

Influence of computer programs on learning outcomes of learners with disabilities in public comprehensive schools in Saboti Sub-County, Kenya

Peter Njofu Namasaka^{1*}
Ronald Werunga Kikechi²

^{1*}njofu8@gmail.com

^{1,2}Mount Kenya University, Kenya

<https://doi.org/10.51867/AQSSR.2.4.45>

ABSTRACT

This study investigated the influence of computer programs on the learning outcomes of learners with disabilities in public comprehensive schools in Saboti Sub-County, Kenya. The study was directed by the Universal Design for Learning (UDL) framework, which emphasises the importance of offering various methods for learners to engage, access information, and illustrate understanding to meet their diverse needs. A descriptive research design was utilised to carry out the study. The study involved 1,509 individuals from 13 public comprehensive schools in Saboti Sub-County. According to the Krejcie and Morgan Table, a sample size of 310 respondents was identified as adequate. A total of 297 learners with disabilities were selected from this sample through a stratified random sampling, while 13 heads of institutions were included purposefully. Data were collected using structured questionnaires administered to learners with disabilities, and interviews were carried out with the heads of institutions. Descriptive statistics and the chi-square test were employed for the quantitative responses, whereas the qualitative responses were analysed in order to identify prevalent themes. The findings indicated learners with disabilities experienced advantages from computer programs like Access to Math, Live Scribe, and Big Calc. A significant number of learners with disabilities indicated that these tools enhanced their comprehension of the material, and a clear correlation was observed between the utilisation of the programs and improved learning outcomes. The findings indicate that computer programs can significantly enhance learning outcomes; however, it is essential for educators to receive proper training and for educational institutions to upgrade their ICT infrastructure in order to effectively utilise these tools.

Keywords: Computer Programs, Inclusive Education, Kenya, Learning Outcomes, Learners with Disabilities

I. INTRODUCTION

In the United States, many students in grades K-12 bring their own computers or tablets to school. A study by Stetter (2018) found that fourth-grade students with learning disabilities (LD) used reading applications that featured phonics instruction, timed reading, and vowel awareness on their own iPads as well as with pen and paper without the apps. Students with disabilities enjoyed learning on the iPads and were more engaged with their activities. Some significant computer intervention studies combined the computer with active, teacher-led instruction and feedback on these tactics (Stetter, 2018).

According to another study by Serero and Schlebusch (2025), it emphasised the significant role of information communication technology skills in promoting the development of such abilities for visually impaired learners in a full-service school. While teachers are enthusiastic about using information communication technologies, challenges still remain in effectively improving the skills of visually impaired students due to the lack of resources, inadequate training, and inconsistent utilisation of such information and communication technology strategies. In Zambia, Chileshe et al. (2025) determined that learners with visual impairment reported the utilisation of information and communication technology implements in their schools as a pleasant, transforming, inspiring encounter and, furthermore, demanding. Learners with visual impairment faced specific problems in accessing and efficiently using ICT resources, including a shortage of ICT devices and skilled staff, as well as insufficient time to develop Information and Communication Technology [ICT] skills. Other challenges included poor internet connectivity, outdated software, limited tactile visuals, a complicated website, and programs that were not easily accessible.

In Kenya, access to ICT equipment in schools remains limited. Makokha and Mutisya (2016) found that email is still not widely used as a tool for communication between learners and teachers. Most special schools offer ICT resources through digital literacy programs (DLP), such as laptops and tablets, but they invest very little in specialised tools to support children with disabilities and special educational needs. Omboto et al. (2022) noted that most devices are controlled by school officials or teachers who lack the necessary skills to use them effectively.

Given the significant influence computer programmes can have on learning outcomes for learners with disabilities, this study aims to address the gaps identified in both international and local contexts. This study, therefore,

aimed to provide insights to guide policy and practice in Kenya, ensuring that learners with disabilities receive the support necessary to succeed academically.

