


Use of Technology for the Effectiveness of School Support Systems in Addressing Barriers to Learning



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ABSTRACT

This paper examines the potential for technology to support the effectiveness of school-based support systems in addressing barriers to learning. In this context, a literature review was carried out to investigate the use of technology to improve the effectiveness of school support systems and to determine whether it is possible to address barriers to learning. Meta-analyses were conducted covering studies published between 1999 and 2024, with the primary databases used being the Directory of Open Access Journals (DOAJ), the Education Resources Information Center (ERIC), and Google Scholar. According to the evaluation, using technology to improve the effectiveness of school support systems is imperative to eliminating barriers to learning and ensuring that all learners have an equal chance of flourishing. It includes various services and tools designed to meet the diverse needs of learners, from academic support to mental health care. According to the findings, integrating technology to facilitate the school support structure should be evaluated according to the philosophical and educational principles that make up the foundation of the educational system. Every school should have a support structure that caters to various learning levels so that support services provide the teaching and learning materials necessary to understand the subject for all learners. Empirical investigations may help further support evidence-based data, beyond using deductive reasoning, leading to recommendations. Although legislation can provide a framework for planning, the success of learner support services must be planned and implemented at the pedagogical and practical levels.

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INTRODUCTION

Across the past century, education systems have continually evolved in their efforts to create more inclusive, equitable, and effective learning environments. Central to this evolution has been the conceptualisation and implementation of school support systems, organized sets of resources, personnel, and practices designed to identify, reduce, and ultimately remove barriers to learning.¹ Historically, support in schools encompassed ancillary services such as counselling, special needs education, psycho-

¹ Linda Darling-Hammond, “Reinventing Systems for Equity,” *ECNU Review of Education* 7, no. 2 (June 12, 2024): 214–29, <https://doi.org/10.1177/20965311241237238>; Aras Bozkurt et al., “Speculative Futures on ChatGPT and Generative Artificial Intelligence (AI): A Collective Reflection from the Educational Landscape,” *Asian Journal of Distance Education* 18, no. 1 (2023): 53–130; Linda Darling-Hammond, “Reimagining American Education: Possible Futures,” *Phi Delta Kappan* 103, no. 8 (May 9, 2022): 54–57, <https://doi.org/10.1177/00317217221100012>.

social interventions, and, more recently, social and digital inclusion strategies.² The momentum for these systems accelerated globally in the aftermath of pivotal movements toward inclusive education and equity, as reflected in the 1994 Salamanca Statement, the United Nations’ Sustainable Development Goal 4, and a growing body of international and national policy frameworks aimed at ensuring quality education for all learners, irrespective of their backgrounds or abilities.³

Parallel to these educational reforms, the global rise of digital technology has fundamentally transformed the possibilities for supporting learners. The proliferation of the internet, mobile devices, and interactive digital platforms has enabled schools to leverage technology in ways that go far beyond basic instruction.⁴ Educational Technology has shifted pedagogical paradigms towards personalised, accessible, and data-informed approaches that hold significant promise for not just teaching, but for the broader support systems that underpin learner success.⁵

In many parts of the global South, the digital transformation of school support systems is rife with both innovative potential and complex contextual challenges. South Africa’s history of educational segregation and deep structural inequalities has shaped a landscape where access, quality, and inclusivity are persistent concerns. At the same time, digitalization initiatives, public-private partnerships, and policy innovations like the White Paper on Inclusive Education have collectively aimed to harness technology for the substantial task of overcoming persistent barriers to learning for the country’s diverse learner population.⁶

In recent years, the integration of technology into education has transformed traditional teaching and learning environments, offering new opportunities to enhance learner engagement, personalize instruction, and streamline administrative processes.⁷ However, beyond the classroom, technology also holds significant potential to strengthen school support systems like structures and services designed to identify and address barriers to learning, such as emotional distress, learning disabilities, socio-economic challenges, and absenteeism. As schools increasingly adopt digital tools, there is growing interest in how these innovations can be leveraged not only for scholastic instruction but also to improve the effectiveness of support systems that promote holistic learner development.⁸

Despite the explosion of educational technologies, there remains a notable gap in our understanding of how these tools are being used, or could be used more effectively, to support learners facing diverse challenges.⁹ Much of the existing research has focused on instructional technology, leaving limited insight into how digital platforms, data analytics, and communication tools can enhance interventions, referrals, and collaboration among educators, counsellors, and families.¹⁰ Furthermore,

² Ammar Abulibdeh, Esmat Zaidan, and Rawan Abulibdeh, “Navigating the Confluence of Artificial Intelligence and Education for Sustainable Development in the Era of Industry 4.0: Challenges, Opportunities, and Ethical Dimensions,” *Journal of Cleaner Production* 437 (2024): 140527; U Haider, “Innovative Pedagogy: Melding Interdisciplinary and Artificial Intelligence in Education,” *Journal Environmental Sciences and Technology* 2, no. 1 (2023): 176–83; S I Khonturaev, “The Evolution Of Artificial Intelligence: A Comprehensive Exploration For Higher Education,” *Best Journal of Innovation in Science, Research and Development* 2, no. 11 (2023): 700–706.

³ Yan Wang, Zhihua Liu, and Chenglin Tu, “Advancing Sustainable Development Goal 4 Through a Scholarship of Teaching and Learning: The Development and Validation of a Student-Centered Educational Quality Scale in Developing Countries,” *Sustainability* 17, no. 10 (May 12, 2025): 4369, <https://doi.org/10.3390/su17104369>; UNESCO, “Inclusion & Education: All Means All. Global Education Monitoring Report” (Paris: UNESCO Publishing, 2020); UNESCO, “Member States Map the Future of Education for Sustainable Development,” 2018; UNESCO, *Education 2030: Incheon Declaration and Framework for Action— Towards Inclusive and Equitable Quality Education and Lifelong Learning for All* (Paris: UNESCO, 2015).

⁴ D. Mustafa, “Smart Classrooms, Bright Minds: The Intersection of Education and Artificial Intelligence,” *Journal Environmental Sciences And Technology* 2, no. 1 (2023): 150–58; D. Siegle and T. S. Hook, “Learning from and Learning with Technology,” in *Content-Based Curriculum for Advanced Learners*, ed. J. Van Tassel- Baska and C. A. Little, 4th ed. (London: Routledge, 2023), 595–618.

