

Bridging the knowledge gap: Countering the digital divide in rural school libraries in Zimbabwe

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Abstract

The digital divide between urban and rural learners is a significant obstacle to achieving the United Nations Sustainable Development Goal Number 4 (SDG 4) and the provision of information to rural dwellers. Achieving inclusive and equitable education for all partly hinges on bridging the digital gap. A case study of the Zimbabwe Rural Schools Library Trust (ZRSLT) was conducted to explore innovative strategies employed to bridge the digital divide. Data went through document and web content analysis, and interviews with three board members were conducted. Thematic content analysis was used to analyse the data. The findings revealed that ZRSLT established community initiatives and public-private partnerships to leverage the resources and expertise to develop and implement innovative solutions to bridge the digital divide. This was done through the provision of reading materials, donating technological equipment, building school libraries, assisting disadvantaged learners with school fees, and engaging policymakers to support rural schools in developing policies that support the integration of technology into the educational system. The authors recommend the need to identify policy and institutional changes needed to support the adoption and implementation of innovative solutions by the stakeholders in the education system. This study can inform national and regional educational standards where policymakers can use evidence-based strategies to design and implement programmes that specifically address the needs of rural learners. By addressing the digital divide, this study not only supports the achievement of SDG 4 but also contributes to the overall progress and development of rural communities in developing countries.

Keywords: equity; rural; school libraries; sustainable development; Zimbabwe

Publication Type: case study

Introduction

The digital divide, a significant barrier to equitable access to education, remains a persistent challenge, particularly in developing countries (Afzal et al., 2023). The term ‘digital divide’ refers to the inequalities among learners in accessing technology and information and communication technology (ICT) skills (Faloye & Ajayi, 2021). This divide is most pronounced between urban and rural areas, where disparities in infrastructure, resources, and opportunities hinder the educational progress of rural learners (Olanrewaju et al., 2021; Sumida & Kawata, 2021; van Maarseveen, 2021). In the context of the United Nations Sustainable Development Goal Number 4 (SDG 4), addressing this digital divide is crucial (Tonegawa, 2023).

SDG 4 aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (United Nations, 2024). The goal recognizes that education is essential for

the success of all the other SDGs. It deals with universal primary and secondary education, early childhood development and pre-primary education, equal access to technical, vocational, and higher education, and skills for employment and entrepreneurship, among other targets and indicators (Abrahams, 2024). Therefore, SDG 4 emphasizes the importance of lifelong learning, quality education, and inclusive practices to ensure that everyone has the chance to achieve their potential and contribute to society (Adipat & Chotikapanich, 2022).

Additionally, the African Union Agenda 2063 is a strategic framework for the continent's socio-economic transformation over the next 50 years. It aims to deliver on the African Union's vision of an integrated, and peaceful Africa, driven by its citizens and representing a dynamic force in the global arena (African Union, 2024). Aspiration number 1 is about a prosperous Africa based on inclusive growth and sustainable development, while goal number one emphasises well-educated citizens and a skills revolution underpinned by science, technology, and innovation (STI). The priority area under this goal is education and STI skills-driven revolution, and this goes hand in hand with SDG 4. The National Development Strategy 1 (NDS1) in Zimbabwe addresses the global aspirations of the SDGs (UN Zimbabwe, 2024) and Agenda 2063 (African Union Commission, 2024). It is Zimbabwe's first 5-year medium-term plan to realize the country's vision of 2030 and document the importance of access to quality, equitable, and inclusive education (Government of Zimbabwe, 2020).

