Journal of Classroom Action Research

JOURNAL OF CLASSROOM ACTION RESEARCH
Vol. 4 No. 1, February 2025
e- ISSN 2828-0601 , p-ISSN 2828 - 0695
Available online at:
https://journal.eltaorganization.org/index.php/jcar

Challenges and Opportunities for Technology and Language Learning in Sub-Saharan Africa

Stephen Nsyengula[1],Emmanuely Haule[2], Willy Mhagama[3], Joel Wang'uba[4], Anna Yassin[5]
Department of Humanities, Mbeya University of Science and Technology, Tanzania.

stephennsyengula@gmail.com

Received : February st[h], 2025 *Accepted : February 3[rd] , 2025* *Published : February 5[th], 2025*

Abstract

Sub-Saharan Africa has experienced a technological revolution in recent decades, with the rapid propagation of mobile devices and internet access influencing various aspects of life. This technological advancement has opened new frontiers for language learning in education, presenting both challenges and opportunities, particularly in the Mbeya region of Tanzania. This qualitative study explores the current state of technology-assisted language learning in Mbeya, identifying key obstacles and potential for growth. Through in-depth interviews and Focussed Group Discussions with educators, students, and policymakers, the research delves into the access and utilisation of technological resources within the language learning ecosystem. The findings of this study are significant, revealing disparities in connectivity, device availability, and digital literacy, particularly among marginalised communities, which limit their ability to fully leverage technology for language acquisition. However, the study also underscores the necessity of a comprehensive, multi-pronged strategy that includes investments in infrastructure, teacher training, and culturally relevant digital content. This strategy is urgent and crucial, aiming to inform stakeholders and contribute to developing equitable and sustainable technology-enhanced language learning strategies in Mbeya and beyond.

Keywords: ***Technology-assisted language learning; Teacher Training, Educational inequalities***

INTRODUCTION

In recent decades, sub-Saharan Africa has undergone a significant technological revolution, marked by the proliferation of mobile devices and increased internet access, influencing various sectors, including education. This transformation aligns with global trends, where technology has reshaped educational landscapes, fostering new methods of language learning through digital platforms, mobile applications, and online resources. However, the extent and impact of this integration vary across regions, often influenced by infrastructure, policy support, and socio-economic conditions.

In developed regions such as North America and Europe, robust infrastructure, high digital literacy, and supportive educational policies have facilitated the widespread adoption of digital tools for language learning. Platforms like Duolingo and Babbel have gained popularity, while blended learning models combining face-to-face instruction with online resources have enhanced language proficiency and learner engagement. These successes highlight the transformative potential of technology in education, particularly when key enabling factors are present (Godwin-Jones, 2018;

Published by English Lecturers and Teachers Association (ELTA)

DOI : 10.52622/jcar.v4i1.360

Golonka et al., 2014). In contrast, developing regions such as sub-Saharan Africa face substantial barriers, including limited internet connectivity, lack of devices, and inadequate teacher training, which hinder effective technology integration in education (Ngugi, 2016; Walsh et al., 2018).

The case of Tanzania, particularly in the Mbeya region, reflects these broader challenges. While urban areas have witnessed rapid digital infrastructure expansion, rural regions continue to experience significant disparities in access and utilization of technological resources for educational purposes (Kasuga, 2020). Similar trends are observed in other developing nations, where digital divides exacerbate educational inequalities. For instance, research in Kenya and Nigeria suggests that mobile learning offers flexible and cost-effective solutions for language learning, yet systemic issues such as poor infrastructure and socio-economic inequalities limit its reach and impact (Otieno et al., 2018; Akin-Adaramola, 2021).

In Asia, countries like South Korea and China have successfully integrated technology into language learning through government initiatives promoting digital textbooks, language learning apps, and online courses (Kim, 2017; Wang & Vasquez, 2012). These initiatives are supported by strong digital infrastructure and policies encouraging innovation in educational technology. However, regions such as Southeast Asia face similar challenges to those in sub-Saharan Africa, where disparities in technological access and varying levels of digital literacy affect the effectiveness of digital language learning interventions (Cahyani & Cahyono, 2020). Tanzania can draw lessons from these experiences, particularly in the role of policy-driven interventions that address infrastructure development and digital literacy enhancement.

The importance of culturally relevant digital content in technology-assisted language learning has been recognized globally. Research from Latin America highlights that culturally adapted digital content enhances learner engagement and language acquisition, particularly in multilingual contexts (Chik, 2014). Similarly, studies from the Middle East indicate that integrating local cultural elements into language learning applications improves learning outcomes and learner satisfaction (Alzubi & Singh, 2020). This insight is particularly relevant to Tanzania, where the development of localized digital resources aligned with linguistic and cultural needs remains a significant challenge (Mgaya & Mosha, 2019).

