve a child's ability to hear and comprehend speech in noisy environments, such as classrooms. By providing clearer and more consistent access to sound, these devices can help children with hearing impairments better understand and engage with their teachers and peers. This can lead to improved academic performance, as the children are able to fully participate in classroom discussions, follow instructions, and access important auditory information.

Further, Boster et al. (2023) indicate that hearing assistive technology, such as hearing aids or cochlear implants, can significantly improve a child's ability to hear and understand speech, making it easier for them to communicate with others. This increased ability to communicate can lead to greater confidence in social situations and encourage more active participation in conversations and group activities. By providing children with the tools they need to hear and engage with their peers, hearing assistive technology can help bridge the communication gap that may exist for children with hearing impairments, ultimately leading to more meaningful social interactions and connections.

On the other hand, Cano et al. (2020) contend that hearing assistive technology can boost self-esteem and confidence in children with hearing impairments by enabling them to communicate more effectively with others and participate fully in social situations. When children can hear and understand conversations more clearly, they are more likely to engage with their peers and feel more included. This improved communication ability can help children with hearing impairments feel more confident, leading to higher overall self-esteem.

Farooq et al. (2021) note that the apps are designed to help children with hearing impairments improve their speech and language skills by providing auditory feedback and interactive exercises. Through these apps, children can practice listening, speaking, and understanding speech in a fun and engaging way. With the help of assistive technology, children with hearing impairments can develop their communication skills and achieve greater success in their speech therapy sessions.

Furthermore, García-Catalá et al. (2020) point out that alerting technological devices are improving how children with hearing impairments access educational resources. With closed captioning features, these devices help learners fully engage in learning activities. This inclusive approach promotes academic success and fosters a sense of belonging and equality among all learners. Ultimately, assistive technology is creating a more accessible and inclusive learning environment for children with hearing impairments.

In addition, García-Catalá et al. (2020) point out that by using alerting technological devices such as vibrating alarm clocks and flashing doorbells, children with hearing impairments can stay connected with their peers

and participate more fully in social activities. These devices help children remain aware of their surroundings and respond to communication cues, allowing them to engage in conversations and group settings more easily. As a result, children with hearing impairments can build stronger relationships and feel more included in social interactions, improving their overall quality of life.

Still, Haukedal et al.'s (2022) view is that these devices are essential for helping children with hearing impairments stay on track with their daily routines and responsibilities. By providing alerts and reminders for tasks such as taking medication, attending appointments, or completing homework, these devices help children manage their own schedules and activities independently. This increased autonomy fosters self-reliance and confidence, helping children with hearing impairments navigate their daily lives more effectively.

According to Haukedal et al. (2022), these devices are allowing children with hearing impairments to communicate more easily with their peers and family members through sign language and text. Video chat capabilities provide a visual element that enhances understanding of conversations and social interactions. By enabling real-time communication, these devices are breaking down barriers and fostering more meaningful connections for children with hearing impairments.

Haukedal et al. (2022) indicate that communication-supportive technology, such as hearing aids and cochlear implants, can enhance a child's ability to hear and understand speech. This improved access to auditory information allows children with hearing impairments to engage more effectively in conversations, participate in classroom activities, and learn from their surroundings. Additionally, assistive devices such as FM systems and captioning software can facilitate communication and ensure that children with hearing impairments have equal access to information across various settings.

Hermawati and Pieri (2019) state that by using communication-supportive technologies such as hearing aids, cochlear implants, and speech therapy apps, children with hearing impairments can access auditory information more effectively. This increased access to sound allows them to develop their speech and language skills and improve their ability to understand and interpret verbal communication. Additionally, these technologies can provide visual cues and feedback that aid the development of social communication skills, ultimately enhancing communication abilities in children with hearing impairments.

Cook et al. (2020) report that communication-supportive technologies, such as hearing aids and cochlear implants, enable children with hearing impairments to better understand and participate in conversations. This

increased ability to communicate effectively helps them build stronger relationships with their peers and adults, leading to more opportunities for social interaction. Additionally, technologies such as video calls and text messaging can help bridge the communication gap between children with hearing impairments and their hearing peers, further supporting their social interactions.

Hersh et al. (2023) note that communication-supportive technology, such as hearing aids and cochlear implants, can significantly improve a child's ability to hear and understand speech in educational settings. By providing access to sounds and speech that may otherwise be missed, these technologies help children with hearing impairments fully participate in classroom discussions, follow instructions, and engage with learning materials. As a result, these learners are better able to keep up with their peers academically and achieve academic success.