In Zimbabwe, an organization called the Zimbabwe Rural School Libraries Trust (ZRSLT) was formed to address a digital divide identified between rural and urban learners. The ZRSLT is a non-profit organization dedicated to improving education and literacy in rural areas through the provision of educational materials to deal with digital disparities in Zimbabwe (ZRSLT, 2024a). The organization focuses on establishing and supporting libraries in rural schools to provide access to educational materials like books, computers, and tablets, fostering a love for reading and using ICTs among rural learners. One chapter of the Trust is in Zimbabwe, one in New Zealand, and another one is being formed in Australia. The chapter in New Zealand was formed to complement the efforts of the Zimbabwean chapter. The chapter was created when the founder of the ZRSLT migrated to New Zealand and wanted to carry forward the idea of mobilizing resources for rural schools in Zimbabwe. The organization is now a Private Voluntary Organisation (PVO), which is an organization that is registered with the Department of Social Welfare in Zimbabwe, is exempt from income taxes, and receives funds from private sources, voluntary contributions of money, staff time, or in-kind support from the public.

This study explores ZRSLT's strategies to bridge the digital divide between rural and urban learners in Zimbabwe. This research helps to identify effective approaches that enhance educational accessibility and quality for rural students by fostering an environment conducive to lifelong learning using educational technology in the teaching and learning process. This study was conducted to produce suggestions based on evidence that can guide policy and practice to achieve SDG 4, ensuring that no learner is left behind due to geographic and socio-economic disparities. It is against this background that the study sought to achieve the following objectives:

1. Identify the aspects of the digital divide in rural schools.
2. Document strategies employed by the ZRSLT to bridge the digital divide between rural and urban learners.
3. Identify challenges faced by ZRSLT in bridging the digital divide.

Problem Statement

SDG 4 calls for inclusive and equitable quality education and promotes lifelong learning opportunities for all (UNESCO, 2016). However, a digital divide between rural and urban learners in developing countries like Zimbabwe presents a significant barrier to achieving inclusive education, as outlined in SDG 4 (Nera & Nyakadzino, 2023). Urban learners generally benefit from better digital infrastructure, more extensive access to educational technologies, and a higher concentration of trained educators proficient in using digital tools (Kormos & Wisdom, 2023). In contrast, rural learners often face limited access to these critical resources due to infrastructural deficiencies, socioeconomic constraints, and geographical isolation (Tokwe, 2018). This disparity worsens educational inequalities, leaving rural students disadvantaged in acquiring the skills and knowledge necessary for personal and professional development in an increasingly digital world. This persistent knowledge gap undermines efforts to provide lifelong learning opportunities and hinders the progress of rural communities (Olanrewaju et al., 2021). The ZRSLT recognises the urgency of addressing this issue so that learners have an equal opportunity to thrive in the digital age.

This study aims to identify innovative strategies that bridge this digital divide so that all learners can access the benefits of digital learning and technology-based educational resources. It seeks to explore solutions that enhance digital infrastructure, improve access to digital educational resources, and ensure that rural learners receive equitable educational opportunities. Addressing this problem is crucial for meeting the targets of SDG 4 and fostering an inclusive, knowledgeable, and economically vibrant society.

Literature Review

This literature review documents the key aspects of the digital divide and how it affects rural learners, especially the availability of the infrastructure and the resources to assist both students and learners in using digital devices to enhance the teaching and learning processes. The activities being done by non-governmental organisations to bridge the digital divide in rural schools would also be unpacked. Finally, the challenges being faced in bridging the digital divide will be identified. This study aims to bridge this gap by investigating how the ZRSLT is bridging the digital divide in rural schools in Zimbabwe.

Key aspects of the digital divide

The digital divide in rural schools refers to the significant gap between students and educators in rural areas versus those in urban areas in terms of access to and effective use of digital technologies and internet connectivity (Afzal et al., 2023; Wang, 2013). The divide impacts the quality of education and the opportunities available to rural students since rural schools often lack reliable, high-speed internet access, making it difficult for students to access online resources, participate in virtual classes, or use cloud-based applications (du Plessis & Mestry, 2019). There is a shortage of essential digital devices such as computers, tablets, and smartphones in rural schools, limiting students' ability to engage with digital learning tools. If they are available, the devices are often outdated and incapable of supporting modern applications.