⁵ Kevin Kelly and Todd D Zakrajsek, *Advancing Online Teaching: Creating Equity-Based Digital Learning Environments* (Taylor & Francis, 2023).

⁶ Department of Education, *Education White Paper 6: Special Needs Education Building an Inclusive Education and Training System* (Pretoria: Government Printer, 2001).

⁷ Victor M Gallegos-Rejas et al., “A Multi-Stakeholder Approach Is Needed to Reduce the Digital Divide and Encourage Equitable Access to Telehealth,” *Journal of Telemedicine and Telecare* 29, no. 1 (2023): 73–78.

⁸ Darling-Hammond, “Reinventing Systems for Equity.”

⁹ Cecilia Ka Yuk Chan, “A Comprehensive AI Policy Education Framework for University Teaching and Learning,” *International Journal of Educational Technology in Higher Education* 20, no. 1 (2023): 38.

¹⁰ Abulibdeh, Zaidan, and Abulibdeh, “Navigating the Confluence of Artificial Intelligence and Education for Sustainable Development in the Era of Industry 4.0: Challenges, Opportunities, and Ethical Dimensions”; Oluwagbemiga Paul Agboola and Mustafa Tunay,

there is insufficient evidence on the impact of technology-enabled support systems in resource-constrained schools, where barriers to learning are often most acute and persistent.¹¹

This study aims to explore the role of technology in improving the effectiveness of school support systems in addressing barriers to learning. Specifically, it seeks to examine how digital tools are currently being utilised within support structures, identify best practices and limitations, and propose strategies for more impactful integration. By filling this gap, the research hopes to contribute to a more inclusive and responsive educational environment where all learners have equitable access to the support they need to thrive. In the ensuing units, deliberations will be on research methodology, literature review on transforming learner and learning support, holistic school support, system in addressing barriers to learning, important elements for functional school support systems, as well as conclusion and recommendations.

METHODOLOGY

The author designed the search strategy to identify articles that included Barriers to Learning, Effective Technology, and School Support Systems. Potentially relevant articles were extracted from three electronic databases (Electronic databases: Directory of Open Access Journals (DOAJ), Education Resources Information Center (ERIC), and Google Scholar) with a filter or a set of subject-related keywords (Barriers to Learning Subject Headings). The filter to define 'Barriers to Learning' was composed of the following words and phrases used with inclusion: Effective Technology, School Support Systems, Multisystemic Support Framework, Education for All, Integrated Education, and Universal Learning Design.

All searches, including Barriers to Learning, Effective Technology, and School Support Systems, were conducted using the Directory of Open Access Journals (DOAJ), Education Resources Information Center (ERIC), and Google Scholar. These databases were chosen due to their prevalence in education and multidisciplinary journal indexing. The Directory of Open Access Journals (DOAJ) provides researchers with access to peer-reviewed, high-quality journals. It has archived over two million articles from 17,193 journals, and it lets you either browse by subject or search by keyword.¹² A search by topic can help you find material related to the field of education at the Education Resources Information Center (ERIC). The service mainly indexes journals and gray literature such as technical reports, white papers, government documents, and books. All materials about ERIC are subject to a formal review process before being indexed. Also, there is advice on how to search the database, including tips for advanced searches. A great database for education-specific content is ERIC.¹³

The Google Scholar search interface enables a simple way to search broadly for scholarly literature. From a single location, you can search for a range of disciplines and sources: articles, theses, books, abstracts, and court opinions, from academic publishers, professional societies, online repositories, universities, and other websites. Gusenbauer and Haddaway describe Google Scholar as assisting in discovering relevant work in the world of scholarly research.¹⁴

Article selection consisted of an initial screening of the titles identified in the searches and a secondary review of the abstracts of the articles. An article was included if it used one or more of the terms and phrases chosen by Barriers to Learning, Effective Technology, and School Support Systems. The author scanned each citation's title and abstract, removing citations inconsistent with the search strategy and criteria, and irrelevant articles were irreversibly excluded. The author conducted a separate

“Urban Resilience in the Digital Age: The Influence of Information-Communication Technology for Sustainability,” *Journal of Cleaner Production* 428 (2023): 139304.

¹¹ Wang, Liu, and Tu, “Advancing Sustainable Development Goal 4 Through a Scholarship of Teaching and Learning: The Development and Validation of a Student-Centered Educational Quality Scale in Developing Countries.”

¹² Sascha Kraus, Matthias Breier, and Sonia Dasi-Rodríguez, “The Art of Crafting a Systematic Literature Review in Entrepreneurship Research,” *International Entrepreneurship and Management Journal* 16, no. 3 (2020): 1023–42.

¹³ K.L. Lane et al., “Conducting Systematic Reviews of the Literature: Guidance for Quality Appraisal,” in *Delivering Intensive, Individualized Interventions to Children and Youth with Learning and Behavioral Disabilities (Advances in Learning and Behavioral Disabilities)*, ed. M. Tankersley, B.G. Cook, and T.J. Landrum, vol. 32 (Bingley: Emerald Publishing Limited, 2022), 109–30.

¹⁴ Michael Gusenbauer and Neal R Haddaway, “Which Academic Search Systems Are Suitable for Systematic Reviews or Meta-analyses? Evaluating Retrieval Qualities of Google Scholar, PubMed, and 26 Other Resources,” *Research Synthesis Methods* 11, no. 2 (2020): 181–217.

review of potentially relevant articles to determine eligibility and resolve any disagreements before final selection. In the end, 32 studies were included for review.

To ensure uniformity in the review and coding process, the author double-coded the published articles and reconciled any discrepancies. Developing a categorisation system, the author employed methods similar to thematic analysis to best capture the most frequently observed implementation of inclusive education policy in all articles. The categorisation thus revealed that the articles examined differed widely in their views of what Barriers to Learning, Effective Technology, and School Support Systems aim to achieve and how they are to be applied.

