MEST Journal

EXPLORING THE IMPACT OF MULTISENSORY LEARNING AND ASSISTIVE TECHNOLOGIES ON SPECIAL EDUCATION

Sohaib Ullah
Center for Studies of Education and Psychology of Ethnic Minorities in Southwest China of Southwest University, Chongqing, China
https://orcid.org/0009-0004-6892-1858

Marwa Zaib
Department of Education, University of Chitral, Pakistan

ARTICLE INFO

Open access

JEL Category:
GGD, TT, EE

Keywords:

educational interventions
multisensory learning techniques
assistive technologies
special needs education
inclusive education

ABSTRACT

This paper explores how different educational interventions, that is, multisensory learning strategies, audiobooks, and assistive technology, can improve the academic participation and social inclusion of children with special needs. Quantitative research design was employed, and surveys were administered by educators, special education professionals, and parents of children with disabilities across diverse learning environments. In the results, multisensory learning strategies were perceived as the best intervention (mean score = 3.51), followed by assistive technologies (3.35) and audiobooks (3.28). There were also gender differences, with male respondents perceiving multisensory learning techniques more positively than their female counterparts. The findings indicate that participants perceived an integrated set of interventions as useful for supporting the diverse needs of children with disabilities and for promoting academic participation and social inclusion. The study suggests that participants viewed the combination of multisensory learning methods, audiobooks, and assistive technologies as a potentially comprehensive approach to supporting the developmental and educational needs of children with disabilities. Future studies are needed to understand the relationships among these interventions, gender disparities, and their long-term impact on inclusive education practices.

1 INTRODUCTION

Elementary education is a critical stage for children with special needs, and the group of children with special needs is extremely broad, as it includes autism, intellectual disabilities, learning disabilities, and blindness (Grigorenko et al., 2020). Conventional educational methods do not always meet the specific learning needs of these children; therefore, special interventions must be

Address of the author:
Sohaib Ullah
sohaibullah09@gmail.com

Received: 02.04.2026
Revised: 18.05.2026
Accepted: 20.05.2026
Available online: 20.05.2026

developed (Ainscow, 1991). Multisensory learning methods, assistive technology, including audiobooks and tools for optical character recognition, and tailored learning plans are effective in helping children with special needs and in facilitating their cognitive, emotional, and social development (Lamport et al., 2012; Polyium & Jongnantawat, 2024). To foster academic achievement and social acceptance among such children, it is crucial to consider their unique needs and provide personalized educational support (Lopatinska et al., 2023).

Most studies note the importance of early, personalized interventions for children with special needs (Morales Jr et al., 2025). Early recognition and targeted learning interventions are major factors in improving academic achievement and developing positive social behaviors (Osher et al., 2008). Integration of assistive technologies, coupled with personalized instructional approaches, will help children with disabilities be more involved in the curriculum, thereby enhancing their learning experiences (Ahmed et al., 2025). Moreover, the popularization of inclusive teaching practices that promote collaboration among educators, parents, and special education professionals is essential to establishing a supportive, inclusive learning environment that benefits all students, including those with special needs (Beveridge, 2013).

Even though the importance of such interventions is gaining ground, there are still many difficulties in successfully applying these approaches across different educational establishments (Lendrum & Humphrey, 2012). Some barriers faced by many schools include a lack of resources, poor teacher training, and societal stigma toward people with disabilities (Mantey, 2017). Moreover, a strong desire to have evidence-based research to determine the effectiveness of these interventions in addressing the needs of diverse children at the elementary level persists (Rathvon, 2008). It is paramount to consider not only the academic performance of these strategies but also the social and emotional growth of children with special needs, as these are key components of their overall development and of their becoming members of society (Rafiyya et al., 2024).

The paper will explore how educational interventions can address the learning needs of elementary learners with special needs, particularly through multisensory learning strategies and assistive technology (Volpe & Gori, 2019). This study can be useful to teachers and policymakers by providing insights into how these interventions can support academic success and social inclusion, enabling the refinement of educational practices and the fostering of inclusive learning environments. The main purposes of the study are as follows:

1. To assess the efficacy of the educational intervention, including multisensory learning methods and assistive technologies, in improving the academic involvement and socialization of children with special needs in elementary school.
2. To explore the importance of such interventions in meeting various needs of children with autism, intellectual disabilities, learning disabilities, and blindness.

Research questions are:

1. How do educational interventions, such as multisensory learning strategies and assistive technologies, support the perceived academic engagement and social interaction of elementary-level children with disabilities?
2. What are the perceptions of educators, parents, and special education professionals about the effectiveness of the above-stated interventions in meeting the special needs of children with disabilities?