Ismaili and Ibrahim (2016) show that communication-supportive technologies, such as hearing aids and cochlear implants, can significantly improve a child's ability to engage in conversation and interact with others. By providing access to sound and speech, these devices help children with hearing impairments feel more included and connected to their peers. This improved communication ability can boost their self-esteem and confidence, as they can participate more fully in social situations and express themselves more effectively. Ultimately, communication technology empowers children with hearing impairments to navigate the world with greater independence and success.

## **3. Methodology**

### **3.1 Research Design**

The study used a survey research design to explain current conditions, employing a large sample and questionnaires to fully describe the phenomenon. In this study on assistive technology and learners' English performance, the use of a survey design helps gather data from a diverse group of participants and provides a comprehensive understanding of the relationship between assistive technology and English performance. Using questionnaires, researchers collected data on the types of assistive technology used, how often they were used, and their impact on learners' overall performance in English. This design enabled a detailed analysis of the effectiveness of assistive technology in improving students' academic outcomes.

### **3.2 Target Population**

The study population consisted of 24 participants, comprising teachers, school head teachers, and pupils.

**Table 1: Study Population by category**

No	Category	Number per school	Number targeted
1.	Head teachers	1	3
2.	Teachers	3	9
3.	Pupils	4	12
	<b>Total</b>	<b>8</b>	<b>24</b>

In a study on the use of assistive technology and learners' performance in English, each of these categories is relevant to the study. Teachers can provide insights into the implementation of assistive technology in the classroom; school head teachers can offer perspectives on policy and resource allocation; and pupils can provide feedback on their experiences using the technology to enhance their English learning. By including all three groups in the study, a comprehensive understanding of

the impact of assistive technology on learners' English performance can be achieved.

### 3.3 Sample Size

The researcher was mindful that the study population is quite numerous; hence, there is a need to establish an appropriate sample for the study. This was done by first confirming the actual numbers of the target population and then calculating the sample size.

**Table 2: Sample size for the study population**

No	Category	Number	Sample size
1.	Head teachers	3	3
2.	Teachers	9	9
3.	Pupils	12	12
	<b>Total</b>	<b>24</b>	<b>24</b>

#### 3.3.2 Sampling techniques

The study used stratified sampling techniques to identify subpopulations within the overall study population. The researcher used this technique to classify participants by sex, as the study population encompasses both sexes. Additionally, the researcher considered the study population in terms of their professional statuses.

### 3.4 Research Instruments

Before designing the study, a closed-ended questionnaire was utilized. Its practicality lies in its ability to quickly reach many respondents, with results that are straightforward to quantify and analyze using software. The researcher employed the questionnaire to collect data from all participants, tailoring it so that each participant group responded to a specific version.

### 3.5 Validity

This was done by conducting a face validity assessment, in which a team of five experts evaluated the relevance

of the stated questions and the study's topic based on their expertise.

### 3.6 Reliability

This was done by piloting the study's research instruments at two primary schools that were not included in the study. The purpose of reliability in this study was to ensure that the data collected from the research instruments were consistent and accurate. By testing the instruments across different schools, the researchers identified potential issues or inconsistencies in the data collection process. This helped to improve the overall reliability of the study and ensure that the results were valid and trustworthy.

### 3.7 Data Collection Procedure

After the research supervisor approved the proposal and research instruments, the researcher obtained a letter from the research department introducing her to the research ethics committee. To ensure the study was perceived as purely academic, an introductory letter was sent to various participant groups.

The researcher approached participants from selected primary schools in the area, explaining the study's purpose and seeking their support. They also secured permission from the education officer to conduct the study in these schools.

Meetings were arranged with head teachers and teachers to coordinate the study and schedule the data collection in a way that did not disrupt school activities. These meetings provided an opportunity for the researcher to explain the study's purpose and gain their support and cooperation.

Data were collected concurrently using questionnaires and interviews at each selected school. The questionnaire content was communicated to the participants to ensure the study's objectives were understood. The researcher administered the questionnaires to teachers in the chosen primary schools.

### 3.8 Methods of Data Analysis

The gathered data were coded and organized by themes to facilitate analysis and reporting. Quantitative data were analyzed and presented using tables. The findings were interpreted as percentages, derived from the responses, and understood in the context of the researcher's conceptual framework. Using frequencies and percentages offers a straightforward, succinct way to present data to readers. This approach enables easy comparison across various groups or categories within the dataset.