In assessing the reliability and validity of the study, the author attempted to demonstrate the impact of barriers to learning, effective technology, and school support systems as a facilitator using such data sources as standardised data from studies and by examining the publication bias.¹⁵ Furthermore, Barriers to Learning, Effective Technology, and School Support Systems, as facilitators, were described in detail to provide evidence of trustworthiness and credibility, and through a literature search that tried to locate, retrieve, and include hard-to-find study results, unpublished literature, among others.

A comprehensive literature search would involve, in addition to electronic bibliographic databases, cover-to-cover searches of key journals; review of conference proceedings and reference lists of prior reviews and articles on the topic of interest; contact with other researchers and institutions; and search for trial registers, online library catalogues, and the Internet. Overall, it can be said that publication bias is a possible threat in all scientific fields, such as qualitative research, essential quantitative studies, and narrative reviews, as well as systematic reviews and meta-analyses.¹⁶

DISCUSSION

Transforming Learner and Learning Support

At most schools, learner support staff have tended to work in relative isolation from one another and other key stakeholders. Much of the work has been problem-focused (discrete), and there has been an overreliance on specialised services for individual learners and small groups.¹⁷ In one school, for example, a learner deemed at risk of staying back a grade, dropping out, and/or substance abuse would receive services from three separate counselling programmes, operating in silos. Not only are fragmentation, specialisation, and redundancy expensive, but they also contravene the need for cohesiveness and optimising effectiveness, while leading to counterproductive competition for scarce resources, all of which undermine the goals of reducing redundancy and improving availability. If the children had behavioural or emotional issues, they were also under-resourced. In the majority of schools, teachers do not have the support they need when they see learners struggling.¹⁸

Propositions or plans that essentially amount to more resources are usually impractical. School budgets are always tight; cost-effectiveness is a perennial consideration. In some schools, principals say up to 25% of their budget is already devoted to tackling barriers to learning. The current analysis of these approaches suggests very poor results at best, with wasted resources used in redundancy and counterproductive competition to externalise support staff on community-based professionals who partner with schools.¹⁹ For solutions to learning barriers that arise from these societal conditions or from family or individual conditions, school-based support systems are essential. These barriers to learning can result in disconnection from learning in the classroom, achievement gaps, and dropout rates.

¹⁵ Isaiah Andrews and Maximilian Kasy, "Identification of and Correction for Publication Bias," *American Economic Review* 109, no. 8 (2019): 2766–94.

¹⁶ "Cochrane Handbook for Systematic Reviews of Interventions," 2023, <https://training.cochrane.org/handbook>.

¹⁷ Laura Lane and Rachel Birds, "Contextual Admissions and Affirmative Action: Developments in Higher Education Policy in England," *Perspectives: Policy and Practice in Higher Education* 17, no. 4 (October 4, 2013): 135–40, <https://doi.org/10.1080/13603108.2013.830154>.

¹⁸ Lisa R Fortuna et al., "Focusing on Racial, Historical and Intergenerational Trauma, and Resilience: A Paradigm to Better Serving Children and Families," *Child and Adolescent Psychiatric Clinics of North America* 31, no. 2 (2022): 237–50; Mel Ainscow, "Inclusion and Equity in Education: Making Sense of Global Challenges," *Prospects* 49, no. 3 (2020): 123–34.

¹⁹ Ayse Kart and Mehmet Kart, "Academic and Social Effects of Inclusion on Students without Disabilities: A Review of the Literature," *Education Sciences* 11, no. 1 (2021): 16.

Holistic School Support System in Addressing Barriers to Learning

Miseliūnaitė and Cibulskas assert that a holistic school support system should address barriers to learning to have a conducive environment for learning.²⁰ Schools must have a whole school support system in place to create a conducive learning environment by overcoming barriers to learning. By addressing all aspects of the learners' requirements, this methodology ultimately contributes to creating an inclusive and supportive environment that improves both academic success and personal growth.

Multi-Systemic Support Framework

The multi-systemic support framework is based on the understanding that society is a complex system made up of individuals and their relationships. Targeted supports, such as tutoring, differentiated instruction, and personalised learning plans, should be built into these all-inclusive systems. This helps meet individual learning requirements and provides learners with the tools to address barriers to learning.²¹ For instance, the multisystemic support method provides a framework for delivering different levels of academic aid according to learner foibles. The concept relating to levels of support is fundamental to the multisystemic support approach.

The multisystemic support approach is usually built into a three-level framework known as the tiered model of intervention, in which there are increasing levels of intervention.²² Primary interventions (Tier 1) involve universal interventions provided for all learners in the general setting. These include evidence-based instruction, positive behavioural support, and ongoing screening to identify learners in need of additional support. At this level, you want to adjust policies and practices so that the vast majority of our learners can thrive in traditional practice.²³

Level 2 interventions include targeted interventions for learners who have been identified as at risk through some type of screening and progress monitoring data. They are then given additional help (usually in small groups) with specific academic or behavioural needs. Level 2 interventions are more intensive and may include strategies such as additional instruction, social skills training, or behavioural interventions.²⁴ Level 3 is an intensive, individualised intervention for learners who are still struggling after level one and level two support have already taken place. Most of these interventions are customised to the individual child and can include one-on-one instruction, specialist programmes, or working with outside specialists. They closely monitor progress and modify their intervention based on how the learner responds. At this level, the aim is to overcome major and ongoing barriers to learning.²⁵

Perry and Winfrey contend that the data-driven nature of the multisystemic support approach is one of its biggest strengths.²⁶ Schools analyse data from regular assessments and progress monitoring, allowing them to determine which kind and level of support will best meet the needs of each learner. It ensures that the intervention is catered according to the requirements of the learners and changes are made, wherever necessary, to effectuate the desired results. Additionally, multisystemic support encourages collaboration among teachers, family, and community partners. Collaboration among these stakeholders can lead to a comprehensive support system that caters to the academic, behavioural, and social-emotional needs of learners. This collaborative environment allows all learners to receive the support they need to maximise success.²⁷

²⁰ Brigita Miseliūnaitė and Gintautas Cibulskas, "Enhancing Active Learning through a Holistic Approach: A Case Study of Primary Education in Lithuania," *Education Sciences* 14, no. 6 (May 30, 2024): 592, <https://doi.org/10.3390/educsci14060592>.