Despite the growing body of literature on technology-assisted language learning globally, research specifically focused on the Mbeya region remains limited. While existing studies provide a broad overview of challenges and opportunities in sub-Saharan Africa, they often lack in-depth analysis of specific contexts that could inform targeted interventions. Furthermore, while the barriers to technology integration are well-documented, there is less emphasis on exploring community-driven and localized solutions that address these challenges.

This study aims to bridge this gap by investigating the current state of technology-assisted language learning in the Mbeya region of Tanzania, identifying key obstacles, and exploring opportunities for enhancing language education through technological means. By employing a qualitative approach, this research seeks to provide a comprehensive understanding of the access, utilization, and effectiveness of technological resources in Mbeya's language learning ecosystem. The study's findings will inform policymakers, educators, and other stakeholders about the complexities and potential solutions in this domain, ultimately contributing to the development of equitable and sustainable strategies for technology-enhanced language learning in Tanzania and beyond.

METHODS

This study employed a qualitative research design, with 20 educators, 15 secondary school students, and 10 educational stakeholders (education officers, Non-governmental Agencies) in the Mbeya region. The participants were selected through purposive sampling to provide diverse perspectives on the state of technology-assisted language learning. Data were collected through

Focus group discussions, semi-structured interviews, and documentary reviews, allowing for an exploration of personal experiences, challenges, and insights into using technology in language learning. The data were analyzed thematically, focusing on key issues such as access to technology, the effectiveness of digital resources, and the role of policy in shaping technology integration in education.

FINDINGS

1. Disparities in Access and Digital Literacy

The study identified significant technological access disparities among different communities in Mbeya, particularly between urban and rural settings. Through semi-structured interviews, educators from urban schools highlighted progress in integrating digital tools for language learning. For instance, one teacher noted, *"In our school, we use tablets and whiteboards for teaching English, which has made lessons more interactive and engaging for students."* However, this contrasts sharply with rural and marginalized communities, where substantial barriers persist. These barriers include limited internet connectivity, lack of device access, and low digital literacy among students and educators.

In focus group discussions, rural teachers expressed frustration with the lack of infrastructure. One rural educator stated, *"We only have one computer for the entire school, and it is often broken or used for administrative purposes rather than teaching."* This was echoed by students who reported that their exposure to technology was minimal, often limited to using shared mobile phones with limited data capabilities, if at all. Documentary reviews of school reports from rural areas further corroborated these findings, revealing that many schools lacked essential technological equipment and reliable internet access, with some documents noting that *"only a few rural schools have functional internet connections suitable for educational purposes."*

2. Challenges in Technology Integration

The integration of technology in language learning is further hindered by inadequate teacher training and low digital literacy levels among educators. Many teachers reported feeling ill-equipped to use technology effectively, emphasizing the need for targeted professional development and support. As one urban teacher noted in an interview, *"We received tablets from a donor organization, but no training on how to integrate them into our lessons. They are just in storage because we do not know how to use them."* This sentiment was shared by rural educators, one of whom stated during a focus group discussion, *"There is no training provided for us to use the little technology we have. We are expected to figure it out on our own, which is very difficult."*

The documentary review of training records highlighted a significant gap in professional development. Very few teachers in the region had received any formal training on the use of digital tools in education. This lack of training contributes to a wider sense of digital disempowerment among educators, which directly affects their ability to facilitate technology-assisted language learning effectively.

3. Intensification of Educational Inequalities

The disparities in access and digital literacy worsen existing educational inequalities, particularly affecting marginalized communities. In interviews, several stakeholders acknowledged the challenges but cited budget constraints and competing priorities as barriers to addressing them. One Educational officer commented, "*We are aware of the digital divide, but there is limited funding*

for expanding infrastructure to rural areas. Our focus has been on improving basic education standards first."

Focus group discussions with educators from rural schools revealed the impact of these disparities on teaching experiences. One educator shared, *"I have heard about apps that can help with learning English, but I have never used one because we do not have computers at school."* This lack of access to digital resources limits students' ability to engage with modern language learning tools, placing them at a disadvantage compared to their urban counterparts with better access to such technologies.

Documentary reviews of educational performance reports indicated that students in rural areas consistently scored lower in English language assessments than their urban peers. The reports noted that "*students from schools with access to digital learning tools performed better in language proficiency tests than those without access,"* highlighting the impact of technological disparities on educational outcomes.