2 LITERATURE REVIEW

Educational interventions are important for supporting the academic participation and social inclusion of children with disabilities (Arvaniti, 2025). Children with disabilities represent a diverse group, including those with cognitive, physical, developmental, sensory, and learning-related disabilities. Conventional educational approaches often do not address the learning needs of such children individually and require the implementation of special strategies to teach them (Tzivinikou & Papoutsaki, 2016). Individualized Education Programs (IEPs), assistive technologies, and multisensory learning methods have been identified as major tools in developing an inclusive learning environment. These solutions not only improve academic performance, but also social, emotional, and behavioral

development of children with disabilities (Kirby et al., 2019).

The field of special education has undergone remarkable changes over the last several decades, aimed at developing specialized educational programs that meet the needs of students with disabilities (Blackwell & Rossetti, 2014). According to the Individuals with Disabilities Education Act (IDEA), special education services are supposed to be individualized and systematic, implemented to provide children with disabilities access to academic opportunities in the least restrictive setting (Carson, 2014). Early intervention is a very important part of this process, as studies have shown that early intervention to address developmental delays and learning challenges may lead to improved educational and social outcomes in the future (Reichrath, et al., 2010; Zucker, 2010). The need to ensure that schools, parents, and special education professionals work together to develop effective support structures for children with learning disabilities, intellectual disabilities, and emotional disorders is highlighted through early intervention programs where children are the main beneficiaries of the initiative.

The use of assistive technologies in the educational environment has become one of the central objects of attention in the field of special education (Erdem, 2017). Alternatives like speech-to-text programs, audiobooks, and adaptive communication technology have been found to go a long way in enabling children with disabilities to access the curriculum based on their capabilities (Cummings, 2011). Such technologies have been particularly helpful with students with learning disabilities, autism, and intellectual disabilities because they provide them with alternative ways of learning and interacting with the educational material (Belsky, 2001). In particular, it was noted that audiobooks and optical character recognition devices can enhance reading comprehension, engage learners, and help children with visual impairments and other disabilities overcome traditional educational barriers, thereby supporting their independent learning (Sri Takshara & Bhuvaneswari, 2025).

Nevertheless, although these interventions have been proven beneficial, there are still difficulties with their implementation and universal introduction. Limited resources, insufficient training of educators, and the unwillingness of society to change are the obstacles that still do not allow inclusive education efforts to achieve the desired outcomes (Hollings, 2021). Moreover, the lack of standardized evaluation methods to assess the effectiveness of these interventions leads to discrepancies in their use across educational environments (Hager & Klinger, 2005). The solution to these challenges should be holistic, encompassing the long-term professional development of teachers, enhanced cooperation among the parties involved, and efforts to raise public awareness to reduce stigma and promote inclusive education.

Previous studies have extensively discussed the individual effectiveness of multisensory learning techniques, audiobooks, and assistive technologies in enhancing academic and social outcomes for children with special needs. However, these interventions are often considered in isolation, without a cohesive framework to guide their integration into classroom settings. While these interventions show promise, there remains a gap in understanding how they can be combined to maximize their impact across various disabilities. Additionally, the role of gender in shaping perceptions of these interventions is often overlooked. Therefore, this study seeks to explore how a more structured, inclusive framework can address these gaps and better support the diverse needs of children with disabilities.

This study is grounded in the Universal Design for Learning (UDL) concept, which promotes the development of a flexible learning environment that meets the needs of all students, including those with special needs (Al-Azawei, et al., 2016). UDL emphasizes the need to offer many means of representation, interaction, and expression to ensure that all learners can access and participate in the educational process (Raza et al., 2023). In this respect, assistive technologies and multisensory learning interventions align with UDL principles, as they provide customized support to students with varying abilities to foster academic interests and social integration.

To fill these gaps, this study adopts the Universal Design for Learning (UDL) framework, which emphasizes flexible teaching to cater to each learner's unique needs. UDL's principles, which

provide multiple means of representation, engagement, and expression, align with the need for personalized, multisensory interventions. By integrating UDL into special education strategies, we can create a more cohesive and inclusive approach that not only enhances academic performance but also fosters social integration for children with special needs. Moreover, UDL's emphasis on reducing barriers to learning offers a perfect lens for addressing gender differences in perceptions of educational interventions, as it encourages equal access to educational resources for all students.