²¹ Joacim Ramberg et al., "School Effectiveness and Truancy: A Multilevel Study of Upper Secondary Schools in Stockholm," *International Journal of Adolescence and Youth* 24, no. 2 (2019): 185–98.

²² Kathleen Lynne Lane et al., "Supporting Comprehensive, Integrated, Three-Tiered Models of Prevention in Schools," *Journal of Positive Behavior Interventions* 17, no. 4 (October 13, 2015): 209–22, <https://doi.org/10.1177/1098300715578916>.

²³ Julie Esparza Brown, Amanda K Sanford, and Donna Sacco, "Multi-Tiered System of Supports for Multilingual Learners: Using Culturally and Linguistically Aligned Practices.," *National Center on Intensive Intervention*, 2024.

²⁴ Zachary Weingarten and Paul K Steinle, "Using Diagnostic Data to Inform Intervention Planning.," *National Center on Intensive Intervention*, 2023.

²⁵ Garrett J Roberts et al., "The State of Current Reading Intervention Research for English Learners in Grades K–2: A Best-Evidence Synthesis," *Educational Psychology Review* 34, no. 1 (2022): 335–61.

²⁶ B. D. Perry and O. Winfrey, *What Happened to You?: Conversations on Trauma, Resilience and Healing* (Flatiron Books, 2021).

²⁷ Lane et al., "Supporting Comprehensive, Integrated, Three-Tiered Models of Prevention in Schools."

The multisystemic support approach is an appropriate framework for additional learning support.²⁸ The multisystemic support framework provides additional support to learners at multiple levels through data-driven interventions and stakeholder collaboration to ensure that all learners can be successful.

Supporting Behavioural and Emotional Needs

Behavioural and emotional challenges can also present major barriers to learning. Schools must adopt programmes to ensure the promotion of social-emotional learning and offer mental health services to enhance the emotional well-being of learners.²⁹ Social-emotional learning promotes a range of skills necessary for academic success and personal growth, including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. In addition, where school counsellors and psychologists are available, they can help equip learners with coping mechanisms for stress, anxiety, and similar emotional health issues.³⁰

Brown and Sanford are of the opinion that learners need the skills to be able to address various barriers to learning, and social-emotional learning helps them to develop the necessary skills to strengthen their ability to advocate for themselves and develop coping mechanisms.³¹ These skills are important in creating a meaningful and beneficial learning experience. One of the key impacts of social-emotional learning is how it can help learners learn to better regulate and improve their emotions, as well as build their resilience. Social-emotional learning teaches learners to regulate how they think and feel, which in turn helps them better manage stress, anxiety, and other emotional challenges that can inhibit learning.³² Mindfulness and emotional awareness programmes reduce disruptive behaviour, allowing learners to remain focused and engaged in a classroom activity. Helping them feel attached, to feel they belong and are part of a community; the emotional stability is what you and your learners will need to succeed, since learners will only be able to routinely manage the negative emotions about school.³³

Social-emotional learning also involves creating positive social interactions and relationships that are essential for a healthy learning environment. Skills such as empathy, clear communication, and conflict resolution enable learners to establish and maintain supportive relationships with peers and teachers.³⁴ Positive interactions foster a feeling of belonging and community in the school, helping to build motivation and engagement in learning for all learners. A peer group is also there to support each other emotionally and academically, and that helps to address learning barriers.³⁵

Furthermore, social and emotional learning includes responsible decision-making and problem-solving skills. These skills enable learners to manage intricate social dynamics and make decisions that benefit their academic and private lives.³⁶ Learners who know how to solve problems and make healthy choices are less likely to participate in risk-taking behaviour that can interfere with their education. In

²⁸ Elaine Allensworth, Sarah Cashdollar, and Julia Gwynne, “Improvements in Math Instruction and Student Achievement Through Professional Learning Around the Common Core State Standards in Chicago,” *AERA Open* 7 (January 10, 2021), <https://doi.org/10.1177/2332858420986872>; Juliana Uloma Iheakanwa, Sunday Obro, and Williams Pius Akpochofo, “Reading Ability, Study Habits and Students’ Academic Performance in Social Studies,” *Reading*, 2021.

²⁹ John J. Hoover et al., “Sustaining a Multitiered System of Supports for English Learners in Rural Community Elementary Schools,” *Rural Special Education Quarterly* 39, no. 1 (March 29, 2020): 4–16, <https://doi.org/10.1177/8756870519847466>.

³⁰ Michael Gusenbauer, “Search Where You Will Find Most: Comparing the Disciplinary Coverage of 56 Bibliographic Databases,” *Scientometrics* 127, no. 5 (May 6, 2022): 2683–2745, <https://doi.org/10.1007/s11192-022-04289-7>.

³¹ J. E. Brown and A. K. Sanford, “Culturally and Linguistically Responsive Multi- Tiered Support Systems for English Learners: Assessment across the Tiers,” in *Supporting English Learners in the Classroom: Best Practices for Distinguishing Language Acquisition from Learning Disabilities*, ed. E. M. Haas and J.E. Brown (Teachers College Press, 2019), 65–93.

³² Hank Fien et al., “*Including English Learners in a Multitiered Approach to Early Reading Instruction and Intervention,” *Assessment for Effective Intervention* 36, no. 3 (June 15, 2011): 143–57, <https://doi.org/10.1177/1534508410392207>.

³³ UNESCO, *Education 2030: Incheon Declaration and Framework for Action— Towards Inclusive and Equitable Quality Education and Lifelong Learning for All*.

³⁴ LaRon A Scott, “Barriers with Implementing a Universal Design for Learning Framework,” *Inclusion* 6, no. 4 (2018): 274–86.

³⁵ L. A. F. Manuel et al., “ 21st Century Management and Leadership in Education and the Modern Workplace: Roles, Responsibilities, and Coping Strategies of School Leaders,” *International Journal of Learning, Teaching and Educational Research* 14, no. 4 (2024): 29–45.