In addition, insufficient electrical supply, frequent power outages, and a lack of a stable electrical infrastructure can hinder the use of digital tools in rural schools (Kormos & Wisdom,

2021). This is coupled with an inadequate physical infrastructure, such as classrooms and secure storage for digital equipment (Lombo & Subban, 2024). Moreover, rural schools may have limited access to high-quality digital educational content, including books, interactive learning modules, and online courses (Kormos & Wisdom, 2021). This lack of educational tools to enhance learning experiences affects rural learners' teaching and learning activities compared to urban areas. Furthermore, there is often a lack of technical support and expertise to maintain digital infrastructure and assist with troubleshooting in rural areas (Aruleba & Jere, 2022).

Ensuring the sustainability and regular maintenance of digital devices and infrastructure can be challenging in rural areas due to financial and logistical constraints (Vimal et al., 2023). This also affects digital literacy and skills, where many teachers may lack the training to effectively integrate digital tools into their teaching practices (Mahwai & Wotela, 2022; Maja, 2023; Mustafa et al., 2024). The students may also have lower levels of digital literacy than their urban counterparts, affecting their ability to use technology effectively for learning (Afzal et al., 2023). In addition, the high cost of digital devices and internet access can be prohibitive for many rural families, further widening the digital gap. Limited financial resources in rural schools can restrict investments in digital infrastructure and resources (Olanrewaju et al., 2021). As a result, the digital divide in rural schools has far-reaching implications for students, teachers, and communities, such as educational inequality, social exclusion, economic disparities, and lack of skills development. Students in rural areas may fall behind their urban peers academically due to limited access to digital tools and resources. Without exposure to technology, rural students may lack the essential digital skills required for future education and employment opportunities (Afzal et al., 2023; Olanrewaju et al., 2021). The digital divide can also perpetuate socio-economic disparities, as students from rural areas may have fewer opportunities for upward mobility. Finally, limited access to digital technologies can lead to social exclusion, as rural students may be unable to participate in broader digital and knowledge economies (Ye & Yang, 2020). This study provides some insights into what is being done by a non-profit organization to address the digital divide in rural schools in Zimbabwe to ensure educational equity and foster inclusive development.

Non-profit organisations and bridging the digital divide

Non-profit organisations play a crucial role in bridging the digital gap in rural schools, especially in developing countries where government resources and infrastructure may be limited (Ehimuan et al., 2024). Their involvement is multifaceted and impactful, addressing various dimensions of the digital divide, including infrastructure development. The organisations provide technology by supplying essential digital tools such as computers, tablets, and internet connectivity to rural schools. Equipping schools with the necessary hardware lays the foundation for digital learning.

Non-governmental organisations (NGOs) also partner with technology firms and local governments to establish or implement internet connectivity in remote areas, ensuring that rural students can access online resources and learning platforms (Furuholt & Saebo, 2018). Capacity building is also done through teacher training, where NGOs provide training programs for teachers to enhance their digital literacy and pedagogical skills for integrating technology into the classroom (Agyei, 2020; Teane, 2024). This helps educators effectively utilize digital tools to improve teaching and learning outcomes. They also offer workshops and courses to develop essential digital skills, preparing students for future educational and employment opportunities (ICDL Foundation, 2023).

In addition, some NGOs develop and distribute educational content tailored to rural schools' curriculum and specific needs, such as books (Gali & Schechter, 2020). Some organisations create or support the development of e-learning platforms that provide rural students access to a wide range of educational materials and courses. Furthermore, community engagement activities involve parents and the broader community to raise awareness about the importance of education (Hassan et al., 2023). NGOs organise community workshops to help parents support their children's learning at home. In addition, local partnerships are formed with local businesses and other community stakeholders where NGOs mobilise resources and support educational initiatives. NGOs also advocate for policy changes and secure funding for digital education initiatives (Gali & Schechter, 2021). They work to ensure that the needs of the rural schools are represented in national and regional educational strategies. They collaborate with government agencies to implement scalable digital education programmes, leveraging their expertise and resources to complement public efforts. Monitoring and evaluation are also done to assess the effectiveness and efficiency of educational programmes (Usmani et al., 2022). NGOs conduct regular assessments to measure the impact of their interventions on educational outcomes. This data helps refine strategies and ensure that initiatives effectively bridge the digital gap. They develop sustainability plans to ensure that digital education initiatives continue to benefit rural schools long-term, even after initial funding and support have ended. This study documents the role of ZRSLT as an NGO that promotes the bridging of the digital divide between rural and urban learners in Zimbabwe.