4. Need for Targeted Interventions

The findings underscore the need for targeted interventions to bridge the digital divide and support educators in utilizing technology for language learning. Respondents across different data sources consistently highlighted the importance of professional development for teachers. A rural teacher suggested, *"If we had proper training and support, we could use the technology we have more effectively, even if it is limited."* Similarly, a focus group of urban educators proposed that "*collaborative training sessions between urban and rural schools could help share knowledge and resources."*

Moreover, documentary reviews of successful interventions in other regions of Tanzania suggested that community-driven initiatives, such as local ICT hubs and partnerships with tech companies, could offer scalable solutions to improve access and utilization of digital resources in rural schools. These reviews highlighted case studies where "community involvement and external partnerships significantly improved digital literacy and technology use in education," suggesting a potential pathway for Mbeya to follow.

DISCUSSION

The findings of this study reveal significant disparities in access to technology and digital literacy between urban and rural communities in Mbeya, Tanzania, which have serious implications for language learning and educational equality. The following discussion integrates relevant studies to compare and contrast the challenges and potential solutions for technology-assisted language learning in this context.

1. Disparities in Access and Digital Literacy

The study found significant differences in access to technological resources between urban and rural schools in Mbeya. Urban institutions reported better integration of digital tools into language learning, such as tablets and whiteboards, which aligns with similar findings in other urban settings across sub-Saharan Africa (Sinyolo, 2020). This progress in urban areas is often attributed to more substantial infrastructure, better funding, and support from donor organisations, which facilitate the adoption of educational technologies (World Bank, 2019). For example, urban schools in Nairobi, Kenya, have similarly benefited from robust digital initiatives that enhance language learning (Otieno et al., 2018).

Contrastingly, rural and marginalised communities in Mbeya face substantial barriers, including limited internet connectivity, lack of access to devices, and low digital literacy among both students and educators. This mirrors findings from rural schools in other parts of sub-Saharan Africa, such as Uganda and Ethiopia, where technological infrastructure remains weak and unevenly

distributed (Kidd & Murray, 2021). However, a study by Tooley and Dixon (2019) contrasts these challenges by highlighting cases where low-cost private schools in rural Nigeria have managed to leverage minimal technological resources through community initiatives and local partnerships, demonstrating that strategic, low-cost interventions can make a meaningful impact even in resource-poor settings.

2. Challenges in Technology Integration

Technology integration into language learning is further hampered by inadequate teacher training and low digital literacy levels among educators, as observed in both urban and rural contexts in Mbeya. Similar findings have been reported in South Africa, where teachers in many schools lack confidence in using digital tools due to insufficient training (Isaacs, 2017). These challenges are not unique to Africa; studies from Latin America, such as Peru, have shown that without proper training, adopting technology in education is often superficial and fails to significantly enhance learning outcomes (Severin & Capota, 2019).

Conversely, in more developed educational settings like those in South Korea, extensive teacher training programs have been a cornerstone of successful technology integration, which contrasts sharply with the challenges faced in Mbeya (Kim, 2017). These programs emphasise the technical aspects of using digital tools and how to integrate them effectively into the curriculum. This highlights a critical gap in Mbeya, where teacher professional development is minimal. As a result, even when digital tools are available, they remain underutilized due to a lack of knowledge and confidence in their application (Pelgrum, 2019).

3. Intensification of Educational Inequalities

Disparities in access to technology and digital skills are deepening existing educational inequalities in Mbeya, particularly for marginalized communities. This study found that students in rural areas consistently perform worse in English language assessments compared to their urban counterparts, a trend supported by global evidence. For instance, research in the United States has shown that students with better access to technology tend to achieve higher academic outcomes, reinforcing the view that access to digital resources plays a critical role in educational success (Warschauer & Matuchniak, 2010).

However, some studies provide a contrasting perspective. For example, research in Finland suggests that while technology can enhance learning, it is not a panacea, and other factors, such as teacher quality and pedagogical approaches, play equally essential roles (Salomaa & Matsuo, 2018). This suggests that while improving access to technology is crucial, it must be part of a broader strategy that includes enhancing teacher skills and developing pedagogically sound digital content. In Mbeya, the lack of access to technology is compounded by the limited availability of culturally relevant digital resources, which further hinders the effectiveness of technology in language learning (Mgaya & Mosha, 2019).

4. Need for Targeted Interventions

The findings emphasize the urgent need for targeted interventions to bridge the digital divide and support educators using technology for language learning. Respondents in Mbeya highlighted the importance of professional development for teachers, suggesting that collaborative training sessions between urban and rural schools could facilitate the sharing of knowledge and resources. This approach is consistent with recommendations from UNESCO (2020), which advocates for context-specific professional development programs to address teachers' unique challenges in low-resource settings.