³⁶ L R Natividad, “Understanding Alternative Conceptions: Constructivism and Nature of Science Approach,” *Lukad: An Online Journal of Pedagogy* 2, no. 1 (2022): 21–30.

cultivating these skills, social-emotional learning allows learners to build agency and responsibility, which are critical to later success in life.

Sahin et al. claim that social-emotional learning is a high-impact lens by which to counter the barriers to learning we see in our learners.³⁷ Therefore, social-emotional learning creates a learning environment that is both supportive and effective to allow all learners to thrive as it scaffolds their emotional regulation, relationships, and even decision-making. For learners to navigate and conquer challenges and reach their best potential, social and emotional learning must become embedded in the school curriculum and culture.

Family and Community Engagement

Morelle and Morelle stress that family and community partnerships are the cornerstone of a comprehensive support system, and schools should also work closely with families to ensure a home environment that reinforces the need for education.³⁸ These may involve frequent communication between teachers and parents, parental education programmes, and materials for learning at home. In return, schools become community hubs, providing families with access to important information, additional services and resources, strengthening ties to the surrounding community, and creating a welcoming environment that encourages greater community support.³⁹ A complete overview of how family and community involvement are important to address barriers to learning and provide effective school assistance. Research indicates that active family participation in children's education leads to better academic achievement, behaviour, and attendance.⁴⁰ Parents will be involved in their children's education in a variety of ways, such as parent-teacher conferences, volunteering at school events, and helping them learn at home. By nurturing the home-school partnership, parents contribute to their ability to identify and relate to whatever challenges their children may face, be it learning disabilities, social-emotional barriers, or language barriers.

To support learning, community engagement also plays a substantial role in creating a liberating learning environment. Schools can also partner with local businesses, non-profit organisations, and community leaders who can offer resources, expertise, and mentorship opportunities. After-school programmes run by community organisations can offer additional academic support and tutoring, as well as enrichment activities that children may not experience during the school day. In addition, they can also model positive behaviour and serve as mentors who guide learners toward good and quality lives.⁴¹

Together, schools and communities can form a robust support system that responds to the unique needs of learners and helps them navigate the challenges they face in learning.⁴² Building the bridge between home, school, and community is necessary to break down the barriers that learners experience and help create a supportive learning environment for all. This well-rounded model fosters academic success while supporting the general health and growth of learners. Together, teachers and parents can build a system that involves every sector to contribute their strengths to creating an adaptable, resilient, inclusive, and complete educational system.⁴³

Building a Positive School Climate

³⁷ Harun Şahin, Meriç Eraslan, and Muhammed Ali Özkan, "Investigation of High School Students' Social Emotional Learning Skills and Social Media Use," *Frontiers in Psychology* 15 (January 6, 2025), <https://doi.org/10.3389/fpsyg.2024.1425497>.

³⁸ Mokwena Morelle and Glory Maria Morelle, "Active Partnership, Community Engagement, and Intersectoral Collaboration Are Needed to Enhance the Successful Implementation of Inclusive Education at Full-Service Schools," *International Journal of Studies in Inclusive Education* 1, no. 2 (December 20, 2024): 52–55, <https://doi.org/10.38140/ijisie.v1i2.1573>.

³⁹ Larissa Oliveira-Duarte et al., "Innovation Ecosystem Framework Directed to Sustainable Development Goal# 17 Partnerships Implementation," *Sustainable Development* 29, no. 5 (2021): 1018–36.

⁴⁰ Scott Douglas et al., "Understanding Collaboration: Introducing the Collaborative Governance Case Databank," *Policy and Society* 39, no. 4 (October 1, 2020): 495–509, <https://doi.org/10.1080/14494035.2020.1794425>.

⁴¹ M. Morelle, "Collaborative Engagement Between Stake Holders in Enhancing Successful Identification of Learners with Barriers," *International Journal of Innovative Science and Research Technology* 8, no. 9 (2023): 1552–54.

⁴² Vera A. Skae, Bruce J.L. Brown, and Pamela D. Wilmot, "Teachers' Engagement with Learners in Inclusive Foundation Phase Classrooms," *South African Journal of Childhood Education* 10, no. 1 (December 17, 2020), <https://doi.org/10.4102/sajce.v10i1.873>.

⁴³ Margaret Wood and Feng Su, "Parents as 'Stakeholders' and Their Conceptions of Teaching Excellence in English Higher Education," *International Journal of Comparative Education and Development* 21, no. 2 (2019): 99–111.

Building a positive school climate is the key to ensuring a productive learning environment. This means nurturing a climate of respect, inclusion, and high expectations for all learners. This can be achieved through the establishment of clear behaviour expectations, the promotion of positive relationships between learners and staff, and the provision of opportunities for the voice and leadership of the learner.⁴⁴ A positive school climate allows learners to feel safe, valued, and motivated to learn. A positive school climate improves the safety, support, and inclusiveness of the school, where learners feel valued and motivated to learn. The school and the community must build relationships among learners, teachers, and staff. They need to foster a more connected learning environment, a needed condition for learners that encourages participation in learning and involves participation in school activities. Reducing feelings of isolation and anxiety, common barriers to learning, go without saying.⁴⁵

Social-emotional learning programmes teach learners skills such as self-awareness, self-regulation, and empathy. These skills allow learners to regulate their emotions, form positive relationships, and make good choices. Integrating social-emotional learning into the curriculum allows schools to foster a more supportive environment that meets learners' emotional and social needs.⁴⁶ Schools can significantly impact the school climate by implementing interventions and supports that promote positive behaviour. Positive behaviour interventions and supports focus on teaching learners the behaviour you want to see rather than only punishing them when they do something wrong. This makes a school environment more positive and predictable, as it sets clear expectations that learners strive to meet.⁴⁷

Additionally, family participation and community involvement can improve the climate at a school. Examples include families and community members participating to support and fill the learning gap. This partnership can tackle outside barriers to learning, including socioeconomic issues, by wrapping the learner in. Teachers must undergo continuous training to adequately assist learners and foster a positive learning environment. Components of professional development may include training with cultural competency, trauma-informed practice, and effective classroom management techniques. When schools pay attention to these areas, they establish a conducive climate that can help reduce barriers to learning, thus allowing all learners to reach their full potential.⁴⁸

Using Data-Driven Decision Making

Villeneuve and Bouchamma maintain that good support systems use some form of data-driven decision-making to capture the needs of the learners and monitor the effectiveness of those interventions over time.⁴⁹ Schools should regularly monitor the progress of learners and use data to inform the practices they have implemented and the additional support that learners need. Data-driven decision-making can be powerful in sharing learner needs and tracking the effectiveness of interventions in schools. Having access to data allows teachers to make informed and evidence-based decisions that improve support for learners and address barriers to learning. These data can be sourced from academic data, attendance records, behaviour reports, and social-emotional assessments. This comprehensive data collection helps teachers understand the diverse needs of their learners.⁵⁰ For example, attendance data patterns can indicate learners who are frequently absent and may need more support.