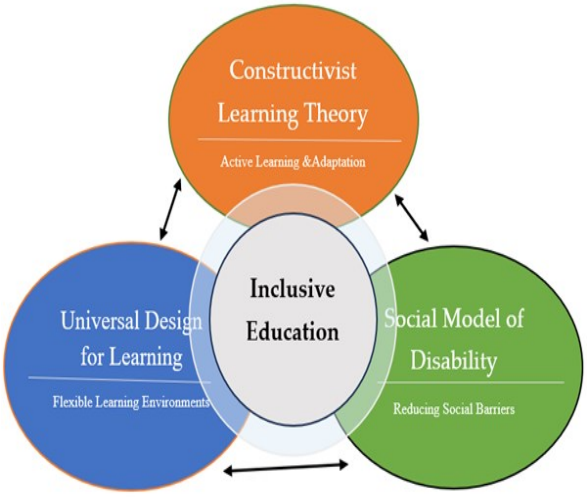

Figure 1. *Theoretical Framework for Inclusive Education*

The Social Model of Disability is also a complementary theory, in that the impairments are not the source of challenges to children with disabilities, but rather the attitudes of society and environmental barriers (Shakespeare, 2006). This study focuses on how educational interventions can be implemented to reduce barriers, encourage inclusion, and improve the learning process for children with special needs by integrating UDL and the Social Model of Disability.

3 METHODOLOGY

In this work, the research design is a quantitative study aimed at assessing the effectiveness of educational interventions for children with special needs in elementary schools (Bloomfield & Fisher, 2019). The main goal was to examine participants' perceptions of how multisensory learning strategies and assistive technologies support academic participation and social inclusion among children with disabilities. In this section, the research design, sample selection methods, data collection methods, and the data analysis methods employed in the research are described.

3.1 Research design

A quantitative approach was used to examine the correlation between educational interventions and children with special needs' academic and social levels. The study employed a survey of educators, special education professionals, and parents of children with special needs. The systematic quantification of perceptions about the usefulness of different interventions, such as multisensory lessons and audiobooks, among other assistive technologies, in improving the learning experiences and social involvement of children with disabilities can be done using this methodology.

3.2 Population and sample

The target population of this study consisted of teachers, parents, and special education professionals with direct experience working with children with disabilities in elementary educational settings. Purposive sampling was used to select participants from public, private, and special education centers in Islamabad and Rawalpindi.

The final sample consisted of 151 participants recruited from diverse educational settings, including public institutions, private schools, and special education centers serving children with autism, learning disabilities, intellectual disabilities, and visual impairments. Of the total sample, 55 participants were from public institutions, whereas 96 participants were from private schools or special education centers.

Regarding gender, the sample included 75 male participants and 76 female participants. The age distribution of the participants was as follows: 50 participants were aged 20–29 years, 50 were aged 30–39 years, 26 were aged 40–49 years, and 25 were aged 50 years or above.

Regarding participant role, the sample included 60 teachers, 70 parents of children with disabilities, and 21 special education professionals. Participants were included in the study if they met the following criteria: (a) they were teachers, parents, or special education professionals; (b) they had direct experience with children with disabilities; (c) they were associated with

elementary-level education or special education services; and (d) they voluntarily agreed to participate in the study. Participants who did not have direct experience with children with disabilities or who did not provide informed consent were excluded.

3.3 Research instrument

Data were collected using a structured self-administered questionnaire developed for the present study. The questionnaire was designed to examine participants' perceptions of the perceived effectiveness of multisensory learning strategies, audiobooks, and assistive technologies in supporting academic engagement, social inclusion, and cognitive development among children with disabilities.

The questionnaire consisted of 16 items divided into two main sections. The first section collected demographic information, including gender, age group, participant role, and institutional background. The second section included Likert-scale items related to participants' perceptions of educational interventions for children with disabilities. These items focused on three major intervention areas: multisensory learning strategies, audiobooks, and assistive technologies.

The perception items were measured using a four-point Likert scale: 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree. Higher scores indicated more positive perceptions of the intervention's effectiveness. Mean scores were calculated for each intervention category to determine participants' overall level of agreement.

Sample questionnaire items included: "Multisensory learning techniques improve the academic engagement of children with disabilities," "Audiobooks support language development among children with learning difficulties," and "Assistive technologies help children with disabilities participate more effectively in classroom activities."

The questionnaire was developed after reviewing relevant literature on inclusive education, multisensory learning, audiobooks, and assistive technologies. To ensure content validity, the draft questionnaire was reviewed by specialists in education and special education. Their feedback was used to improve item clarity, relevance, and appropriateness for teachers, parents, and special education professionals before the final version was used for data collection.

3.4 Data collection

Data were collected through direct administration of the questionnaire in selected schools and special education centers. The researcher personally distributed the questionnaires to eligible participants and provided clarification when needed to ensure that the items were understood correctly. Participants completed the questionnaire voluntarily, and all responses were treated anonymously and confidentially.

3.5 Data analysis

The collected data were analyzed using descriptive statistics. Frequencies, percentages, means, and standard deviations were calculated to summarize participants' perceptions of multisensory learning strategies, audiobooks, and assistive technologies. The questionnaire responses were coded on a 4-point Likert scale: 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree. Standard deviations were calculated from the available aggregated Likert-scale response distributions. Because the dataset was available only in aggregated form, participant-level inferential analyses such as independent-samples t-tests, one-way ANOVA, p-values, and Cronbach's alpha could not be reliably reconstructed. Therefore, gender-related findings are presented as descriptive trends rather than statistically confirmed differences (Hinton, et al., 2014).