Challenges faced in bridging the digital divide

Non-profit organisations play a crucial role in bridging the digital divide in rural schools (Afzal et al., 2023; Ali & Khan, 2024; Gonzales & Yan, 2020; Mishra, 2021). However, they face numerous challenges that hinder their efforts (Chisango & Marongwe, 2021; La Fleur & Dlamini, 2022; Tilya, 2018; Wang, 2013). There are funding constraints due to limited financial resources, and securing consistent funding is a significant challenge (Bandyopadhyay et al., 2021). As a result, ensuring long-term financial support for maintaining digital infrastructure and programmes is difficult, especially in economically volatile environments. Infrastructure deficiencies are another challenge where there is a lack of basic infrastructure (Feurich et al., 2024; Okocha & Edafewotu, 2022; Samuel-Okon & Abejide, 2024; Sulaiman & Halamy, 2021).

Rural areas often lack the basic infrastructure needed for digital initiatives, such as stable electricity, reliable internet connectivity, and secure facilities to house digital equipment. The cost of setting up necessary infrastructure, such as internet towers and electrical lines, can be prohibitively high (Prathapagiri, 2020). Therefore, frequent power outages hinder the consistent use of digital tools, internet connectivity remains expensive and unreliable in many rural areas, and the sustainability and maintenance of digital equipment is a persistent issue. Moreover, the lack of skilled personnel to use and maintain digital tools is an obstacle, and ongoing training and capacity building is required to keep up with technological advancements, which can be resource-intensive (Samuel-Okon & Abejide, 2024).

Ensuring that digital initiatives are sustainable in the long term without ongoing external support is a significant challenge. Furthermore, evaluating the impact of digital education initiatives can be challenging due to a lack of reliable data and metrics. Also, establishing effective feedback mechanisms to continually improve programmes is often difficult. In addition, policy and regulatory environments might also affect the work of the NGOs in bridging the digital divide in rural schools (Kuteesa et al., 2024; Samuel-Okon & Abejide, 2024). Therefore, continued

collaboration among all the stakeholders is vital to overcome the existing challenges and ensure the sustainability of the initiatives. This study would unpack the challenges ZRSLT faces in its efforts to bridge the digital divide in rural schools in Zimbabwe.

Methodology

As a non-profit organization, ZRSLT was established in 2012 to develop school libraries in rural communities to address the digital divide sustainably and to meet SDG 4. Following Yin's (2018) model, a case study was conducted at the ZRSLT to analyse the impact of the work being done by the organization. Data was gathered through document and web content analysis. The ZRSLT website (ZRSLT, 2024a) was used to retrieve reports and news articles that were broadcast and the activities taking place to deal with the digital divide and promote a reading culture within rural schools in Zimbabwe.

The data was collected in May 2024, and nine news articles and eight reports were retrieved for analysis. Conceptual analysis was used to determine the concepts in a text whereby the research objectives were identified, and specific phrases that inform the objectives were identified (i.e., key aspects of the digital divide, strategies for bridging the digital divide, and challenges faced). Themes were drawn, sticking to pre-defined categories to stay focused and examine the data for specific concepts. The sub-themes that emerged from the data analysis were the digital divide, digital resources, financial resources, sustainability, access gap, infrastructure, reading culture, fundraising activities, computers, stakeholders, and policy engagement.