Data-driven approaches allow for targeted interventions. Teachers can identify students struggling academically, socially, and emotionally by analysing the collected data. Such processes allow for identifying exactly where learners are struggling. For example, if a learner's mathematics performance starts to decline based on data, mathematics-level interventions could be applied. Monitoring the efficacy of interventions is crucial. Once interventions are implemented, continuous data

⁴⁴ Sarah Klevan, "Building a Positive School Climate Through Restorative Practices," October 2021, <https://doi.org/10.54300/178.861>.

⁴⁵ Klevan, "Building a Positive School Climate Through Restorative Practices."

⁴⁶ Şahin, Eraslan, and Özkan, "Investigation of High School Students' Social Emotional Learning Skills and Social Media Use."

⁴⁷ Manuel et al., "21st Century Management and Leadership in Education and the Modern Workplace: Roles, Responsibilities, and Coping Strategies of School Leaders."

⁴⁸ Morelle, "Collaborative Engagement Between Stake Holders in Enhancing Successful Identification of Learners with Barriers."

⁴⁹ André Villeneuve and Yamina Bouchamma, "Data-Driven Decision Making Using Local Multi-Source Data: Analysis of a Teacher-Researcher's Professional Practice," *Teaching and Teacher Education* 132 (October 2023): 104198, <https://doi.org/10.1016/j.tate.2023.104198>.

⁵⁰ Victoria L Bernhardt, *Data Analysis for Continuous School Improvement* (Routledge, 2017).

collection and analysis can help assess impact. Schools can use tools for progress monitoring to measure learning improvement over time. If an intervention is not effective, the data can inform adjustments or support the implementation of alternative strategies. This cyclical approach ensures that interventions are adaptable and impactful. Data-driven decision-making is improved with stakeholder participation. When teachers, parents, and even learners review data to develop intervention plans, a collaborative approach is cultivated. The collaborative effort ensures that diverse perspectives are integrated, leading to more effective interventions. Teachers can provide information on the dynamics of the class, and parents can provide information about the individual's behaviour at home.⁵¹

Finally, professional development in data literacy is crucial. Data is a huge part of education now, and teachers need the skills to collect, analyse, and interpret data. Professional development may involve training on the use of data management systems, the interpretation of data reports, and the use of data for instructional planning. This data analysis helps schools assist learners through data-driven decision-making. Furthermore, it enables schools to identify and remediate learning needs while ensuring that interventions remain fluid, optimizing actions taken.⁵²

Important Elements for Functional School Support Systems

Functional school support systems should be comprehensive, multisided, and integrated. They must be linked to instructional initiatives to overcome barriers to learning and teaching in a more integrative way. School support systems are necessary to create a supportive and productive environment for learning. The school support system is described as an integrated school support system that includes academic support, behavioural support, and psychosocial support. By addressing both academic success and emotional growth, this holistic approach creates a square platform for learning wherein all parts of a learner's well-being are taken into consideration.

With a set of policies, procedures, and practices for the whole school, schools can be cohesive in their support systems. It is a very important foundation for any learning environment, as it provides a sense of consistency and congruence to call home. For example, effective behaviour support systems depend on the use of clear expectations and end with the application of consistent rules to create a safe and positive learning environment. If everyone in the school community believes in the same philosophies, it creates a conducive culture that leads to success. In essence, school support must be truly holistic in terms of learners' needs, reach (in terms of types of support), and cohesion (as attitudes, systems, and school processes) at the heart of any nuanced and theoretical framework of school support systems.⁵³ In this way, schools can tailor their academic environment to provide all learners with the right conditions to flourish academically, socially, and emotionally across the learning continuum.

Systemic Change

Traditional approaches focus on discrete problems or specialized services, which can lead to fragmentation and isolation. However, in this respect, systemic change is needed to introduce an integrated plan that maximises the output and efficiency of the available resources. Systemic change is needed to create an integrated approach that maximizes results and cost-effectiveness in overcoming barriers to learning. When using a systemic approach, the school must redesign and rethink all aspects of education so that all parts work harmoniously. That is, it is about creating a complete system approach that aligns policies, practices, and resources to accelerate learning and development for all learners.⁵⁴

⁵¹ Villeneuve and Bouchamma, "Data-Driven Decision Making Using Local Multi-Source Data: Analysis of a Teacher-Researcher's Professional Practice."

⁵² Thomas G. Cech, Trent J. Spaulding, and Joseph A. Cazier, "Data Competence Maturity: Developing Data-Driven Decision Making," *Journal of Research in Innovative Teaching & Learning* 11, no. 2 (November 28, 2018): 139–58, <https://doi.org/10.1108/JRIT-03-2018-0007>.

⁵³ Jixian Zhang, "Research on the Theoretical Framework and Practical Form of Provincial Lifelong Education Community," *OALib* 07, no. 04 (2020): 1–16, <https://doi.org/10.4236/oalib.1106287>.

⁵⁴ Adam Rubin and Ali Brown, "Unlocking the Future of Learning by Redesigning Educator Learning," in *Sustainability, Human Well-Being, and the Future of Education* (Cham: Springer International Publishing, 2019), 235–68, https://doi.org/10.1007/978-3-319-78580-6_7.