The review was primarily aimed at assessing the perceived efficacy of multisensory learning interventions and assistive technology in supporting the learning needs of children with diverse needs. The paper further evaluated the effects of these interventions on the academic progress, socialization, and cognitive development of the participating children.

3.6 Ethical considerations

The ethical considerations of this study were met, as all participants (educators, special education professionals, and parents) provided informed consent. The respondents were informed of the voluntary nature of the research and their right to withdraw at any time. They were confidential and anonymous, and all data was safely stored, and only aggregate data was reported. The necessary

review board granted ethical approval for the study and ensured that it was carried out in accordance with the rights and well-being of the participants.

4 RESULTS

This part presents research on the efficacy of educational interventions, including multisensory learning strategies, audiobooks, and assistive technologies, in supporting the academic and social engagement of children with special needs. The findings are structured by the major interventions under investigation and provide an in-depth review of participants' perceptions. To make it clear, the tables will be combined to present similar information, and visual graphs will supplement the presentation of key results.

4.1 Perceived effectiveness of multisensory learning techniques across disabilities

Table 1 summarizes the perceived effectiveness of multisensory learning methods in promoting academic engagement and social integration among children with autism, intellectual disabilities, learning disabilities, and blindness. The interventions were rated on a Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree).

Table 1: Perceived Effectiveness of Multisensory Learning Techniques across Disabilities

Disability Type	Mean	SD
Autism	3.67	0.53
Intellectual Disability	3.43	0.75
Learning Disabilities	3.43	0.59
Blindness	3.42	0.57

The results show that respondents rated the perceived effectiveness of multisensory learning methods across different disabilities. The mean score for autism was 3.67, for intellectual disability was 3.43, and for learning disabilities was 3.43, as shown in Table 1.

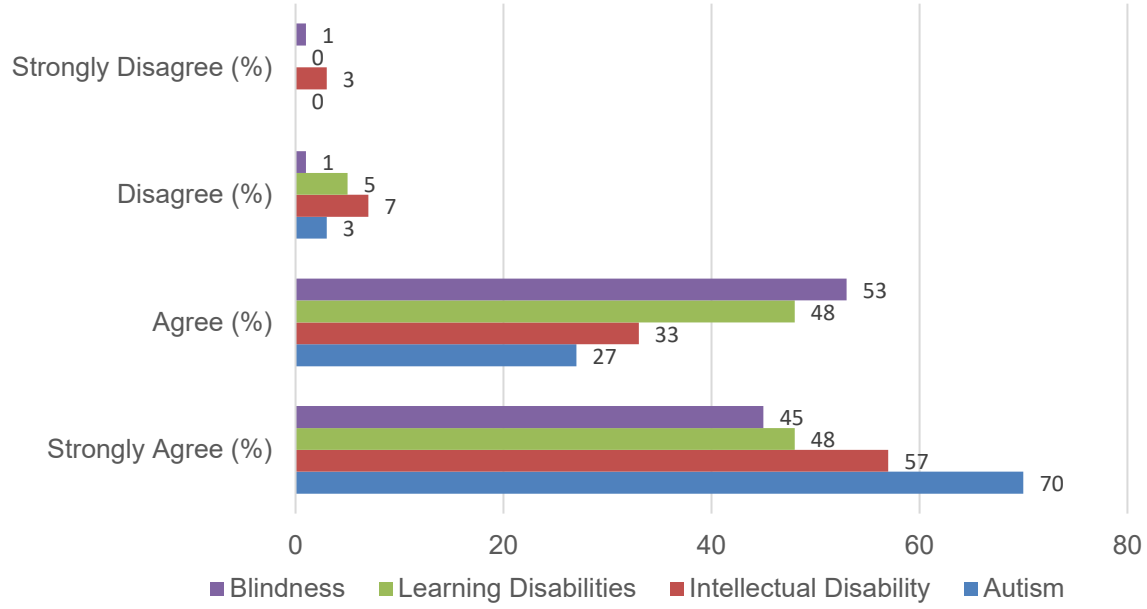

Figure 2: *Perceived Effectiveness of Multisensory Learning Techniques*

Figure 2 presents the percentage of responses for perceived effectiveness of multisensory learning methods across different disability types (autism, intellectual disabilities, and learning disabilities).

4.2 Perceived effectiveness of audiobooks and assistive technologies for children with disabilities

Table 2 presents participants' perceptions of the effectiveness of audiobooks and assistive technologies in improving academic performance, engagement, and cognitive skills for children with special needs.

