Innovative Teaching Strategies for Delivering the Core Curriculum to Learners with Low Vision in Integrated Schools in Botswana

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ABSTRACT

Innovative teaching strategies are vital for effectively delivering the core curriculum to learners with low vision (LV) in inclusive educational settings. This study investigated pedagogical practices that promote engagement and understanding among learners with LV, emphasizing the significance of adaptive instructional methods. Building on existing literature, key strategies identified include cooperative learning, differentiated instruction, participatory learning and assistive technology, which bridge the gap between standard curricula and the unique challenges faced by these learners. The research employed a descriptive survey design, integrating qualitative and quantitative methodologies, to assess the effectiveness of these strategies in enhancing academic performance. A sample of n=69 participants, including special education and regular teachers, was selected from two primary schools in Botswana. Data was collected through questionnaires, interviews and observations, revealing that specialized pedagogical approaches, such as the use of tactile learning aids and individualized educational plans, significantly improve learning outcomes for learners with LV. The findings highlight the need for comprehensive teacher training to implement these innovative strategies effectively, particularly in inclusive schools, where the lack of specialized resources often limits support for learners with LV. This research highlights the importance of creating inclusive educational environments that cater to the diverse needs of learners with LV, ensuring their academic success alongside their sighted peers. The study recommends on the need for policy interventions that prioritize inclusivity and accessibility for learners with LV, advocating for specialized training programs for teachers and the implementation of Individualized Education Plans (IEPs) to provide tailored support. Additionally, fostering collaboration between special and regular teachers, along with involving parents in the educational process, can enhance the sharing of best practices and support the integration of learners with LV into the broader school community.

Keywords: Curriculum Delivery, Inclusivity, Innovative Teaching Strategies, Low Vision, Special and Inclusive Schools

INTRODUCTION

Innovative teaching strategies are essential in ensuring the core curriculum is effectively delivered to learners with low vision (LV) in inclusive schools. LV is a visual impairment that significantly affects an individual's ability to perform everyday tasks despite the use of corrective lenses or medical treatment, but it is not severe enough to be classified as complete blindness, with core curriculum being the set of essential academic subjects and learning experiences that form the foundation of education, typically including language arts, mathematics, science, social studies and other fundamental areas as noted by Kasebusha and Banda (2021). Pedagogical practices, including strategies, methods and approaches teachers use, are critical in supporting these learners. According to Kane *et al*. (2017), these practices aim to promote engagement and understanding among learners by adapting instructional methods to meet diverse needs. In the context of learners with LV, Kasebusha and Banda (2021) identify key strategies such as cooperative learning, participatory learning, differentiated instruction and the use of assistive technology. These approaches help

bridge the gap between the standard curriculum and the unique challenges faced by learners with VI, ensuring that they can access learning materials effectively and meaningfully.

Special schools, which are tailored for learners with disabilities, often provide more individualized support for learners with LV, utilizing specialized resources and teaching strategies. As highlighted by Erickson (2020), the goal of these practices is to enhance student learning outcomes by creating educational experiences that accommodate the visual limitations of learners. For example, in special schools, teachers may employ tactile learning aids, large print materials and technology designed to enhance visual input, such as magnifiers and screen readers (Kupar, 2018). In contrast, inclusive schools, where learners with LV are included in mainstream classrooms, may struggle to provide the same level of individualized support, especially when teachers lack the training to modify their teaching strategies appropriately (Miyauchi, 2020). This lack of support can negatively impact the learning outcomes of learners with LV in inclusive settings, emphasizing the need for teacher training in inclusive pedagogical practices.

In inclusive schools, innovative teaching strategies for learners with LV focus on adapting the learning environment to ensure inclusivity. Studies by Pandey (2018) suggest that teachers in inclusive settings must modify their teaching strategies to leverage the residual vision of learners with LV, helping them use their remaining visual capacity to engage in classroom activities. Strategies such as providing enlarged text, using high-contrast materials and ensuring sufficient lighting are crucial adaptations that allow learners to participate in standard classroom settings. However, as found by Douglas, Rockson and Dorleku (2020), inclusive schools often face challenges in implementing these modifications consistently. Teachers in these settings may not have access to specialized resources or training, resulting in inadequate support for learners with LV. This highlights the importance of continuous professional development and collaboration between special education specialists and regular teachers to ensure that learners with LV receive the necessary accommodations.