Additionally, online interviews were done with three board members who have been with the Trust since its inception. The board members were purposively selected as they hold organizational memory and have participated in most of ZRSLT's activities. They are also the decision-makers mapping how the organization operates over time. An interview protocol ensured that all the board members were asked the same questions. The data was analysed using thematic content analysis (Braun & Clarke, 2022) and presented according to the research objectives. The three themes pointed out in the paragraph above were used. The sub-themes from the interviews were financial challenges, the information access gap, the digital divide, digital infrastructure, sustainability, reading culture, digital literacy, computers, community engagement, and fundraising activities.

Results

This section documents the results of the data collected using document analysis, web content analysis, and semi-structured interviews. The findings showed that the ZRSLT is instrumental in bridging the digital divide between rural and urban learners. The research objectives guided the study, which revealed three themes: the role of the ZRSLT in bridging the digital divide, strategies to bridge the digital divide in schools, and challenges faced in bridging the digital divide.

The role of ZRSLT in bridging the digital divide

The ZRSLT was established by people who wanted to plough back to their communities through the “*Ziva midzi yako*” (know your roots) initiative which was officially launched in 2013 (The Zimbabwean, 2013; Zimbabwe Reads, 2013). Most of the members did their primary education in rural schools without a library. As a result, there was an information access gap between the

rural and urban learners. The goal was to promote a reading culture among rural learners and ensure access to relevant and up-to-date educational materials in rural schools (Newsday, 2012). It focuses on improving resources in rural schools, including digital resources, by creating well-equipped libraries offering traditional books and digital learning materials. The responses from the participants indicated that the main reason for starting the Trust was to bridge the digital and information access gap between rural and urban schools:

“The Zimbabwe Rural Schools Library Trust was inspired by the Matenda school library project which I recommended to a friend. He approached me wanting ideas on how he could help his former school. I said if he was able to ship books to Zimbabwe, I could get them. He agreed, and when the books were sent, I asked a fellow librarian based in the province to manage the setting up of a library. The project produced good results, and I felt this had to be spread across the country.” - Participant 1

“The gap in information access between rural school children and urban school-going children led to the establishment of ZRSLT” - Participant 2

“The need to bridge the gap between urban-based schools and those based in the rural areas in terms of access to reading material led to the ZRSLT. We wanted to promote a reading culture among rural school children.” - Participant 3

Evidence from the websites buttresses this by pointing out that the Trust is aimed at mobilizing resources and establishing rural school libraries (Dube, 2012). The objectives of ZRSLT in Zimbabwe and New Zealand are provided on its website (ZRSLT, 2024a):

Objectives for Zimbabwe

- To mobilize resources for the establishment and sustainable development of library services in identified underprivileged rural schools in Zimbabwe.
- To help cultivate a reading culture in rural children and their communities.
- To develop an awareness of books and other information resources as a means of satisfying their educational, information, and entertainment needs and interests.
- To unlock the reading potential of rural children.
- To assist with the alleviation of child delinquency in society.
- To work with other organizations with similar objectives.
- To promote access to computers and other ICT equipment for rural schools and their communities.
- To raise the necessary funds to further the Trust’s objectives.

Objectives for New Zealand

- To mobilize resources for establishing and developing library services in underprivileged rural schools in Zimbabwe.

- To advance education by helping young people in Zimbabwe cultivate a reading culture.
- To work hand in hand with other organisations that share the same aims and objectives and support educational initiatives for Zimbabwe.
- Raise the necessary funds to support the Zimbabwe Rural Schools Library Trust (Zimbabwe).
- To encourage and promote intercultural exchange programs between New Zealand and Zimbabwe's rural schools.

Strategies to bridge the digital divide in schools

The Trust has been working with rural communities to build libraries in rural schools, distribute reading materials, and assist underprivileged students with school fees. The importance of the libraries to the rural communities is explained to maintain the libraries and the donated materials for the benefit of the community. In addition, public-private partnerships are being done by donating books and computers to rural schools. Fundraising activities were done in the countries where the Trust is registered through selling raffle tickets, fun runs, and sausage sizzles (The Herald, 2020; The Zimbabwean, 2023; Zimbabwean Situation, 2020; Zimbabwe et al., 2022; ZRSLT, 2019a; ZRSLT, 2019b; ZRSLT, 2019c; ZRSLT, 2021).