Contrasting views come from studies in high-income countries, where interventions have focused more on individualized professional development and integrating technology directly into

teacher education curricula (Tondeur et al., 2017). While such comprehensive approaches may be ideal, they are often not feasible in low-resource contexts like Mbeya due to financial and logistical constraints. However, evidence from community-driven initiatives in Rwanda shows that leveraging local resources and partnerships can effectively enhance digital literacy and technology use in education, even with limited budgets (Trucano, 2016). This suggests that similar models could be adapted and scaled in Mbeya, using local ICT hubs and strategic partnerships to improve access and utilisation of digital resources in rural schools.

The discussion highlights the common challenges and unique opportunities for enhancing technology-assisted language learning in Mbeya. By comparing and contrasting similar contexts, it becomes clear that while the challenges are significant, targeted, context-sensitive interventions that combine infrastructure improvements, professional development, and community engagement can make a meaningful difference. Stakeholders should prioritise a holistic approach that addresses technological access and pedagogical capacity, ensuring that all students, regardless of location, have equitable opportunities to benefit from technology in education.

CONCLUSION

This study has highlighted the significant disparities in access to technology and digital literacy between urban and rural communities in the Mbeya region of Tanzania, revealing a complex landscape where technology's potential to enhance language learning remains largely untapped, especially in marginalised areas. While urban schools have made strides in incorporating digital tools such as tablets and interactive whiteboards, rural schools face substantial challenges, including limited internet connectivity, lack of devices, and insufficient digital skills among educators and students. These disparities hinder the effective integration of technology into language education and intensify existing educational inequalities, placing students in rural areas at a significant disadvantage compared to their urban counterparts.

The challenges identified in this study reflect broader issues observed across sub-Saharan Africa and other developing regions, where infrastructure deficits, inadequate funding and a lack of professional development for teachers pose persistent barriers to technology integration in education. The findings emphasize the need for a multi-faceted approach that goes beyond merely providing digital tools. Investments must also be made in building the capacity of educators through targeted professional development, ensuring that they are equipped to use technology effectively in their teaching. Moreover, interventions should be context-specific, addressing the unique needs and challenges of rural schools, including the development of culturally relevant digital content that aligns with local linguistic and educational contexts.

To bridge the digital divide and promote equitable access to technology-enhanced language learning, it is crucial for stakeholders, including policymakers, educational institutions, and the private sector, to collaborate on comprehensive strategies that prioritise both infrastructure development and human capacity building. Community-driven initiatives, such as local ICT hubs and partnerships with technology companies, offer promising avenues for scaling up access and utilisation of digital resources in rural areas. By adopting a holistic and inclusive approach, it is possible to create an educational environment where all students, regardless of their location, can benefit from the transformative potential of technology in language learning. Addressing these challenges will enhance language proficiency and contribute to closing the educational gaps between urban and rural communities, fostering a more equitable and inclusive education system in Mbeya and beyond.

REFERENCES

Akin-Adaramola, O. (2021). Barriers to the Adoption of E-learning in Nigeria's Higher Education. *Journal of Educational Technology Systems, 50*(1), 45-58.

Alzubi, A. A., & Singh, M. K. M. (2020). The Impact of Mobile-Assisted Language Learning on Learners' Achievement. *Journal of Computer Assisted Learning, 36*(2), 248-261.

Cahyani, H., & Cahyono, B. Y. (2020). Teachers' Attitudes and Technology Use in Language Instruction: The Case of Indonesia. *Language Teaching Research, 24*(6), 723-739.

Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2019). A Review of Technological Pedagogical Content Knowledge. *Educational Technology & Society, 16*(2), 31-51.

Chik, A. (2014). Digital Gaming and Language Learning: Autonomy and Community. *Language Learning & Technology, 18*(2), 85-100.

Godwin-Jones, R. (2011). Emerging Technologies: Mobile Apps for Language Learning. *Language Learning & Technology, 15*(2), 2-11.

Godwin-Jones, R. (2018). Emerging Technologies for Language Learning. *Language Learning & Technology, 22*(3), 2-8.

Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for Foreign Language Learning: A Review of Technology Types and Their Effectiveness. *Computer Assisted Language Learning, 27*(1), 70-105.

Hockly, N. (2015). Developments in Online Language Learning. *ELT Journal, 69*(3), 308-313.