The results show that audiobooks received an overall mean score of 3.36. Table 2 presents the breakdown of responses for general use, language development, and cognitive support.

Table 2: Perceived Effectiveness of Audiobooks and Assistive Technologies for Children with disabilities

Intervention	Mean	SD
Audiobooks (General)	3.27	0.60
Language Development	3.29	0.62
Cognitive Support	3.33	0.63

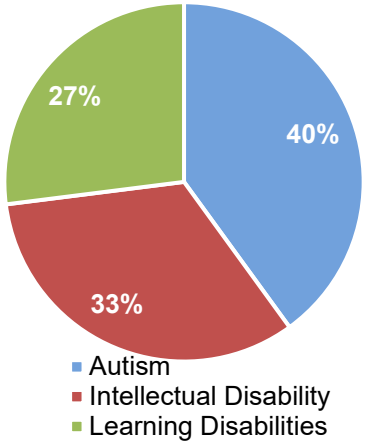

Figure 3: *Gender-Based Perception of Interventions*

This chart visually shows the distribution of responses for audiobooks, with male and female respondents indicating their level of agreement or strong agreement with the effectiveness of audiobooks.

4.3 Gender-based perceptions of educational interventions for children with disabilities

Table 3 compares male and female participants' perceptions of the effectiveness of multisensory learning techniques and audiobooks. It highlights differences in responses by gender.

Note. The figure presents descriptive gender-based differences in participants' perceptions of multisensory learning strategies and audiobooks. Higher mean scores indicate more positive perceptions of the intervention.

Table 3*: Gender-Based Perception of Educational Interventions for Children with disabilities*

Intervention	Gender	Mean	SD
Multisensory Learning	Male	3.67	0.56
Audiobooks	Female	3.47	3.31
Multisensory Learning	Male	3.17	0.63
Audiobooks	Female	3.32	0.56

Descriptive gender-based trends were observed in participants' perceptions of the interventions. Male participants reported a higher mean score for multisensory learning techniques (M = 3.67, SD = 0.53) than female participants (M = 3.47, SD = 0.56). In contrast, female participants reported a slightly higher mean score for audiobooks (M = 3.32, SD = 0.56) than male participants (M = 3.17, SD = 0.63). However, because participant-level raw data were not available, these differences should be interpreted as descriptive trends rather than statistically validated gender differences.

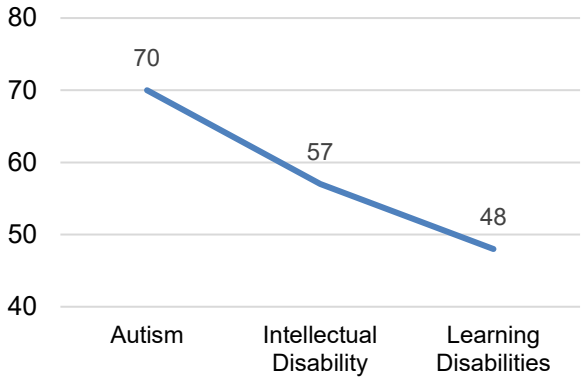

Figure 4: Effectiveness of Educational Interventions

4.4 Overall perceived effectiveness of educational interventions for children with disabilities

Table 4 summarizes the overall perceived effectiveness of various educational interventions (multisensory learning techniques, audiobooks, assistive technologies) based on the mean scores derived from participant responses.

Table 4: Overall Effectiveness of Educational Interventions for Children with disabilities

Intervention	Mean Score (Out of 4)
Multisensory Learning	3.51
Audiobooks	3.28
Assistive Technologies	3.35

The overall mean scores indicate the general effectiveness of the interventions. Multisensory learning methods were rated highest (Average Improvement: 3.51), followed by assistive technologies (3.35) and audiobooks (3.28). Table 4 summarizes the overall effectiveness of the three educational interventions: multisensory learning (mean score 3.51), audiobooks (mean score 3.28), and assistive technologies (mean score 3.35).

Findings of this research show that multisensory learning methods are rated as the best educational intervention, with children with special needs coming in second, closely behind the assistive technologies. Although it is beneficial, audiobooks have somewhat lower ratings than the other two interventions. Gender differences were also noted, with male participants rating the multisensory learning techniques more positively than female participants. Overall, participants perceived these interventions as useful for supporting academic involvement and social inclusion among children with disabilities. However, because the study measured perceptions rather than direct educational outcomes, these findings should be interpreted as perceived effectiveness rather than confirmed intervention impact.