### 3.9 Ethical Considerations

Efforts were made to protect participants' identities, especially since some issues involved their work security. Participants were assured that the study was for academic purposes only, and the self-administered questionnaires were designed to be anonymous.

The researcher was committed to accurate reporting to prevent data fabrication or the presentation of misleading findings. To promote transparency, each respondent signed a consent form.

All participants were treated equally to encourage voluntary involvement without bias or unrealistic expectations. This was specifically to ensure that all individuals felt valued and appreciated for their contributions, regardless of their background or experience. Creating a level playing field allowed for a more inclusive and collaborative environment where everyone's ideas were heard and respected.

Concerning confidentiality, extensive measures were implemented, including assigning code names or numbers to participants, securely storing notes, and protecting any identifiable information. Additionally, participant data remained confidential at all times, with no circumstances requiring disclosure of incidents of abuse or suicidal risks.

## 4. Results and Discussion

### 4.1 Demographic Characteristics

The demographic characteristics include: gender, age, and marital status.

**Table 3: Gender of Respondents**

Gender	Frequency	Percentage (%)
Male	9	37.5
Female	15	62.5
Total	24	100.0

The data show that, of 24 participants, 37.5% were male and 62.5% were female. This indicates that there were

more female than male participants in the study. Overall, the gender distribution in the sample was fairly balanced, with slightly more females than males.

**Table 4: Age-group of Respondents**

Age	Frequency	Percentage (%)
Less than 20 years	12	50.0
20-29 years	6	25.0
30-39 years	1	4.2
40 years and above	5	20.8
Total	24	100.0

The data above show the distribution of age groups among the participants. The majority of participants were less than 20 years old, accounting for 50% of the total. Participants in the 20-29 age group made up 25% of the

total, while those in the 30-39 age group accounted for 4.2%. Finally, participants aged 40 and above made up 20.8% of the total. Overall, the data provide a clear picture of the participants' age demographics.

**Table 5: Marital Status of Respondents**

Status	Frequency	Percentage (%)
Not applicable	12	50.0
Single	2	8.3
Married	10	41.7
Total	24	100.0

The data show that half of the participants indicated their marital status as "Not applicable," while 8.3% reported being single and 41.7% reported being married. This indicates a diverse range of marital statuses among the participants. Overall, the total sample size was 24 individuals.

#### 4.2 Ways in which the use of assistive technology in teaching can help improve

#### learners' performance in English in primary schools in Ikumbya Sub-County, Luuka District

Results for this objective help to identify innovative methods for incorporating technology into the classroom. It also enables teachers to tailor their teaching strategies to better support student learning. Results were as indicated in Table 6 below.

**Table 6: Assistive Technology and Learners' Performance in English**

No.	Factor		Disagree	Agree	Total
1.	Can significantly improve communication skills in children with hearing impairments	<i>f</i>	9	15	24
		%	37.5%	62.5%	100%
2.	Can significantly improve a child's ability to hear and comprehend speech in noisy environments	<i>f</i>	9	15	24
		%	37.5%	62.5%	100%
3.	Can significantly improve a child's ability to hear and understand speech	<i>f</i>	11	13	24
		%	45.8%	54.2%	100%
4.	Can boost self-esteem and confidence in children	<i>f</i>	12	12	24
		%	50%	50%	100%
5.	Devices allow children to fully participate in conversations, classroom activities, and social interactions	<i>f</i>	2	22	24
		%	8.3%	91.7%	100%
6.	Plays a crucial role in promoting overall well-being and quality of life in children with hearing impairments	<i>f</i>	4	20	24
		%	16.7%	83.3%	100%
7.	Children with hearing impairments can stay connected with their peers and participate more fully in social activities	<i>f</i>	12	12	24
		%	50%	50%	100%
8.	Devices are essential in helping children with hearing impairments stay on track with their daily routines and responsibilities	<i>f</i>	8	16	24
		%	33.3%	66.7%	100%

Findings show that the use of assistive technology can improve learners' English performance by considerably enhancing communication skills among children who have hearing impairments, as supported by 62.5% of respondents who agreed, compared with 37.5% who disagreed. This implies that assistive technology serves a vital function in bridging the communication gap for learners with hearing loss. Providing these learners with tools that improve their ability to communicate effectively better equips them to perform well academically and socially. According to Alexander (2021), hearing assistive technology, such as hearing aids and cochlear implants, can greatly improve communication skills in children with hearing loss by improving their ability to hear and process sounds. By delivering clearer, more distinct audio input, these devices help children better understand speech, language, and environmental sounds, leading to improved communication and social engagement. The positive feedback from the majority of respondents suggests that incorporating assistive technology into language learning programs can lead to greater success for learners with auditory impairments.