Systemic change is one approach through which we could overcome this obstacle. Such obstacles can include socioeconomic struggles, gaps in access to resources, and mental health challenges that can be huge barriers to a learner's success. A systemic way of thinking to face barriers to learning can help a school system create full support systems at the school level.⁵⁵ A more supportive environment can be created for learners by integrating mental health services, academic support, and family engagement initiatives. Cost-effectiveness is also the key to systemic change. One major consequence of schools working in silos is the duplication or misallocation of resources, which wastes valuable time and money. When resources are uncoordinated, in effect, there are inputs to the health system that are wasted, and relevant spending is wasted where it could be applied better.

Research has proven that comprehensive support programmes can have wonderful effects on the economy by improving the emergence of learners and cutting down on long-term costs due to academic failure and dropout.⁵⁶ Most importantly, systemic change creates an environment of collaboration and continuous development among teachers, administrators, and stakeholders. It helps to ensure that everyone is working toward the same objectives and that best practices are shared so that they can be implemented and vice versa wherever possible. One of the most important elements of any organisational change is getting the broadest possible support for the changes being proposed. This change is essential to enable a unified and efficient system of education that is appropriately designed to overcome barriers to learning. By integrating policies, practices, and resources, schools can provide a cohesive framework that benefits all learners and improves educational results.⁵⁷

Sustainable Products/Services and Scale-Up Innovations

School support must be sustainable and scalable. This means stepping out of the project mindset and ensuring that new practices are established within the school system. Sustainable and scalable innovations in school support systems must be proactive in counteracting barriers to learning. Sustainability provides a way forward for these innovations to continue, ensuring continuity of help to learners and teachers. An example is the Child-Friendly School (CFS) model that UNICEF is developing, which promotes the development of safe, inclusive, quality education that draws on local procurement and community participation in sustainable ways. This approach not only meets immediate educational needs but can also lay the foundation for sustained success.⁵⁸

Access is equally important because it allows successful innovations to scale and adapt to other settings and larger populations. Innovations in accessible education emphasise the need for evidence-based programming to improve the well-being of learners. When it comes to social-emotional learning and mental well-being, these programmes highlight that scalable solutions can be adapted to best suit the varied needs of learners worldwide and in educational contexts. In addition, a systemic approach is needed to overcome barriers to learning.⁵⁹ For example, strong preferences for digital tools and professional development for teachers can support the creation of inclusive and engaging learning environments. The project guarantees that technological advancements embrace each learner with the customisation of digital solutions based on the local context in which they are deployed, including diverse schools.⁶⁰ To be truly effective, these innovations in school support must be sustainable and scalable. This means that they can continue to receive assistance and can be modified for use in a variety

⁵⁵ Samuel Ryland, Lee N. Johnson, and Julia C. Bernards, "Honoring Protective Responses: Reframing Resistance in Therapy Using Polyvagal Theory," *Contemporary Family Therapy* 44, no. 3 (September 24, 2022): 267–75, <https://doi.org/10.1007/s10591-021-09584-8>.

⁵⁶ Mayonel J Jardinez and Lexter R Natividad, "The The Advantages and Challenges of Inclusive Education: Striving for Equity in the Classroom," *Shanlax International Journal of Education* 12, no. 2 (March 1, 2024): 57–65, <https://doi.org/10.34293/education.v12i2.7182>.

⁵⁷ Jacomina Motitswe, "The Role of Institute Level Support Teams on Addressing Barriers to Learning and Provide Support in Schools. Are They Functional," *Mediterranean Journal of Social Sciences* 5, no. 8 (2014): 259–64.

⁵⁸ M. Jayne Fleener, "Re-Searching Methods in Educational Research: A Transdisciplinary Approach," in *Complex Dynamical Systems in Education* (Cham: Springer International Publishing, 2016), 9–21, https://doi.org/10.1007/978-3-319-27577-2_2.

⁵⁹ Elliott Nkoma and Johnnie Hay, "Educational Psychologists' Support Roles Regarding the Implementation of Inclusive Education in Zimbabwe," *Psychology in the Schools* 55, no. 7 (August 28, 2018): 850–66, <https://doi.org/10.1002/pits.22147>.

⁶⁰ Norma Nel et al., "Teachers' Perceptions of Education Support Structures in the Implementation of Inclusive Education in South Africa," *Koers - Bulletin for Christian Scholarship* 81, no. 3 (December 15, 2016): 17–30, <https://doi.org/10.19108/KOERS.81.3.2249>.

of educational settings, ultimately addressing barriers to learning and improving educational results for learners of all ages.

Tackling External Factors

Barriers to learning can come from external factors, such as influences from the neighbourhood, family, and peers. This extensive support system must now track these external determinants to shape a conducive learning environment.⁶¹ These external factors can have a profound effect on a learner's academic performance and overall well-being, which makes it imperative for schools to ensure that our strategies address those factors as much as possible. Continuously working to improve teacher practice and learner outcomes, every section significantly impacts a child's learning, and data can impact learning across the system.

Learners from socioeconomically disadvantaged communities face many barriers to academic success, including limited educational resources, exposure to crime, and limited safe spaces to learn and play. Studies show that neighbourhoods of higher wealth and social status generally provide greater educational support.⁶² Schools can work with community organisations to offer additional resources, such as after-school programmes, tutoring, and safe recreational spaces, to help bridge these gaps. Some suggestions to help people overcome living in a disadvantaged neighborhood include getting the community involved in creating a supportive community. Another important factor that affects the learning and development of a child is the influence of the family. Parental involvement, family income, and educational background can influence a learner's academic performance. Research indicates that learners whose parents are involved tend to perform well academically and display more positive behaviour.⁶³

Teachers can help families by providing parent education initiatives, resources for home learning, and opportunities for parental involvement in their child's education. Additionally, economic barriers can be addressed through interventions that provide financial support, school supplies, and access to nutritious meals during school hours, which can help level the field for low-income learners.⁶⁴ Peer influence is also an important part of learner education. Positive peer relationships can improve learning by providing emotional support, motivation, and opportunities for collaborative learning. However, negative peer-to-peer influences (bullying/peer pressure) may impact academic performance, as well as a learner's mental health.⁶⁵

Educational institutions can contribute to a healthy social sphere through social-emotional learning, anti-bullying initiatives, and inclusive, community-building activities. Teachers and school counsellors are well placed to monitor peer dynamics between learners and to provide support to those who may be negatively influenced by peers. Barriers to learning that result from neighbourhood, family, and peer influences are best approached through the whole school community. This helps create an environment where all learners can thrive and succeed, regardless of their circumstances outside of school, through targeted support and resources.