5 DISCUSSION

The findings indicate that participants perceived multisensory learning methods as useful for supporting academic interaction and social inclusion among children with disabilities. Particularly for children with autism, MSL methods received the highest rating, with 70% of participants strongly agreeing with their effectiveness. This aligns with research suggesting that multisensory approaches enhance engagement by addressing multiple learning styles, which may explain their higher perceived effectiveness for children with autism, who often benefit from more sensory-rich environments (Kirby et al., 2019). The mean score for multisensory learning methods (M = 3.51) suggests that participants viewed this intervention positively in relation to meeting the diverse learning needs of children with disabilities. However, this result reflects perceived usefulness rather than direct evidence of improved academic performance or social integration.

These findings should be interpreted as participants' perceptions of usefulness rather than as direct evidence of measurable improvement in children's educational outcomes. These interventions showed particular effectiveness in promoting language development and providing cognitive support, aligning with findings from Ugalde et al. (that highlight the role of audiobooks in improving reading comprehension and language skills for children with learning disabilities. However, the slightly lower ratings compared to multisensory learning techniques suggest that while these tools are beneficial, they may be most effective when used in combination with other interventions, as they primarily target specific areas such as language or cognitive skills rather than providing a comprehensive multisensory learning experience. The results

align with earlier research showing the beneficial effects of audiobooks and assistive technologies on children with learning, autism, and visual impairments (Nees & Berry, 2013; Raza et al., 2025). Nevertheless, the fact that the mean scores were slightly lower than those for multisensory learning techniques implies that, although audiobooks and assistive technologies are effective, they can be combined with other interventions to achieve the best possible outcomes, as with multisensory learning methods.

Gender differences were observed in perceptions of educational interventions, with male participants expressing more positive views of the effectiveness of multisensory learning methods (70% strongly agreed) than female participants (50%). These findings echo previous research indicating that gender differences may influence how educational interventions are perceived and utilized (Reichrath et al., 2010). It is possible that males and females have different learning preferences or experiences with multisensory approaches, which could explain these disparities (Kessels, et al., 2018). Future studies should explore these gender differences in greater depth to better understand how interventions can be tailored.

Overall, this study reinforces the importance of combining educational interventions to address the diverse needs of children with special needs. The results show that multisensory learning strategies, followed by assistive technologies and audiobooks, offer the most effective approach for enhancing academic and social outcomes (Polyium & Jongnantawat, 2024). These findings suggest that interventions should not be viewed in isolation but rather as complementary tools that can be integrated to provide a comprehensive, individualized approach. By combining multisensory learning methods with assistive technologies, educators can more effectively target a range of developmental needs, ensuring that children with special needs receive well-rounded support that fosters both academic achievement and social inclusion. The graphical representations of these results in Figure 1 and Figure 2 also support the conclusion that multisensory methods, with the help of assistive technologies, would play a significant role in facilitating inclusive and equitable approaches to education.

6 CONCLUSION

This study provides insight into participants' perceptions of the usefulness of multisensory learning methods, audiobooks, and assistive technologies in supporting academic engagement and social inclusion among children with disabilities. The results indicate that participants perceived multisensory learning strategies most positively, followed by assistive technologies and audiobooks. The findings support the need for a wide spectrum of differentiated interventions to address the diverse learning needs of children with disabilities, ensuring that educational environments are both inclusive and accommodating. The paper also outlines the key role of individualized educational plans in enhancing academic achievement and social inclusion among children with special needs.

Based on these results, teachers, policymakers, and scholars need to continue exploring and incorporating diverse educational resources that specifically meet the needs of children with special learning needs. Participants' responses suggest that multisensory approaches, audiobooks, and assistive technologies may contribute to a holistic support framework for the academic and social participation of children with disabilities. Further studies are needed to identify links between these interventions, differences in perceptions and educational performance by gender, and long-term educational outcomes, and to streamline inclusive education methods. Because this study was based on questionnaire responses from adults rather than direct assessment of children's academic or social outcomes, the findings should be understood as perceived effectiveness rather than confirmed evidence of intervention outcomes.

6.1 Limitations

This study has several limitations. First, the findings are based on participants' perceptions rather than direct measurements of children's academic achievement, social behavior, or long-term educational outcomes. Therefore, the results should be interpreted as perceived effectiveness rather than confirmed evidence of intervention impact.

Second, the study used purposive sampling and included participants from selected schools and

special education centers in Islamabad and Rawalpindi. As a result, the findings may not be generalizable to all educational settings or regions.

Third, the available dataset was aggregated; therefore, inferential statistical procedures, including t-tests, ANOVA, p-values, and Cronbach's alpha, could not be reconstructed from participant-level responses. As a result, gender-based differences are interpreted descriptively rather than as statistically significant findings.

Finally, the study relied on self-reported questionnaire responses, which may be influenced by participants' personal experiences, expectations, or response bias. Future studies should use larger samples, direct assessment of student outcomes, and complete item-level data to provide stronger statistical evidence.