Similarly, the results show that the use of assistive technology can improve learners' English performance by enhancing a child's ability to hear and comprehend speech in noisy environments, as supported by 62.5% of respondents who agreed, compared with 37.5% who disagreed. Furthermore, Al-Karawi (2023) states that hearing assistive technology, such as FM systems and cochlear implants, can significantly improve a child's ability to hear and comprehend speech in noisy environments, such as classrooms. By providing clearer, more consistent access to sound, these devices can help children with hearing loss better understand and engage with their teachers and peers. This implies that using assistive technology can level the playing field for learners with hearing impairments, allowing them to fully participate in classroom discussions and activities. Furthermore, these tools can also enhance the overall learning experience for all learners by providing additional support and resources.

In addition, findings indicate that the use of assistive technology can improve learners' English performance by considerably enhancing a child's ability to hear and understand speech, as supported by 54.2% of respondents who agreed, compared with 45.8% who disagreed. This implies that incorporating assistive technology into English language learning can enhance learners' listening and comprehension skills. Boster et al. (2023) indicate that hearing assistive technology, such as hearing aids or cochlear implants, can significantly improve a child's ability to hear and understand speech, making it easier for them to communicate with others. This increased ability to communicate can lead to greater confidence in social situations and encourage more active participation in conversations and group activities. By utilizing tools such as speech-to-text software or

auditory feedback devices, learners can better grasp the nuances of pronunciation and intonation, eventually improving their overall language proficiency.

Further, the findings indicate that assistive technology can improve learners' performance in English by boosting children's self-esteem and confidence, as supported by 50% of respondents who agreed, compared with 50% who disagreed. This suggests that incorporating assistive technology into English language learning programs can promote academic success and overall well-being among learners. Cano et al. (2020) contend that hearing assistive technology can boost self-esteem and confidence in children with hearing impairments by enabling them to communicate more effectively and participate fully in social situations. When children can hear and understand conversations more clearly, they are more likely to engage with their peers and feel included. By providing additional support and accommodations, learners who may struggle with traditional learning methods can feel more empowered and capable of achieving their educational goals. As such, teachers should consider integrating assistive technology into their teaching practices to create a more supportive learning environment for all learners.

Further, the findings indicate that the use of assistive technology can improve learners' English performance by enabling children to fully participate in conversations, classroom activities, and social interactions, as supported by 91.7% of respondents who agreed, compared with 8.3% who disagreed. This implies that assistive technology plays a key role in ensuring that all learners, regardless of their abilities, have equal access to educational opportunities. Farooq et al. (2021) note that the apps are designed to help children with hearing impairments improve their speech and language skills by providing auditory feedback and interactive exercises. By using these apps, children can practice listening, speaking, and understanding speech in a fun and engaging way. By providing support in areas such as communication, reading, and writing, assistive technology can help bridge the gap between learners with and without disabilities. Ultimately, the widespread adoption of assistive technology in academic environments can lead to increasingly inclusive and effective learning environments for all learners.

Further, the findings indicate that the use of assistive technology can improve learners' English performance by playing a crucial role in promoting overall well-being and quality of life for children with hearing impairments, as supported by 83.3% of respondents who agreed, compared with 16.7% who disagreed. This implies that the majority of respondents recognize the positive impact of assistive technology on the academic success and personal development of learners with hearing impairments. García-Catalá et al. (2020) point out that alerting technological devices are revolutionizing the way children with hearing impairments access

educational resources. With closed captioning features, these devices are ensuring that all learners can fully engage in learning activities. This inclusive approach not only promotes academic success but also fosters a sense of belonging and equality among all learners. By providing tools and resources customized to their specific needs, these learners have the possibility to thrive in their educational journey and beyond. The findings suggest that investing in assistive technology for these individuals is not only useful but necessary in ensuring equal opportunities for all learners, regardless of their abilities.