1.1 Statement of the Problem

Inclusive education is supposed to give all students a fair chance to learn, including those with disabilities. In practice, though, this is not always the case. In Saboti Sub-County, many learners with disabilities do not have enough access to assistive technologies, like computer programs. Limited access often prevents students from fully participating in classroom activities and can sometimes lead to lower academic performance. There is limited information on how computer programs influence learning outcomes in public comprehensive schools in Saboti Sub-County. Very few studies have examined the effect of interactive computer-based tools on learners with disabilities in these schools. This study explored the relationship between computer programs and the learning outcomes of learners with disabilities by testing the following hypothesis: H_0 : There is no statistically significant relationship between computer programs and the learning outcomes of learners with disabilities.

1.2 Research Objective

To investigate the relationship between computer programs and the learning outcomes of learners with disabilities in public comprehensive schools in Saboti Sub-County, Kenya.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Universal Design for Learning (UDL) Theory

The framework of Universal Design for Learning (UDL) originates from the architectural concept of universal design, which posits that by designing environments for the widest possible range of users from the start, we reduce barriers rather than adapting solutions. According to its definition UDL is a scientifically valid framework for guiding educational practice that (A) allows for flexibility in how information is presented how students react or demonstrate their knowledge and abilities and how they are engaged (B) lowers barriers in instruction offers suitable accommodations challenges and support and upholds high standards of achievement for all students including those with disabilities. The premise of UDL is that learner variability is the norm, not the exception. Each learner engages, represents, and expresses knowledge differently. Therefore, instruction and by extension, instructional tools like computer-based programmes must be designed to offer multiple pathways for engagement (the why of learning), representation (the what of learning), and action and expression (the how of learning). By providing flexible digital programmes (for example computer-based programmes), learners with disabilities can access content in alternative ways (representation), interact or respond using assistive options (action and expression), and remain motivated through meaningful and varied ways (engagement). According to Center for Applied Special Technology [CAST] (2018), such flexibility reduces barriers and improves equity in learning opportunities.

2.2 Empirical Review

Global academic studies indicate that the use of computer-assisted instruction (CAI), adaptive learning technology, and audio programs has been shown to improve the learning outcomes of learners with disabilities (Bouck et al., 2020; Stetter & Hughes, 2010; Torgesen et al., 2010). For example, research shows that learners with dyslexia experience improvements in phonemic awareness, reading accuracy, reading decoding, and reading comprehension through the use of CAI. Game-based CAI also enhances learners with disabilities' mathematics performance.

Torgesen et al., (2010) carried out a randomized study on a computer-assisted instruction (CAI) reading program for dyslexic learners in the United States. The results from the study indicated improvements in phonemic awareness, phonemic decoding, reading accuracy, rapid automatic naming, and reading comprehension that persisted through second-grade learners with disabilities. The researchers reported that the combined intervention helped learners perform significantly better than the control learners who had participated in their school's regular reading program. These results demonstrate that students with learning difficulties in elementary school can benefit from long-lasting literacy gains through managed reading CAI programs.

The findings from Stetter and Hughes (2010) indicate that interactive digital tools help students understand the material more effectively than traditional classroom methods, particularly in improving reading skills. Bouck et al. (2020) reported that students in a mathematics study performed better when they used game-based CAI software than when they were taught using other methods. The researchers emphasized that playful, game-like computer-assisted training best supports students struggling to acquire basic mathematics skills. The virtual manipulatives they investigated used eye-tracking with dyslexic learners. The study found that learners with reading difficulties performed significantly better on comprehension tests when they used the eye-tracking-assisted software than when they did not use the software.

Abiatl and Howard (2020) examined math software designed using a constructivist approach specifically for deaf elementary school students in Namibia. Their findings indicate that assistive technology can significantly enhance students' abilities in mathematics, especially in multiplication and division. Assistive technology can enhance self-awareness, curiosity, teamwork, and metacognitive skills, indicating that learner-centred software supports independent learning. In Malaysia, Khalid et al. (2023) found that assistive technology tools benefit learners with learning disabilities, particularly in reading and writing. Their study showed that adaptive software is effective for students with disabilities. The enhancement of fundamental literacy skills was significantly achieved through software that offered structured and repetitive practice. Their findings showed that using adaptive technology, which offers consistent and targeted practice, can be an effective way to support learners with dyslexia. When students with dyslexia use this technology, repeatedly with focused practice, it supports improvements in their reading and writing and helps them become more confident in their learning.