Evidence from the ZRSLT websites showed that in New Zealand, a page on the Givealittle site was created, appealing to partners to help the rural schools in Zimbabwe build sound libraries (Givealittle, 2021; Jessica, 2019). The fundraising coordinator indicated that several rural schools, especially those in remote areas, have been recording zero pass rates in public examinations, and the primary cause was a lack of reading materials. It was added that the ZRSLT in New Zealand had been mobilizing learning materials to rural areas, and the schools that received the materials recorded improved results. The fundraising activities are also showcased on the official Facebook page to create awareness and encourage people to participate in these initiatives (ZRSLT, 2024b).

Furthermore, money has been provided to purchase books from the Zimbabwe Publishing House to ensure that access to local content is provided. As a result, 100 schools from the country's ten provinces benefited from this initiative. The Zimbabwean (2023) also stated that the ZRSLT has sources for books within Zimbabwe, partnered with the Zambezi Book Project, and distributed books to rural schools. On the same page, the ZRSLT encouraged and promoted intercultural exchange programmes between New Zealand and rural schools in Zimbabwe.

The ZRSLT encourages the community to participate during the building process. There is a division of labour, whereby the community members are responsible for providing labour such as bricklaying and building the structures. The Trust then provides the resources needed to make the project a success. This was done to build a sense of ownership among the community members. The participants were asked how they engage local communities and stakeholders and pointed out that they involve all the stakeholders in running the rural schools:

“Communities are informed when resources are delivered. Special handover ceremonies have been held at the schools to receive the books, and communities have been invited

to these. Where libraries have been constructed, the communities have provided labour during construction.” - Participant 1

“We get to the community through relevant provincial, district, and local chiefs.” - Participant 2

“We go through the local chief and locally based political and religious leaders. We attend Parents’ Day where we explain to parents the importance of libraries.” - Participant 3

The findings showed that policy engagement was another strategy used. Policymakers responsible for school libraries within the district, provincial, and national levels were engaged to discuss issues surrounding the development of rural school libraries. The results also showed that ZRSLT is mobilizing physical and electronic resources in rural schools, as shown below.

“The focus is now to include computers with each shipment to ensure the rural children also have access to computers. The first recipient of computers is a school in Mwenezi. Rural schools that have constructed computer laboratories but cannot afford the equipment are the prime targets.” - Participant 1

“We have mobilized and capacitated some rural schools with computer equipment, including training in ICT literacy skills.” - Participant 2

“Except in two schools where we sourced and donated laptops and desktops to go with hard copy reading material, we have not done much else due to funding constraints.” - Participant 3

The quotes below amplify the evidence of the achievements that ZRSLT has done in bridging the digital divide in rural schools:

“Over 100 schools have received books - a model that the Ziva Midzi Yako initiative launched by the Trust, which has inspired some individuals to fund the construction of libraries at the schools they went to or schools from the rural areas they identify with, or in honour of their parents who worked at the schools.” - Participant 1

“Distribution of reading materials to over 200 schools in rural areas, the establishment of over ten rural school libraries across the country, registration as a PVO.” - Participant 2

“So far, we have helped to put up more than four libraries in the country and distributed reading materials and solar lights to over 60 schools in Zimbabwe.” - Participant 3

The ZRSLT has been working with musicians and some goodwill ambassadors to develop rural libraries and promote a reading culture (Nehanda Radio, 2014). Music has been used as a mass communication advocacy tool to spread the message of the importance of libraries, leading to the production of an album with songs encouraging reading and library use (Mpangi, 2018; ZRSLT, 2017).