Inclusive schools strive to meet the educational needs of learners with LV, through equipping themselves to address these learners' needs. As Dheesha (2022) points out, learners with LV in inclusive schools benefit from tailored instructional strategies, including modified teaching aids that enhance their understanding of complex concepts. Although, in some schools that are not well equipped, learners may experience difficulties due to the general curriculum's lack of flexibility. Giese, Greisbach, Meier, Neusser and Wetekam (2022) found that some learners with LV in mainstream schools in Germany opted to transfer to better equipped inclusive schools due to inadequate educational provisions. This highlights the necessity for inclusive schools to adopt innovative and inclusive teaching strategies to support learners with LV fully, ensuring that they can thrive.

LITERATURE REVIEW

Delivering the core curriculum to learners with LV requires the integration of specialized teaching strategies that accommodate their unique visual limitations. In the USA and Canada, Koehler and Wild (2019) examined the practices of teachers educating learners with visual impairment (VI), highlighting gaps in teacher training as a significant barrier to effectively delivering the curriculum. Their study found that while assistive technologies and curricular adaptations were available, teachers lacked sufficient skills to implement these tools in a way that engaged learners with LV. This lack of training undermined inclusive education efforts, limiting the academic potential of learners with LV. From this research, it is evident that even in well-resourced countries, the key to successfully delivering core content to learners with LV lies in the professional development of teachers, ensuring they are equipped to use innovative strategies effectively.

Similarly, in Ghana, a study by Douglas, Rockson and Dorleku (2020) assessed the instructional strategies employed for learners with LV in regular schools. Although teachers in Ghana used real objects and optical devices as teaching aids, many lacked the necessary training to effectively utilize these tools, leading to limited success in fostering inclusive learning environments. The study concluded that, while resources were available, the insufficient skills of teachers hindered the effective delivery of the core curriculum to learners

with LV. In comparison to the USA and Canada, the Ghanaian context further emphasizes the global challenge of inadequate teacher preparedness. It highlights the importance of capacity-building initiatives to ensure teachers can successfully implement innovative teaching strategies, especially in resource-constrained settings.

In Zambia, Kasebusha and Banda (2021) explored the use of individualized educational plans (IEPs) and assistive technologies for VI learners in special schools. Their findings showed that tailored strategies, including audio devices and high-contrast lesson materials, significantly improved learner engagement and academic performance. Unlike the studies in the USA, Canada and Ghana, where teacher training gaps were prevalent, the Zambian study presented a more positive outcome due to the effective use of customized teaching approaches. This suggests that when teachers are trained and equipped with the right tools, innovative strategies can lead to successful curriculum delivery for learners with LV. The Zambian case stresses on the relevance of creating individualized learning experiences to address the specific needs of learners with LV.

A study by Negash and Gasa (2020) in Ethiopia explored the inclusion of learners with VI in secondary schools and found that cooperative learning, peer tutoring and assistive technology were among the key strategies used to support learners with LV. However, teacher training deficiencies limited the effectiveness of these approaches. The study emphasized that, while the strategies themselves were sound, their implementation was hindered by teachers' lack of expertise in using assistive technology and in adapting the core curriculum. This aligns with the global trend, where the success of innovative teaching strategies for learners with LV is closely tied to the skills and training of the teachers implementing them. The Ethiopian context, reveals the importance of proper teacher training in ensuring the effective use of inclusive teaching practices.