According to Cui et al. (2018), the Yixue Squirrel adaptive learning system, when compared to traditional classroom instruction and another adaptive learning system, produced higher learning outcomes. This demonstrates that adaptive learning technologies in mathematics and reading instruction in China, particularly within the context of Chinese pedagogy, may outperform traditional methods. A study by Fadlilah (2022) explored the development of audio learning digital media designed for blind and visually impaired (BVI) learners in Indonesia. The researchers found that the software provided learners with visual impairments (BVI) with learning approaches that were clear, tailored to their needs, and enjoyable. Their research indicated that audio-accessible software could considerably enhance the active participation of learners with sensory impairments in educational environments.

Murithi and Yoo (2021) found that teachers in Kenya felt that schools did not have enough ICT resources, which made it hard to use technology while teaching the new curriculum. Furthermore, they note that most teachers reported receiving only basic computer literacy training. Although teachers perceived the use of computers as necessary, they faced difficulties integrating technology into their lessons. Consequently, these findings indicate that teachers' awareness of ICT importance does not automatically lead to effective classroom integration. Makewa and Mutie (2018) examined the use of computers by learners with special needs, revealing that those with learning disabilities often possessed superior digital skills compared to their teachers. This difference made technology use in the classroom less effective and sometimes led learners to take the lead when using digital resources. Even though there are not any specific academic metrics yet, this demonstrates that Kenyan learners are ready for learning through computer software. Their investigation indicates that Kenyan school studies reveal potential for ICT adoption, though it remains limited due to infrastructure shortages, gaps in teachers' skills, and low technology utilization (Makewa & Mutie, 2018).

Another study conducted in Kenya by Murithi et al. (2022) examined the utilization of listening assistive technologies and the academic performance of learners with hearing challenges in three primary schools located in Meru and Tharaka Nithi Counties, Kenya. According to the authors, despite the Kenyan government's efforts to train teachers and employ them in schools serving students with hearing impairments, "*academic performance in primary schools for learners with hearing impairments has been poor*" (p.57). The study adopted a mixed-methods descriptive design and found that while there was a positive correlation between the use of assistive listening devices and improved academic outcomes, the devices were "inadequate and poorly maintained," and their utilisation remained low. Challenges included learners' limited skills to use the devices, weak guidelines on device usage, and insufficient institutional support from the Ministry of Education and other stakeholders. The authors argue that "software alone does not ensure learning success without a proper support system"; issues of maintenance, user training, and continuous institutional backing must accompany technological provision. Their study calls for increased allocation of funds for procurement and maintenance of such devices. This clarifies that merely providing hardware and software without a sustainable infrastructure undermines the potential of assistive technologies for effective change in learner outcomes (Murithi et al., 2022).

Major et al. (2023) indicate that while global evidence consistently documents the positive influence of computer adaptive instruction, technology-assisted reading platforms, and audio-input programs on students' literacy and numeracy skills, the Kenyan context reveals important implementation complexities. Their study of the DPL (digital personalised learning) tool evaluated in Kenya showed that learners "benefit from personalised learning progress," but the tools were still at an early rollout stage, with many counties and pre-primary schools yet to integrate the devices fully into classroom practice. This suggests a clear gap: the existence of adaptive, technology-enabled programmes alone is insufficient unless accompanied by robust infrastructure, teacher support, and full classroom integration, highlighting the challenge of moving from promising pilot evidence to scale, consistency, and sustainable integration in Kenya's real-world schooling environment.