Challenges faced in bridging the digital divide

The challenges that ZRSLT had faced in bridging the digital divide include financial resources to provide information sources, sustainability since there are no trained librarians in most of the rural schools, electricity challenges, limited locally produced reading materials, overreliance on donations which might not be locally relevant, internet connectivity is erratic and expensive. These challenges are the same as those outlined by many studies that focused on funding, poor infrastructure, and poor digital literacy skills (Aruleba & Jere, 2022; du Plessis & Mestry, 2019; Kormos & Wisdom, 2021; Lombo & Subban, 2024; Mahwai & Wotela, 2022; Maja, 2023; Mustafa et al., 2024; Olanrewaju et al., 2021). However, no author has indicated the challenge of relying on donors, which leads to the availability of materials that might not be suitable for the curriculum or the local context. The books donated to Zimbabwe are in English, and the primary reason for providing them is to improve the reading skills of rural students. Therefore, the rural schools might not have a collection development policy but would be happy to have books to give to the learners. The participants stated that:

“We have had challenges with resources. Fundraising activities so far have not generated enough resources to set up an office and employ staff to manage the work. The work has been done by Trustees on a voluntary basis who obviously prioritise their own work for justifiable reasons.” - Participant 1

“Funding has been the major limitation for the organization.” - Participant 2

“Funding and limited locally produced reading materials.” - Participant 3

Evidence from the website points out that the financial challenges were felt when a container of books and computers destined for rural primary schools had issues with clearing, and demurrage costs were mounting (Jessicca, 2019). Demurrage is a fee that must be paid when cargo remains at a port or terminal for longer than the agreed free period specified in a shipping contract. This led to seeking outside interference where other organisations chipped in to pay for the clearing costs. The financial challenges align with what was stated by Bandyopadhyay et al. (2021). The participants emphasized the issue of sustainability challenges. They indicated that beyond the support provided by ZRSLT, it had been difficult to sustain the projects in rural schools, although training was done.

“Sustainability is a concern as there are no trained personnel to manage the libraries.” - Participant 1

“To some extent, there have been limitations due to the energy crisis as the computers relied on grid-connected power” - Participant 2

*“Sustainability in the two cases cited is gained through the appointment of qualified teachers who undergo regular training to upgrade their knowledge.”
- Participant 3*

Vimal et al. (2023) identified similar difficulties. The participants indicated that the government should partner with institutions conducting developmental projects to bridge the digital divide.

“Government should complement initiatives to establish and resource school libraries.” - Participant 1

“Budget provision from Treasury annually for the building and establishment of libraries in rural schools is important.” - Participant 2

“The government should support the establishment of rural school libraries by allocating enough funds for physical and digital infrastructure. They should also step up the training of librarians to take up positions in schools that establish libraries.” - Participant 3

Furuholt and Saebo (2018) also supported this, indicating the importance of involving all stakeholders in dealing with the digital divide in rural schools. Therefore, the government's role in bridging the digital divide cannot be overlooked since it is responsible for policy enactment and implementation and providing the necessary resources and infrastructure.

Discussion

The study showed that the ZRSLT is a crucial agent in addressing the digital divide in rural schools and uses various strategies to bridge the digital divide between rural and urban learners. Through a combination of infrastructure development, capacity building, content delivery, community engagement, policy advocacy, and continuous evaluation, ZRSLT has been instrumental in creating a more equitable educational landscape, thereby significantly contributing to the achievement of SDG 4, as shown by the website content and results from the interviews. The above subthemes were emphasized in both data collection instruments, showing an overlap signifying their importance in bridging the digital divide, which is prevalent in Zimbabwean schools. The significant challenges are financial and sustainability issues, intermittent power supply, high internet connectivity costs, and digital equipment maintenance. The main results from the study showed that the ZRSLT provides computers, tablets, and internet access to rural schools and trains teachers and students to use digital tools effectively. The following achievements were registered in bridging the digital divide as evidenced by results from the study:

- a) Solar lights have been distributed to schools for learners to borrow so they can read at home at night.
- b) Computers have been distributed to two rural schools.
- c) Construction of more than four school and community libraries.
- d) Training learners, teachers, and librarians in digital and information literacy.
- e) Over 100 rural schools received books through donations.
- f) Registration as a Private Voluntary Organisation (PVO) in 2023.