Kenya’s experience, as explored by Mutia (2020), reflects similar challenges to those observed in Ghana and Ethiopia, particularly regarding the lack of formal training in special education among teachers. The study revealed that teachers were ill-equipped to manage learners with LV, with most relying on traditional methods that were not adapted to the needs of these learners. This limited the effectiveness of core curriculum delivery in secondary schools. However, Kenya’s inclusion of learners with LV in the general education system presents a unique opportunity for the government and educational stakeholders to implement comprehensive training programs that equip teachers with the skills necessary to support learners with LV effectively. The findings from Kenya reinforce the global need for educational reform, where specialized teacher training is prioritized to ensure that learners with LV receive quality education.

In Botswana, Habulezi (2016) conducted a study on the educational strategies used to support learners with VI in secondary schools. The findings highlighted the use of real-life objects, descriptions and adapted learning materials as key components of the teaching process. However, the study also noted that many teachers lacked formal training in special education, similar to the findings in Ghana and Kenya. Despite the availability of materials, the absence of specialized training led to sub optimal outcomes. This points to a recurring issue across different contexts: the need for well-trained teachers who can fully utilize the available resources to meet the needs of learners with LV. In comparison to Zambia, where training and individualization of learning were more pronounced, Botswana’s experience reinforces the argument that teacher preparation is crucial for the effective delivery of core content to learners with LV.

METHODOLOGY

The research utilized a descriptive survey design that integrates both qualitative and quantitative methodologies to investigate the pedagogical strategies employed by teachers for learners with LV and their effects on academic performance. Following a framework by Stangor (2014), the study elucidated the characteristics and needs of a specific group by gathering comprehensive data. The qualitative aspect allowed for rich, verbatim accounts from informants in the interviews, while the quantitative component provided measurable data to enhance understanding from respondents in the survey. The study's findings

revealed the critical role of teachers' pedagogical practices, such as active learning approaches and assistive technologies, in improving academic outcomes for learners with LV.

The study involved a carefully selected population of n=69, including regular and special education teachers for learners with visual impairment, as well as school administrators from two primary schools in Botswana's Northeast and Kgatleng Regions. Employing purposive and census sampling techniques, the research ensured a thorough representation of the educational environment catering to learners with VI. Instruments such as questionnaires, interviews, observation guides and document analysis tools were utilized to gather both qualitative and quantitative data. This methodology enabled a robust exploration of the independent variables on teachers' pedagogical practices and their impact on the dependent variable, the academic performance of learners with LV. Ethical considerations and logistical arrangements were meticulously addressed to safeguard participant welfare and ensure the integrity of the research process.

RESULTS

The study aimed to investigate the teaching strategies employed by teachers to effectively deliver the core curriculum to learners with LV. The findings revealed a diverse range of strategies implemented by teachers to accommodate these learners, emphasizing inclusivity and accessibility. Results of the study revealed that a significant number of teachers utilize interactive learning techniques to engage learners with LV. These techniques, such as group discussions, role-plays and hands-on activities, promote active participation and foster a more inclusive learning environment. Through involving all learners in the learning process, teachers can enhance understanding and motivation among learners with LV. In a qualitative inquiry, an informant stated that:

> *A notable number of teachers employ interactive learning techniques, such as group discussions, role-plays and hands-on activities, to effectively engage learners with low vision (LV). These strategies encourage active participation, helping to create an inclusive education environment where all learners feel involved. This approach not only enhances understanding but also boosts motivation, enabling learners with LV to grasp concepts more effectively.*
>
> (KII 2)

In view of the sentiments, the use of interactive learning techniques, such as group discussions, role-plays and hands-on activities, is particularly effective in engaging learners with LV, as it fosters an inclusive classroom environment that promotes active participation. Studies, including those by Douglas, Rockson and Dorleku (2020) and Koehler and Wild (2019), support this notion, indicating that such strategies not only enhance understanding but also significantly boost motivation among learners with LV. Through incorporating these interactive approaches, teachers create opportunities for collaboration and peer interaction, which can enhance social skills and self-confidence. Furthermore, as Dheesha (2022) suggests, these techniques allow for differentiated instruction tailored to the unique needs of learners with VI, enabling them to grasp complex concepts more effectively. This interactive methodology not only facilitates comprehension but also cultivates a sense of belonging and engagement, vital for the academic success of learners with LV.