In particular, no detailed empirical research has been conducted in public comprehensive schools in Saboti Sub-County that uses interactive teaching aids developed for learners with disabilities. Most studies in this context have related technology use to inclusive teaching approaches, teacher professional learning, or the semi-rural Kenyan context with limited infrastructure. The absence of this comprehensive view makes it difficult to evaluate the influence of such technology on learning. While international and local studies confirm the potential of computer programs for learners

with disabilities, no empirical study has investigated the specific influence of Access to Math, Live Scribe, and Big Calc on learning outcomes in public comprehensive schools in Saboti Sub-County, Kenya. This study seeks to address this gap.

III. METHODOLOGY

This study used a descriptive research design and was carried out in Saboti Sub-County, which covers 323.6 km² and has an estimated population of 202,372 (Kenya National Bureau of Statistics [KNBS], 2019). The study population included 1,496 learners with disabilities and 13 heads of institutions. A sample size of 310 respondents was selected based on the Krejcie and Morgan (1970) table. A stratified random sampling technique was used to select 297 learners with disabilities, while all 13 heads of institutions were selected purposively for the study.

Data were collected using structured questionnaires for learners with disabilities and interview schedules for the heads of institutions. Quantitative data were analysed using descriptive statistics, including means, frequencies, and percentages, and the chi-square test at a 0.05 significance level. Qualitative data were analysed thematically, with coding and direct quotations used to reflect participants' views.

Table 1

Target Population

Category	Target Population
Heads of institution	13
Learners with disability	1,496
Total	1509

According to the table, 310 people constituted a sample size from a target population of 1,509 persons. Since all heads of institutions were specifically chosen to take part in the research, the sample size consisted of 297 learners with disabilities and 13 heads of institutions totalling to 310 respondents. The strata for sampling the learners were based on the different categories of disabilities present in the schools. Furthermore, data were collected using questionnaires for learners with disabilities and structured interview schedules for heads of institutions.

The raw data gathered was analysed and examined for errors and omissions with both quantitative and qualitative data were coded to enable clustering of responses into different groupings. Since this study was descriptive in nature, the data was analysed and presented in tables using means, frequencies, and percentages. The study hypothesis was validated using the chi-square test of association at a significance level of 0.05. For qualitative data, thematic analysis and coding, were applied to the qualitative data to ensure clarity and consistency in reporting.

IV. FINDINGS & DISCUSSION

4.1 Descriptive Statistics and Discussion for Computer Programs

This table presents the distribution of responses on access to and use of the three assistive computer programs. The analysis used frequencies, percentages, and means derived from the Likert-scale items completed by respondents. The results in table 2 describes the availability and use of computer programs such as Access to Math, Live Scribe, and Big Calc.

Table 2

Descriptive Statistics for the Independent Variable (Computer Programs)

Statements		SD	D	U	A	SA	MEAN
Access to Math program is available and used.	F	27	22	38	83	102	3.78
	%	9.9	8.1	14.0	30.5	37.5	
Live Scribe program is available and used	F	17	35	28	87	105	3.84
	%	6.3	12.9	10.3	32.0	38.6	
Big Calc program is available and used	F	7	20	8	110	127	4.21
	%	2.6	7.4	2.9	40.4	46.7	

The descriptive statistics in Table 2 show that the three assistive computer programs Access to Math, Live Scribe, and Big Calc were generally available and actively used in the participating schools. Big Calc recorded the highest mean (4.21), followed by Live Scribe (3.84) and Access to Math (3.78). Between 70% and 87% of respondents either agreed or strongly agreed that the programs were accessible and in active use.

It is evident from the data that Big Calc is the program students favour and the one they most often choose to use among the various programs. This tool is highly utilized and receives the top rating, which indicates that students appreciate the step-by-step problem-solving process. They are shown all the stages of the calculation rather than just the final answer. This was supported by a female head of institution aged 53, who remarked:

“Children with disabilities are not able to recall the steps in a math task. However, when they hear the explanation, follow the steps on their graphing-calculator screen, and observe how a calculation is performed through a multiple-line display, they are able to see the different parts of the computation and the steps involved. Big Calc helps them focus on all parts of the problem and view every component of the answer, not just the final result.”