6.2 Author contributions

The authors contributed to this research as follows:

Sohaib Ullah: Conceptualization, data collection, and drafting of the manuscript, supervision, critical review, and revisions.

Marwa Zaib: Methodological guidance, editing, and final approval of the manuscript.

6.3 Conflict of interest

The authors declare no conflict of interest.

6.4 Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

6.5 Ethics statement

All participants were informed about the study's aims, and their voluntary participation was secured through informed consent. Anonymity and confidentiality were maintained throughout the data collection and analysis. The study complied with general ethical guidelines for educational research and ensured that participation posed no risk or harm to individuals or institutions.

REFERENCES

Ahmed, S., Rahman, M. S., Kaiser, M. S., & Hosen, A. S. (2025). Advancing personalized and inclusive education for students with disability through artificial intelligence: perspectives, challenges, and opportunities. *Digital, 5*(2), 11. https://doi.org/10.3390/digital5020011

Ainscow, M. (1991). Effective schools for all: An alternative approach to special needs in education. *Cambridge Journal of Education, 21*(3), 293-308. https://doi.org/10.1080/0305764910210304

Al-Azawei, A., Serenelli, F., & Lundqvist, K. (2016). Universal Design for Learning (UDL): A content analysis of peer reviewed journals from 2012 to 2015. *Journal of the Scholarship of Teaching and Learning, 16*(3), 39-56. https://doi.org/10.14434/josotl.v16i3.19295

Arvaniti, F. (2025). The Effectiveness of Special Education Interventions in Promoting the Academic and Social Integration of Migrant Children. *Knowledge-International Journal, 69*(2), 431-436. https://ojs.ikm.mk/index.php/kij/article/view/7255

Belsky, J. (2001). Emanuel Miller Lecture: Developmental risks (still) associated with early child care. *The Journal of Child Psychology and Psychiatry and Allied Disciplines, 42*(7), 845-859. https://doi.org/10.1111/1469-7610.00782.

Beveridge, S. (2013). *Children, families and schools: Developing partnerships for inclusive education*: Routledge. https://www.routledge.com/Children-Families-and-Schools-Developing-Partnerships-for-Inclusive-Education/Beveridge/p/book/9780415279345

Blackwell, W. H., & Rossetti, Z. S. (2014). The development of individualized education programs: Where have we been and where should we go now? *Sage Open, 4*(2), 2158244014530411. https://doi.org/10.1177/2158244014530411

Bloomfield, J., & Fisher, M. J. (2019). Quantitative research design. *Journal of the Australasian Rehabilitation Nurses Association, 22*(2), 27-30. https://doi.org/10.33235/jarna.22.2.27-30

Carson, C. (2014). Rethinking special education's "least restrictive environment" requirement. *Mich. L. Rev., 113*, 1397. https://doi.org/10.36644/mlr.113.8.rethinking

Cummings, E. O. (2011). Assistive and adaptive technology resources. *Knowledge Quest, 39*(3), 70.

Erdem, R. (2017). Students with special educational needs and assistive technologies: A literature review. *Turkish Online Journal of Educational Technology-TOJET, 16*(1), 128-146. https://eric.ed.gov/?id=EJ1124910

Grigorenko, E. L., Compton, D. L., Fuchs, L. S., Wagner, R. K., Willcutt, E. G., & Fletcher, J. M. (2020). Understanding, educating, and supporting children with specific learning disabilities: 50 years of science and practice. *American psychologist, 75*(1), 37. https://doi.org/10.1037/amp0000452

Haager, D., & Klingner, J. K. (2005). *Differentiating instruction in inclusive classrooms: The special educator's guide*: Allyn & Bacon.

Hinton, P. R., McMurray, I., & Brownlow, C. (2014). *SPSS explained*: Routledge. https://doi.org/10.4324/9781315797298

Hollings, S. (2021). Implementation barriers of inclusive education and their impact on stakeholders: A review of the literature. *International Journal of Childhood Education, 2*(1), 27-45. https://doi.org/10.1037/amp0000452

Kessels, U., Heyder, A., Latsch, M., & Hannover, B. (2018). How gender differences in academic engagement relate to students' gender identity. In *Gender and educational achievement* (pp. 116-125): Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315622798-11/gender-differences-academic-engagement-relate-students-gender-identity-ursula-kessels-anke-heyder-martin-latsch-bettina-hannover

Kirby, A. V., Williams, K. L., Watson, L. R., Sideris, J., Bulluck, J., & Baranek, G. T. (2019). Sensory features and family functioning in families of children with autism and developmental disabilities: Longitudinal associations. *The American Journal of Occupational Therapy, 73*(2), https://doi.org/10.5014/ajot.2018.027391

Lamport, M. A., Graves, L., & Ward, A. (2012). Special needs students in inclusive classrooms: The impact of social interaction on educational outcomes for learners with emotional and behavioral disabilities. *European Journal of Business and Social Sciences, 1*(5), 54-69.