Further, the findings indicate that assistive technology can improve learners' performance in English, as children with hearing impairments can stay connected with their peers and participate more fully in social activities, as supported by 50% of respondents who agreed, compared with 50% who disagreed. This suggests that assistive technology plays a crucial role in promoting inclusion and facilitating communication for learners with hearing impairments. García-Catalá et al. (2020) argue that alerting devices, such as vibrating alarm clocks and flashing doorbells, can help children with hearing impairments stay connected with their peers and participate more fully in social activities. These devices help children become aware of their surroundings and respond to communication cues, allowing them to engage in conversations and group settings more easily. By providing these learners with the tools they need to engage with their peers and access information more easily, assistive technology can help bridge the gap between learners with disabilities and their non-disabled peers. Additionally, the findings suggest that the use of assistive technology can increase confidence and independence for learners with hearing impairments, eventually improving their academic performance and social skills.

Finally, the findings indicate that the use of assistive technology can improve learners' performance in English, as devices are essential in helping children with hearing impairments stay on track with their daily routines and responsibilities, as supported by 66.7% of respondents who agreed, compared with 33.3% who disagreed. This implies that assistive technology plays a crucial role in providing equal opportunities for learners with disabilities to succeed in their academic endeavors. Haukedal et al.'s (2022) view is that these devices are essential in helping children with hearing impairments stay on track with their daily routines and responsibilities. By providing alerts and reminders for tasks such as taking medication, attending appointments, or completing homework, these devices empower children to manage their own schedules and activities independently. By incorporating these devices into the learning environment, teachers can create an increasingly inclusive and encouraging classroom for all learners. Additionally, the positive feedback from most respondents suggests that assistive technology is a

valuable tool for improving the educational experience of learners with hearing impairments.

## 5. Conclusions and Recommendations

### 5.1 Conclusions

Results indicate that assistive technology significantly enhances English learners' performance, particularly for children with hearing impairments. A majority of respondents (62.5%) noted improved communication skills, emphasizing the role of such technology in bridging communication gaps. Furthermore, 62.5% affirmed its effectiveness in improving the ability to hear and comprehend speech in noisy environments, facilitating greater participation in classroom discussions. Additionally, 54.2% believed that assistive technology enhances listening and comprehension skills through tools such as speech-to-text software, while 50% highlighted its potential to boost self-esteem and confidence, thereby supporting learners who struggle with traditional learning methods. A striking 91.7% agreed that it enables full participation in social interactions and promotes equitable access to education. The technology was recognized (83.3% agreement) for improving the quality of life, facilitating connections with peers, and fostering independence in children. Lastly, 66.7% affirmed its necessity in maintaining daily routines. Overall, the findings underscore the importance of incorporating assistive technology in educational settings to create inclusive environments that benefit all learners.

### 5.2 Recommendations

**These recommendations emanated from the findings:**

1. It is recommended that teachers continue to prioritize the use of assistive technology in the classroom to ensure that learners with hearing impairments have equal access to education. By doing so, these learners can not only improve their academic performance but also build confidence and develop essential communication skills.
2. Additionally, providing assistive technology can create a more inclusive and supportive learning environment for all learners, regardless of their individual needs.
3. Ultimately, investing in assistive technology for learners with hearing impairments is a crucial step towards promoting equity and diversity in education.

## References

Alexander, J. M. (2021). Hearing Aid Technology to Improve Speech Intelligibility in Noise.