Isaacs, S. (2017). The Role of Teacher Training in Technology Integration in South African Schools. *South African Journal of Education, 37*(4), 1-12.

Kasuga, S. (2020). Digital Divide in Tanzania: Challenges and Prospects. *Tanzania Journal of Development Studies, 19*(1), 101-114.

Kennedy, C., & Levy, M. (2008). L'education aux Etats-Unis: Technological Transformation in Language Learning. *Educational Review, 60*(4), 375-390.

Kidd, T., & Murray, M. (2021). The Digital Divide in Education: Challenges and Solutions in Sub-Saharan Africa. *Educational Technology & Society, 24*(2), 22-33.

Kim, H. K. (2017). Technology Integration in English Language Teaching in Korean Universities. *Educational Technology Research and Development, 65*(3), 529-545.

Kukulska-Hulme, A. (2012). Language Learning Defined by Time and Place: A Framework for Next Generation Designs. *Educational Technology Research and Development, 60*(1), 1-13.

Mgaya, T., & Mosha, M. (2019). The Impact of Technology on English Language Learning in Tanzania: A Case of Higher Learning Institutions. *African Journal of Educational Studies, 14*(3), 115-130.

Mkapa, J. (2018). Digital Learning in Tanzania: Challenges and Prospects. *Journal of African Education Studies*, 12(4), 213-228.

Ngugi, B. (2016). Challenges in Integrating ICT in Education in Sub-Saharan Africa. *International Journal of Education and Development using Information and Communication Technology, 12*(2), 24-36.

Okech, A. (2015). Technology in Language Learning: Barriers and Opportunities in Sub-Saharan Africa. *International Journal of Education and Development using ICT*, 11(2), 91-102.

Otieno, A., Wanyama, P., & Muliaro, J. (2018). Mobile Learning: Perspectives from Sub-Saharan Africa. *International Journal of Interactive Mobile Technologies, 12*(4), 118-135.

Pelgrum, W. J. (2019). Obstacles to the Integration of ICT in Education: Results from a Worldwide Educational Assessment. *Computers & Education, 37*(2), 163-178.

Rama, J., & O'Donnell, M. (2012). Developing Localized Digital Content: A Case Study of ICT in Education in Tanzania. *Technology and Society, 15*(2), 23-35.

Salomaa, S., & Matsuo, T. (2018). Beyond Access: The Role of Teacher Quality in Technology-Enhanced Learning in Finland. *Journal of Educational Research, 75*(1), 45-62.

Severin, E., & Capota, C. (2019). Digital Skills and Education in Latin America: A Review. *Inter-American Development Bank Education Report, 14*(3), 66-79.

Sinyolo, D. (2020). The Digital Divide and Its Implications for the Teaching of English in Rural Schools in Tanzania. *Journal of Educational Technology Development, 19*(3), 215-228.

Smith, T. (2017). Bridging the Digital Divide in African Education. *African Journal of Educational Technology*, 6(3), 45-67.

Stockwell, G. (2013). Technology and Language Learning: A Study on the Use of Mobile Devices. *Language Teaching*, *46*(3), 415-429.

Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the Relationship between Teachers' Pedagogical Beliefs and Technology Use in Education: A Systematic Review of Qualitative Evidence. *Educational Technology Research and Development, 65*(3), 555-575.

Tooley, J., & Dixon, P. (2019). Private Schools for the Poor: The Solution to Africa's Education Crisis? *Cato Journal, 21*(2), 321-338.

Trucano, M. (2016). Innovative Uses of ICT in Low Resource Education Settings. *Global Learning Report, 17*(1), 19-28.

UNESCO. (2020). Teacher Training in ICT: Bridging the Digital Divide. *UNESCO Education Series, 8*(4), 33-44.

van Deursen, A. J., & van Dijk, J. A. (2019). The Digital Divide Shifts to Differences in Usage. *New Media & Society, 21*(2), 354-375.

Walsh, C., et al. (2018). The Digital Divide in Sub-Saharan Africa: Implications for Educational Inequality. *African Educational Research Journal, 6*(2), 68-75.

Wang, S., & Vasquez, C. (2012). Web 2.0 and Second Language Learning: What Does the Research Tell Us? *CALICO Journal*, *29*(3), 412-430.

Warschauer, M., & Matuchniak, T. (2010). New Technology and Digital Worlds: Analyzing Evidence of Equity in Access, Use, and Outcomes. *Review of Research in Education, 34*(1), 179-225.

World Bank. (2019). Technology in Education: The Impact of ICT in Schools in Rural Areas of Africa. *World Bank Education Review, 14*(2), 110-122.