Similarly, although to a lesser extent, Live Scribe and Access to Math also serve as valuable aids for learners with disabilities. Live Scribe employs both aural and visual effects to attract the learner’s attention and enhance comprehension. In addition, Access to Math supports learners by allowing them to practice math concepts multiple times, which strengthens their understanding of the procedures and promotes fluency. Among the three programs, Access to Math can best explain a method and help students internalize mathematical concepts. Nevertheless, Big Calc provides the most structured support for promoting the acquisition of mathematical methods.

These findings are consistent with the principles of Universal Design for Learning (UDL). According to CAST (2018), UDL advocates for multiple ways of explaining ideas, motivating learners, and facilitating interaction with materials to meet diverse learning needs. Therefore, the analysis highlights the importance of both the availability of computer programs and the integration of lesson plans for carrying out meaningful learning experiences.

The results further indicate that Big Calc is by far the strongest instrument for special educational needs students, particularly in facilitating their comprehension of complicated processes through a clear visual representation. Similarly, Live Scribe and Access to Math are mainly learning devices designed to make learners’ understanding easier and to support the consolidation of already acquired knowledge. Hence, students become more effective with these tools when they are both accessible and actively utilized during lessons. Consequently, teacher involvement in guiding the effective usage of the programs is equally essential for achieving meaningful learning outcomes

4.2 Descriptive Statistics and Discussion for Learning Outcomes

Following the analysis of program usage, descriptive statistics were generated for the dependent variable, learning outcomes. Participants were asked to rate the extent to which each program improved their learning. The results are presented in Table 3.

Table 3

Descriptive Statistics for the Dependent Variable (Learning Outcomes)

Statements		SD	D	U	A	SA	MEAN
Access to Math improved your learning outcomes	F	27	22	38	83	102	3.78
	%	9.9	8.1	14.0	30.5	37.5	
Live Scribe improved your learning outcomes	F	17	35	28	87	105	3.84
	%	6.3	12.9	10.3	32.0	38.6	
Big Calc improved your learning outcomes	F	7	20	8	110	127	4.21
	%	2.6	7.4	2.9	40.4	46.7	

According to the descriptive statistics in Table 3, Live Scribe and Access Math have received a positive response, with 70.6% and 68.0% of the respondents indicating that their learning outcomes had improved as a result of the programs. Notably, Live Scribe scored slightly higher than Access Math, with a mean of 3.84, while 12% of the students disagreed with this result, which represents a variable phenomenon that warrants further investigation, and the table further reveals a definite tendency towards assessing all three assistive programs as having a positive influence on learning outcomes. Specifically, Live Scribe, through the aural and visual components, stimulates the attention of the student and supports the retention of information, while Access Math stimulates practice and fluency in operations. Nevertheless, Access to Math is the program that can best explain a method and facilitate the internalization of mathematical concepts, whereas Big Calc plays the most significant role in promoting the acquisition of mathematical methods. This conforms to recent research that evaluated adaptive and interactive computer programs as means to enhance the academic achievement of learners with disabilities. Such programs were found to be very efficient in leading to better academic results, as reported by Bouck et al. (2019) and Torgesen et al. (2010), and similarly, students who had regular access to these programs manifested growth in comprehension, retention, and engagement in learning. The differential effectiveness of the instruments, especially the prominence of Big Calc, indicates that it is very important to select the tools that best meet the students' particular needs. Moreover, the presence of the teacher and the planned use of the tools in the lessons further enhance effectiveness, and in general, the descriptive analysis serves as a confirmation of the combined use of these programs in leading to an improved learning quality of students with disabilities.

4.3 Inferential Analysis

The study tested the null hypothesis (H_0) that there is no statistically significant relationship between computer programs and the learning outcomes of learners with disabilities in public comprehensive schools in Saboti Sub-County. A chi-square test of association was conducted to examine this relationship, as shown in Table 4.