The results highlighted the importance of strategic seating arrangements and the use of large print materials and colored chalk to enhance visibility for learners with LV. By considering the specific needs of these learners, teachers can create a classroom environment that supports their learning and reduces visual strain. Further, the use of practical activities and tangible objects emerged as essential for learners with LV, as it allows them to explore concepts through touch and experience. Incorporating hands-on learning experiences into the curriculum enables teachers to make abstract ideas more concrete and accessible to these learners. In an interview, an informant opined that:

> *Strategic seating arrangements, large print materials and colored chalk are crucial in enhancing visibility and reducing visual strain for learners with LV. By addressing their specific needs, teachers can create a*

more supportive learning environment that fosters engagement and comprehension. Additionally, incorporating practical activities and tactile objects allows learners with LV to grasp abstract concepts through touch and hands-on experiences, making the curriculum more accessible and meaningful.

(KII 1)

The assertion in the voice note is that strategic seating arrangements, large print materials and colored chalk play a pivotal role in enhancing visibility, encouraging the use of residual vision and reducing visual strain for learners with LV, thereby significantly improving their learning experience. In addressing these specific needs, teachers can foster a more supportive environment that promotes engagement and comprehension among learners. Furthermore, integrating practical activities and tactile objects into lessons allows learners with LV to better grasp abstract concepts through hands-on experiences, making the curriculum not only more accessible but also more meaningful. This holistic approach not only caters to diverse learning styles but also empowers learners with LV by facilitating a deeper understanding of the material, ultimately contributing to their academic success and confidence in the classroom.

Providing one-on-one attention and fostering peer support networks were identified as key strategies for accommodating learners with LV. In offering individualized guidance and encouraging collaboration with classmates, teachers can help these learners develop their academic skills and build confidence. Additionally, creating a physically accessible classroom environment is essential for learners with LV. In ensuring that the classroom layout is conducive to mobility and that there is adequate space for movement, teachers can promote independence and inclusion. In an interview, an informant pointed out that:

One-on-one attention and peer support networks are crucial strategies in accommodating learners with LV, as they provide personalized guidance and foster collaborative learning. This individualized approach helps learners with LV build both academic skills and confidence through meaningful interactions with teachers and classmates. Additionally, ensuring the classroom is physically accessible, with a layout that supports easy mobility, promotes independence and inclusivity, further enhancing the learning experience for these learners.

(KII 1)

The verbatim alludes that one-on-one attention and peer support networks are essential strategies for accommodating learners with LV, as they facilitate personalized guidance that enhances both academic skills and self-confidence through meaningful interactions with teachers and classmates. Research supports this approach, indicating that individualized instruction allows teachers to tailor their teaching methods to meet the specific needs of learners with VI, thereby fostering an inclusive learning environment (Koehler & Wild, 2019; Miyauchi, 2020). Additionally, the presence of peer support networks not only aids in the social integration of learners with LV but also promotes collaborative learning, where learners can share resources and strategies (Douglas, Rockson & Dorleku, 2020). Furthermore, creating a physically accessible classroom layout is crucial in promoting independence and inclusivity, as it ensures that all learners can navigate their environment comfortably and participate fully in educational activities (Mutia, 2020; Negash & Gasa, 2022). By integrating these strategies, teachers can significantly enhance the learning experience for learners with LV, ultimately leading to improved academic outcomes and personal development.

The study results revealed that the use of ICT in curriculum delivery varies significantly among teachers. While some teachers can effectively integrate ICT into their teaching, others may require additional training and support to utilize these tools effectively. Further, while the study found that the use of assistive technology (AT) in curriculum delivery varies significantly among teachers, it is clear that AT can play a crucial role in supporting learners with LV. Devices such as Perkins Braillers, writing frames and styluses can aid the learners to access and participate fully in the learning process. In an interview, an informant resonated that:

The integration of ICT in curriculum delivery among teachers shows considerable variation, with some teachers skillfully incorporating it while others require more training and support. AT is also unevenly

used but is vital for supporting learners with LV. Tools like Perkins Braillers, writing frames and styluses are essential in enabling these learners to fully engage and participate in the learning process.