Lendrum, A., & Humphrey, N. (2012). The importance of studying the implementation of interventions in school settings. *Oxford Review of Education, 38*(5), 635-652. https://doi.org/10.1080/03054985.2012.734800

Lopatynska, N. A., Deka, I., Dobrovolska, N., Omelchenko, M., & Protas, O. (2023). The role of inclusive education in the social integration of children with special educational needs. *Brazilian Journal of Education, Technology and Society (BRAJETS), 16*(1), 135–142. https://doi.org/10.14571/brajets.v16.n1.135-142

Mantey, E. E. (2017). Discrimination against children with disabilities in mainstream schools in Southern Ghana: Challenges and perspectives from stakeholders. *International Journal of Educational Development, 54*, 18-25. https://doi.org/10.1016/j.ijedudev.2017.02.001

Morales Jr, A., Elimanco, R. M., Tenerife-Cañete, J. J., Abelgas, L., Añora, H., & Pinili, L. (2025). Assessing the Impact of Early Intervention Programs on Students with Special Educational Needs (LSENs). *British Journal of Teacher Education and Pedagogy, 4*(2), 138-149. https://doi.org/10.32996/bjtep.2025.4.2.11

Nees, M. A., & Berry, L. F. (2013). Audio assistive technology and accommodations for students with visual impairments: Potentials and problems for delivering curricula and educational assessments. *Performance Enhancement & Health, 2*(3), 101-109. https://doi.org/10.1016/j.peh.2013.08.016

Osher, D., Sprague, J., Weissberg, R. P., Axelrod, J., Keenan, S., Kendziora, K., & Zins, J. E. (2008). A comprehensive approach to promoting social, emotional, and academic growth in contemporary schools. *Best practices in school psychology, 4*, 1263-1278. https://www.researchgate.net/publication/286336287_A_comprehensive_approach_to_promoting_social_emotional_and_academic_growth_in_contemporary_schools

Polyium, M., & Jongnantawat, P. (2024). How do multisensory teaching strategies enhance literacy skills among students with learning disabilities in inclusive classrooms? วารสาร สห ศาสตร์ ศรีปทุม ชลบุรี, *10*(3), 1-10. https://www.chonburi.spu.ac.th/interdiscip/filepdf/202412261954701511.pdf

Rafiyya, A., Kraiwanit, T., Limna, P., Sonsuphap, R., Kasrisom, A., & Snongtaweeporn, T. (2024). Early childhood social-emotional development: An impact on a developing country. *International Journal of Evaluation and Research in Education, 13*(5), 3081-3089. http://doi.org/10.11591/ijere.v13i5.29462

Rathvon, N. (2008). *Effective school interventions: Evidence-based strategies for improving student outcomes*: Guilford Press. https://psycnet.apa.org/buy/PI

Raza, M. M., Alam, A., & Wara, M. S. M. K. Assistive Technology: A Game-Changer for Children with Learning Disabilities, Enhancing Independence and Well-being. https://doi.org/10.5281/zenodo.15222742

Reichrath, E., de Witte, L. P., & Winkens, I. (2010). Interventions in general education for students with disabilities: A systematic review. *International journal of inclusive education, 14*(6), 563-580. https://www.learntechlib.org/p/107332/

Shakespeare, T. (2006). The social model of disability. In *The disability studies reader* (pp. 16-24): Routledge. http://thedigitalcommons.org/docs/shakespeare_social-model-of-disability.pdf

Sri Takshara, K., & Bhuvaneswari, G. (2025). Empowering visually impaired individuals: The transformative roles of education, technology, and social connections in fostering resilience and well-being. *British Journal of Visual Impairment*. Advance online publication. https://doi.org/10.1177/02646196241310995

Tzivinikou, S., & Papoutsaki, K. (2016). Studying teaching methods, strategies and best practices for young children with special educational needs. *Early Child Development and Care, 186*(6), 971-980. https://doi.org/10.1080/03004430.2015.1071101

Ugalde, L., Santiago-Garabieta, M., Villarejo-Carballido, B., & Puigvert, L. (2021). Impact of interactive learning environments on learning and cognitive development of children with special educational needs: A literature review. *Frontiers in psychology, 12*, 674033. https://doi.org/10.3389/fpsyg.2021.674033

Volpe, G., & Gori, M. (2019). Multisensory interactive technologies for primary education: From science to technology. *Frontiers in psychology, 10*, 1076. https://doi.org/10.3389/fpsyg.2019.01076

Zucker, G. H. (2010). *Intervention Strategies for Pre-School Students with Special Needs.* Paper presented at the Forum on Public Policy Online. https://files.eric.ed.gov/fulltext/EJ912980.pdf