4.3.1 Association between Computer Programs on Learning Outcomes of Learners with Disabilities in Public Comprehensive Schools in Saboti Sub-County

Table 4 below displays the results of the Chi-square test performed to investigate the association between the utilisation of computer programs and the learning outcomes of students with disabilities in public comprehensive schools in Saboti Sub-County.

Table 4

Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	445.588 ^a	269	.000
Likelihood Ratio	320.754	269	.000
Linear-by-Linear Association	99.761	1	.000
N of Valid Cases	271		

a. 271 cells (95.8%) have expected count less than 5. The minimum expected count is .01.

According to Table 4, the p-value ($p=0.000$) is less than the 0.05 significance level indicating that the null hypothesis (H_0) was rejected leading to the conclusion that there is a statistically significant relationship between computer programs and the learning outcomes of learners with disabilities. The results correspond with the Universal Design for Learning (UDL) structure, which advocates for provisions of multiple means of representation, action, and engagement to effectively support the needs of diverse learners. The results agree with the studies conducted by Bouck et al. (2019) and Torgesen et al., (2010), which found that specialized computer programs significantly improve academic learning outcomes for learners with disabilities by offering personalized, co-operative, and clear learning experiences.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The results from this research revealed that the most influential factor for the outstanding educational achievements of learners with disabilities in public comprehensive schools in Saboti Sub, County was the access to Math, Live Scribe, and Big Calc. The frequent utilization of these computer programs gives learners more opportunities to follow the teacher's instructions, get involved in the class, and enhance their numeracy skills to a higher level. The findings presented in this report point to the great significance of using computer, based programs as learning aids to facilitate the implementation of an inclusive education system. Therefore, educational institutions need to be certain that these programs are always in place, and teachers must be given adequate training and support to use them effectively in the classroom for learners with disabilities to thrive academically.

5.2 Recommendations

Based on the findings of the study, it is recommended that educators use computer programs into their regular classes in order to provide assistance to learners with disabilities. Lessons can be simplified with the help of these technologies, to encourage more active engagement in the classroom. It is of the utmost importance for educational institutions and policymakers to make certain that there is an adequate supply of computers and technology, and that teachers are well prepared to make efficient use of these resources. The purpose of future study should be to investigate how these programs influence learners with a variety of disabilities throughout an extended period of time in order to improve on inclusive education.

REFERENCES

- Abiat, L. K. S., & Howard, G. R. (2020). Constructivism-led assistive technology: An experiment at a Namibian special primary school. *South African Journal of Childhood Education*, 10(1), Article a794. <https://doi.org/10.4102/sajce.v10i1.794>
- Bouck, E. C., Mathews, L., & Peltie, C. (2019). Virtual manipulatives: A tool to support access and achievement with middle school students with disabilities. *Journal of Special Education Technology*, 35(1), Article 0162643419882422. <https://doi.org/10.1177/0162643419882422>