(KII 2)

The sentiments that the integration of ICT in curriculum delivery among teachers demonstrates significant variation, reflecting a spectrum of proficiency and comfort levels with these tools. While some teachers adeptly incorporate ICT to enhance learning experiences, others struggle due to insufficient training and support, underscoring a critical need for professional development initiatives. Similarly, the use of AT is inconsistent, yet it plays a crucial role in facilitating engagement and participation for learners with LV. Essential tools, such as Perkins Braillers, writing frames and styluses, empower these learners by providing them with the necessary resources to interact meaningfully with the curriculum. This uneven implementation of ICT and AT highlights the importance of targeted training programs and support systems to ensure that all teachers can effectively utilize these technologies, thereby fostering an inclusive educational environment that meets the diverse needs of all learners.

The study revealed that there is no single best method for teaching learners with LV. The most effective strategies will vary depending on the individual needs and preferences of each student. Therefore, it is essential for teachers to be flexible and adaptable in their approach and to continuously assess the effectiveness of different strategies.

DISCUSSION

Response Rate

The study attained a complete response rate of 100%, with all 69 intended participants (67 respondents and 2 informants) taking part. The 67 respondents accounted for 97% of the total target, while the 2 informants made up the remaining 3%. This response rate reflects the success of the data collection approach and demonstrates the participants' strong engagement and commitment, as shown in Table 1.

Table 1 Response Rate

Targets	Responses Attained	Response Rate
67	67	97%
2	2	3%
69	69	100%

Source: Field Data, 2024

Achieving a 100% response rate significantly enhanced the reliability and validity of the study's findings, ensuring that the data collected was comprehensive and representative of the entire target population. The study gathered demographic data on respondents, focusing on gender, age range, education level and teaching experience. This information was crucial for understanding the respondents' backgrounds and how these factors influence their experiences in the classroom. Gender distribution revealed a predominant female majority of 55 female participants as opposed to 14 male participants among the 69 participants, with women often being more prevalent in primary education roles, aligning with trends noted by Viljoen (2020). The age range of respondents highlighted a diverse teaching experience, with 39% aged 25 to 35 and 31% aged 45 and above, allowing for a rich tapestry of generational perspectives on teaching strategies.

Education levels were diverse, with a majority (34) holding diplomas and only a few possessing master's degrees, indicating a spectrum of qualifications influencing teaching practices. Furthermore, teaching experience varied, with 27% of respondents having over 11 years of teaching, thereby providing insights into effective pedagogical approaches for learners with LV. Understanding the integration of learners with VI

into mainstream classrooms revealed a consensus on the importance of inclusivity and mixed-ability strategies, emphasizing the need for well-prepared teachers to foster positive interactions among all learners, as noted by Otieno, Okello and Namunga (2023). This demographic data highlights the complexity of educational dynamics and the critical role these factors play in shaping effective teaching practices for diverse learners.

The results of the study on revealed critical insights into effective pedagogical approaches tailored for learners with LV. The study highlighted the prominent use of interactive learning techniques, with 43 respondents affirming their effectiveness. This endorsement aligns with current educational theories emphasizing the importance of engagement and active participation in the learning process. By employing interactive strategies, teachers not only facilitate comprehension but also enhance motivation and retention among learners with LV, demonstrating a growing awareness of the need for dynamic and responsive teaching methods in this context.

Another notable finding was the significant support for the use of large print materials and colored chalk, as indicated by 51 affirmative responses. This reflects a recognition of the importance of visual aids in creating an inclusive classroom environment. The thoughtful arrangement of seating and teaching materials can substantially enhance visibility and accessibility, which are crucial for learners with VI. Additionally, the study found that 54 respondents valued individualized attention for learners with LV, emphasizing a personalized approach that caters to specific needs. This combination of environmental adaptations and individualized instruction underscores a comprehensive strategy that empowers teachers to address the diverse challenges faced by learners with LV in inclusive school settings.