Physical resources such as libraries, solar lights, and books enhance access to education and literacy. These are fundamental skills for navigating the digital world and are crucial in preparing communities to participate better in a more connected, digital future. In addition, access to physical libraries and educational materials can help build a culture of learning, creating a pathway toward digital inclusion as these communities become more equipped to adopt and utilize digital tools effectively. The results showed that the rural schools in Zimbabwe lack the necessary infrastructure and resources to fully benefit from digital learning

resources to meet SDG 4. The ZRSLT is now filling that gap to ensure no learner is left behind using digital technologies by providing the needed resources and training. Many fundraising activities were done to get the financial resources needed to purchase the digital resources to donate to rural schools and build libraries where learners would keep and use the equipment. However, the limitation of the study is that it focused on one organization due to financial constraints from the researchers. Other NGOs are also working to bridge the digital divide between rural and urban learners in Zimbabwe, such as Edward Ndlovu Memorial Trust, Education Coalition of Zimbabwe, and Save the Children. These can also be studied to provide information on how they are assisting these schools to achieve SDG 4.

Conclusion

The study was done to document the strategies being employed by the ZRSLT in bridging the digital divide between rural and urban schools in Zimbabwe. A case study of the ZRSLT was done where data was collected using interviews, web, and document analysis, and was analysed using thematic content analysis. The findings were presented according to the research objectives. This study can significantly contribute to understanding and addressing the digital divide in education, fostering a more inclusive and equitable learning environment for all learners. The research aligns with the United Nations' sustainable development goals and underscores the importance of providing digital infrastructure in rural schools. The policy implication is that the findings can inform policymakers and educational authorities about the critical areas that need investment and attention, guiding the allocation of resources and formulation of policies aimed at bridging the digital divide. An area for further research is to study the schools that have benefited from the activities done by ZRSLT and assess the benefits enjoyed and the challenges experienced in rural schools in dealing with the digital divide.

The Zimbabwean government, under the Ministry of Primary and Secondary Education, should complement the initiative and resource rural school libraries. Continued collaboration between local communities, non-profit organisations, and the government to provide the necessary infrastructure, resources, training, and support is essential to overcome challenges and sustain progress. Budget provision through treasury for establishing and maintaining rural school libraries should be made to provide physical and digital infrastructure to support the efforts of ZRSLT, such as investing in internet connectivity, electrical infrastructure, and physical facilities such as libraries, books, and digital tools in rural schools. Training and capacity building should be done to train teachers, librarians, and students to enhance digital literacy and the effective use of technology in education. Regulatory and institutional reforms to support adopting and implementing new solutions can be achieved through advocating for supportive policies and increased government investment in rural digital education initiatives. By bridging this divide, all students will have the opportunity to achieve their full potential and contribute to their communities and economies. This would help to achieve SDG 4, ensuring inclusive and equitable education for all students, regardless of their location.

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We thank the Zimbabwe Rural Schools Library Trust board members for devoting their time to the interviews and for permitting us to document what the institution is doing to bridge the digital divide between rural and urban learners.

Appendix A

Interview guide

My name is Josiline Chigwada and we are conducting a study on innovative strategies to bridge the digital divide between rural and urban learners as a way of achieving SDG 4. You were selected to take part in this study as the pioneers of the Trust and have organisational memory in terms of the activities done so far. Three board members would be part of the study. Could you please assist by giving your time by answering the following questions? Your insights will contribute to shaping policies and practices that promote better access to digital tools and learning resources for all students. You are free to withdraw from the study at any time and your participation is voluntary.

1. What prompted the establishment of the Zimbabwe Rural School Libraries Trust?
2. What are the achievements so far?
3. What innovative strategies do you use to bridge the digital divide between rural and urban learners?
4. How sustainable are these strategies at these schools after the completion of your project and assistance?
5. How do you engage local communities and stakeholders?
6. What challenges have you faced so far?
7. What policy recommendations can you make?

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