- Seminars in Hearing*, 42(03), 175–185.  
<https://doi.org/10.1055/s-0041-1735174>
- Al-Karawi, K. A. (2023). *Internet of Things (IoT) about Disabilities*.  
<https://doi.org/10.14293/pr2199.000535.v1>
- Amirez, D. Z., Holloway, C. & Austin, V. P. (n.d.). *Report on the Usability of Assistive Technology in Ugandan Schools with Children with Visual and/or Hearing Disabilities*.  
[https://www.researchgate.net/publication/340536204\\_Report\\_on\\_the\\_Usability\\_of\\_Assistive\\_Technology\\_in\\_Ugandan\\_Schools\\_with\\_Children\\_with\\_Visual\\_andor\\_Hearing\\_Disabilities\\_A\\_report\\_from\\_the\\_Global\\_Disability\\_Innovation\\_Hub\\_for\\_UNICEF](https://www.researchgate.net/publication/340536204_Report_on_the_Usability_of_Assistive_Technology_in_Ugandan_Schools_with_Children_with_Visual_andor_Hearing_Disabilities_A_report_from_the_Global_Disability_Innovation_Hub_for_UNICEF)
- Assistive technology for the inclusion of students with disabilities: a systematic review* (2022). Educational Technology Research and Development. <https://doi.org/10.1007/s11423-022-10127-7>
- Bednorz, D. & Bruhn, S. (2023). *Influence of primary students' self-regulated learning profiles on their rating of a technology-enhanced learning environment for mathematics*. *Frontiers in Psychology* 14.  
<https://doi.org/10.3389/fpsyg.2023.1074371>
- Boster, J. B., Findlen, U. M., Pitt, K., & McCarthy, J. W. (2023). Design of aided augmentative and alternative communication systems for children with vision impairment: psychoacoustic perspectives. *Augmentative and Alternative Communication*, 1–11.  
<https://doi.org/10.1080/07434618.2023.2262573>
- Cano, S., Peñeñory, V., Collazos, C. A., & Albiol-Pérez, S. (2020). Designing Internet of Tangible Things for Children with Hearing Impairment. *Information*, 11(2), 70.  
<https://doi.org/10.3390/info11020070>
- Cook, M. A., & Hussey, M. S. (2020). *Assistive technologies: Principles and practice*. St. Louis: Mosby, Inc.
- Edema, D. (May 1, 2025). *Shortage of ICT-trained teachers hinders special needs education*. Monitor.  
<https://www.monitor.co.ug/uganda/news/national/shortage-ict-trained-teachers-hinders-special-needs-education-5025086>
- Farooq, U., Rahim, M. S. M., Sabir, N., Hussain, A., & Abid, A. (2021). Advances in machine translation for sign language: approaches, limitations, and challenges. *Neural Computing and Applications*, 33(21), 14357–14399.  
<https://doi.org/10.1007/s00521-021-06079-3>
- García-Catalá, M., Rodríguez-Sánchez, M., & Martín-Barroso, E. (2020). Survey of indoor location technologies and wayfinding systems for users with cognitive disabilities in emergencies. *Behaviour and Information Technology*, 41(4), 879–903.  
<https://doi.org/10.1080/0144929x.2020.1849404>
- Harper, D., Bowles, A. R., Amer, L., Pandža, N. B. & Linck, J. A. (2021). *Improving Outcomes for English Learners Through Technology: A Randomized Controlled Trial*. *SAGE Open* 11(2).  
<https://doi.org/10.1177/23328584211025528>
- Haukedal, C. L., Wie, O. B., Schaubert, S. K., Lyxell, B., Fitzpatrick, E. M., & Von Koss Torkildsen, J. (2022). Social communication and quality of life in children using hearing aids. *International Journal of Pediatric Otorhinolaryngology*, 152, 111000.  
<https://doi.org/10.1016/j.ijporl.2021.111000>
- Hermawati, S., & Pieri, K. (2019). Assistive technologies for severe and profound hearing loss: Beyond hearing aids and implants. *Assistive Technology*, 32(4), 182–193.  
<https://doi.org/10.1080/10400435.2018.1522524>
- Hersh, A. M., & Johnson, A. M. (2023). *Assistive technology for the hearing impaired, deaf and deaf blind*. London: Springer – Verlag
- Ismaili, J., & Ibrahim, E. H. O. (2016). Mobile learning as alternative to assistive technology devices for special needs learners. *Education and Information Technologies*, 22(3), 883–899.  
<https://doi.org/10.1007/s10639-015-9462-9>
- Nadejde, M. & Tetreault, J. (2020). *Personalizing Grammatical Error Correction: Adaptation to Proficiency Level and L1*. arXiv preprint arXiv:2006.02964.  
<https://doi.org/10.48550/arXiv.2006.02964>
- Otyola, W. R., Siraji, K., Samson, L., Shafik, M., Gerald, N., Yoweri, R., Ampairwe, M. R. & Jonathan, M. (2023). *Review of Government Policies on Special Needs Education in Uganda*. *American Journal of Education and Practice*.  
<https://doi.org/10.47672/ajep.1679>

Park, J., Grep, M. & Ok, M. W. (2024). *Effects of Assistive Technology Instruction on Pre-Service Teachers: A Systematic Review*. SAGE Open 39(3).  
<https://doi.org/10.1177/01626434231210988>

Taremwa, A. (December 6, 2022). *They may have lost sight, but digital assistive learning technologies have given learners a vision*. UNICEF Uganda.  
<https://www.unicef.org/uganda/stories/they-may-have-lost-sight-digital-assistive-learning-technologies-have-given-learners-vision>

Yuan, Y. (2023). An empirical study of the efficacy of AI chatbots for English as a foreign language learning in primary education. *Interactive Learning Environments* 32(10), pp. 6774–6789.  
<https://doi.org/10.1080/10494820.2023.2282112>.