The results also highlighted the importance of peer support strategies, with 42 participants supporting their implementation. Collaborative learning environments foster social interactions and help develop communication skills among learners with LV. Moreover, practical activities utilizing tangible objects were affirmed by 47 respondents, indicating a preference for hands-on learning experiences that can enhance understanding and retention. These findings suggest that teachers are recognizing the value of not only academic instruction but also the social dimension of learning, contributing to a holistic educational experience for learners with LV that prepares them for real-world interactions and challenges.

However, the study revealed concerning discrepancies regarding the use of information and communication technology (ICT). While 47 respondents acknowledged the variability in ICT usage among teachers, only 20 affirmed regular implementation of technology in instructional practices. This gap highlights an opportunity for targeted professional development to enhance teachers' skills and confidence in integrating technology into their teaching. Given the potential of ICT to provide innovative solutions and tailored learning experiences, addressing this gap is crucial for improving educational outcomes for learners with LV. Training programs focused on effective technology use can empower teachers to create more inclusive education and engaging learning environments.

The study concluded that "no single best method exists for teaching learners with LV," supported by 56 responses, emphasizes the need for a flexible and multifaceted teaching approach. This acknowledgment reflects an understanding that learners with LV have unique and varied needs that require adaptive strategies. The commitment to employing diverse methods such as group discussions, modified classwork and the development of IEPs illustrates a well-rounded framework aimed at supporting learners with LV. Through fostering an educational culture that embraces varied strategies, teachers can enhance the academic performance and social integration of learners with LV, ultimately contributing to their overall success in inclusive educational settings.

CONCLUSION

In conclusion, the findings from the study on innovative teaching strategies for delivering the core curriculum to learners with LV reveal both strengths and areas for improvement in the educational

approaches employed in inclusive schools. While there is significant recognition of the importance of interactive and practical learning strategies, disparities in the use of technology and the limited implementation of IEPs indicate the need for further professional development and support for teachers. Through fostering a culture of inclusivity and adaptability in teaching practices, teachers can enhance the educational experiences of learners with LV and ultimately promote their academic and social success.

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RECOMMENDATION

The study highlights several key areas where policy and academic interventions can be implemented:

- Government and the education ministry should institutionalize inclusive education policies that mandate the use of interactive teaching strategies, such as group discussions, role-plays and hands-on activities, in classrooms with learners with LV. Additionally, policies should allocate funding for AT and infrastructure, including strategic seating arrangements and provision of large-print materials, to enhance accessibility for learners with LV. For effective implementation, collaboration with teacher training institutions is essential to integrate these strategies into pre-service and in-service teacher training programs.
- Curriculum developers should design adaptive curricula that prioritize differentiated instruction tailored to learners with LV. This should include guidelines on incorporating practical activities, tactile learning materials and technology-based interventions. Furthermore, national education boards should advocate for the adoption of IEPs for learners with LV to address their unique academic and social needs, ensuring flexibility in curriculum delivery.
- Academic institutions should prioritize research on innovative pedagogical strategies and the integration of ICT and AT for learners with LV. Universities should establish specialized programs to train educators in inclusive education, emphasizing the use of technology and adaptive teaching strategies. Further research should evaluate the long-term impacts of these methods on the academic outcomes and social integration of learners with LV to inform evidence-based policy decisions.
- Teacher training programs should include mandatory modules on inclusivity and accessibility, focusing on practical strategies such as interactive teaching, the use of assistive technologies and fostering peer support networks. Institutions should collaborate with technology developers to familiarize educators with ICT tools and AT, enhancing their competency in utilizing these resources effectively. Continuous professional development workshops can ensure teachers stay updated on emerging inclusive practices and technologies.

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