- Bouck, E. C., Park, J., & Stenzel, K. (2020). Virtual manipulatives as assistive technology to support students with disabilities with mathematics. *Preventing School Failure: Alternative Education for Children and Youth*, 64(4), 281–289. <https://doi.org/10.1080/1045988X.2020.1762157>
- CAST. (2018). *Universal Design for Learning Guidelines, Version 2.2*. Wakefield, MA: Author. <https://udlguidelines.cast.org/static/udlg2.2-text-a11y.pdf>
- Chileshe, E., Annie, P. A., & Kasonde, M. (2025). Experiences of learners with visual impairment in the use of information communication technology in two selected schools in Kabwe District. *International Journal of Research and Innovation in Social Science*, 9(3), 3091–3107. <https://doi.org/10.47772/IJRISS.2025.903SEDU0219>
- Cui, W., Xue, Z., & Thai, K.-P. (2018). Performance comparison of an AI-based adaptive learning system in China. In *Proceedings of the 2018 Chinese Automation Congress (CAC)* (pp. 3170–3175). IEEE. <https://doi.org/10.1109/CAC.2018.8623327>
- Fadlilah, M. (2022). The role of digital media in language learning for blind students at junior high school. In *Proceedings of the Sixth International Conference on Language, Literature, Culture, and Education (ICOLLITE 2022)*. Atlantis Press. https://doi.org/10.2991/978-2-494069-91-6_47
- Kenya National Bureau of Statistics. (2019, November). *2019 Kenya Population and Housing Census, Volume I: Population by County and Sub County*. Nairobi, Kenya. <https://www.knbs.or.ke/wp-content/uploads/2023/09/2019-Kenya-population-and-Housing-Census-Volume-1-Population-By-County-And-Sub-County.pdf>
- Khalid, A. H. A., Mohkhlhas, N. N., Zakaria, N. A., Mat Rejab, M., Karim, R. A., & Suharsiwi, S. (2023). Assistive technology for children with learning disabilities: A systematic literature review. In *2023 17th International Conference on Ubiquitous Information Management and Communication (IMCOM)* (pp. 1–6). <https://api.semanticscholar.org/CorpusID:256668298>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610. <https://doi.org/10.1177/001316447003000308>
- Major, L., Daltry, R., Otieno, M., Otieno, K., Zhao, A., Hinks, J., & Friedburg, A. (2023). Randomised controlled trial protocol: Digital personalised learning to improve literacy and numeracy outcomes in Kenyan classrooms. EdTech Hub. <https://edtechhub.org/2023/08/15/emerging-findings-from-a-randomised-controlled-trial-involving-pre-primary-learners-and-eidu/>
- Makewa, L. N., & Mutie, J. M. (2018). Assistive technology for managing learners with special needs in Makueni County, Kenya. *Journal of Research Innovation and Implications in Education*, 2(1), 32–43. https://www.researchgate.net/publication/324898050_Assistive_Technology_for_Managing_Learners_with_Special_Needs_in_Makueni_County_Kenya
- Makokha, G. L., & Mutisya, D. N. (2016). Status of e-learning in public universities in Kenya. *International Review of Research in Open and Distributed Learning*, 17(3), 341–359.
- Murithi, J., & Yoo, J. E. (2021). Teachers' use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation and Education*, 3(1), 1–11. <https://doi.org/10.1186/s42862-021-00012-0>
- Murithi, S., Mwirichia, S., & Gichohi, P. M. (2022). How utilization of augmentative and alternative assistive technologies affect the academic performance in primary schools for learners with hearing challenges in Meru and Tharaka Nithi Counties, Kenya. *International Journal of Professional Practice*, 10(3), 57–67. <https://doi.org/10.71274/ijpp.v10i3.238>
- Omboto, C. M., Kanga, A., & Njageh, A. R. K. (2022). Myth or reality: Digital literacy programme implementation in primary special schools in Nairobi, Kenya. *European Journal of Education (EJED)*, 5(2), 51–66.
- Serero, P., & Schlebusch, G. (2025). Exploring teaching strategies to enhance ICT skills in visually impaired learners: Implications for inclusive education. *Educational Challenges*, 30(2), 71–85. <https://doi.org/10.34142/2709-7986.2025.30.2.06>
- Stetter, M. E. (2018). The use of technology to assist school-aged students with high incidence special needs in reading. *Education Sciences*, 8(2), 61. <https://doi.org/10.3390/educsci8020061>
- Stetter, M. E., & Hughes, M. T. (2010). Computer-assisted instruction to enhance the reading comprehension of struggling readers: A review of the literature. *Journal of Special Education Technology*, 25(4), 1–16. <https://www.learntechlib.org/p/113972/>
- Torgesen, J. K., Wagner, R. K., Rashotte, C. A., Herron, J., & Lindamood, P. (2010). Computer-assisted instruction to prevent early reading difficulties in students at risk for dyslexia: Outcomes from two instructional approaches. *Annals of Dyslexia*, 60(1), 40–56. <http://www.jstor.org/stable/23765402>