Re-engaging Disconnected Learners

Schools must emphasise learners who have disengaged. This calls for a new way of viewing the role of schools in overcoming barriers to learning and teaching. Re-engaging disconnected learners is important for removing barriers to learning and ensuring physical participation in properties to learn. There are multiple factors behind disconnection from education, such as academic failure, socioeconomic

⁶¹ M. Ainscow, "Concepts of Inclusion," in *Inclusive Education a Framework for Reform*, ed. V. Heung and M. Ainscow (Hong Kong: Hong Kong Institute of Education, 2004), 1–15.

⁶² Sally Parry and Ellen Metzger, "Barriers to Learning for Sustainability: A Teacher Perspective," *Sustainable Earth Reviews* 6, no. 1 (2023): 2; E.O. Mashile, A. Fynn, and M. Matoane, "Institutional Barriers to Learning in the South African Open Distance Learning Context," *South African Journal of Higher Education* 34, no. 2 (May 2020), <https://doi.org/10.20853/34-2-3662>.

⁶³ Nel et al., "Teachers' Perceptions of Education Support Structures in the Implementation of Inclusive Education in South Africa."

⁶⁴ Peter Onu, Anup Pradhan, and Charles Mbohwa, "Potential to Use Metaverse for Future Teaching and Learning," *Education and Information Technologies* 29, no. 7 (May 2, 2024): 8893–8924, <https://doi.org/10.1007/s10639-023-12167-9>.

⁶⁵ Jillian Schreffler et al., "Universal Design for Learning in Postsecondary STEM Education for Students with Disabilities: A Systematic Literature Review," *International Journal of STEM Education* 6, no. 1 (December 4, 2019): 8, <https://doi.org/10.1186/s40594-019-0161-8>.

disadvantage, and emotional or behavioural problems. To successfully reengage these learners, schools need broad and multidimensional strategies.

One way to do this is to foster a positive and accepting school culture. Encouraging meaningful relationships between the learner and the teacher, fostering feelings of belonging, and valuing all learners are essential. Implementing programmes in schools that emphasize social-emotional learning enables learners to acquire the skills necessary to understand and manage emotions, establish positive relationships, and make good choices. By prioritising social-emotional learning, schools can foster a more supportive environment that inspires learners to re-engage with their schooling.

Personalised and flexible learning approaches are another key strategy. Disconnected learners typically thrive in customised educational environments designed around their specific needs and dreams. Illustrations of such approaches include differentiated instruction, project-based learning, and technology-driven individualised learning plans. Adaptive learning platforms can identify specific weaknesses in learners and offer personalised assistance to help them get back on track. Schools can consider flexible learning options to better serve disconnected learners and help them re-engage in their studies.

Another area that is essential to reconnecting disconnected learners is family and community involvement. Schools can partner with families to develop a nurturing home environment that complements educational value. This may include regular communication between teachers and parents, as well as offering resources and support for families experiencing difficulties. In addition, schools can collaborate with community groups to provide extracurricular activities, mentoring programmes, and other support that help learners feel a sense of connection both within and outside the classroom. Reconnecting disengaged learners involves a comprehensive approach that targets their academic, social, and emotional needs. By building a system and creating customised learning environments in collaboration with families and communities, we can address barriers to learning and help disconnected learners learn and thrive.

RECOMMENDATIONS

Schools must adopt a whole-school approach to support learners to effectively address barriers to learning. This method of instruction ensures that all aspects of a learner's needs are addressed, fostering a learning and development-friendly environment. An example of this would be to establish a holistic approach, which means integrating academic support, behavioural interventions, and mental health services. Addressing the full range of learning needs allows schools to help create a more inclusive and supportive environment. The multisystemic support approach is widely used, encompassing a range of supports, from universal interventions (Tier 1), to targeted (Tier 2), or intensive (Tier 3) support. Investigating academic and behavioural challenges early can prevent them from becoming significant barriers to learning.

An integrated approach to learner support also recognises the importance of collective action on behalf of learners across the school and beyond, through partnerships with families and community partners. By working in partnership with parents and local organisations, schools can build a network of support that offers resources and services beyond the classroom. In some community schools, wraparound services such as healthcare, counseling, and after-school programmes are established, ensuring that, in addition to learning, other essential learner needs are met. This process aids against extrinsic elements like the effects of family and neighborhood on a learner's capacity to learn.

The integrated approach also requires data-driven decision-making. Schools use data to identify learners at risk while tracking the effectiveness of interventions. Data collected through regular evaluation and progress monitoring allows teachers to modify support strategies as necessary for learners, ensuring that interventions are responsive to changing needs. This feedback loop helps keep support systems relevant and improves the learning outcomes over time. To effectively address barriers to learning, schools need a comprehensive and integrated approach to learner support. This requires systemic changes, sustainability, and consideration of external influences that affect the growth of the learner.

In general, it requires collaboration between schools, communities, and policymakers to address barriers to learning in a way that recognises and supports all learners. A holistic and integrated learning

support paradigm is essential to overcome learning barriers. With a balance of academic, behavioural, and mental health support, along with collaborative processes and data-driven practices, schools can ensure that all learners have equal access to success.

CONCLUSION

This article aimed to examine the use of technology for the effectiveness of school support systems in addressing barriers to learning. One of the principles for the conveyance of support is that if the delivery of support is done based on intersectoral collaboration, its delivery can be effective and economical. Findings indicate that technology enhances school support systems by expanding accessibility, facilitating communication, and promoting personalised learning experiences. Digital tools prove advantageous for students with disabilities, and online platforms provide adaptable instruction for distant students. Learning management systems boost communication between teachers, students, and parents, ensuring prompt support. AI-driven educational technologies customise the learning experience, while adding games boosts student participation. Teachers benefit from immediate access to student data and digital training opportunities. Complementary resources and governmental initiatives also assist in addressing socioeconomic as well as barriers to learning. When utilised effectively, technology fosters a more inclusive and efficient educational setting.

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