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Learning strategies for students with multiple disabilities in special basic education centers: a systematic review

Estrategias de aprendizaje para estudiantes con multidiscapacidad en centros de educación básica especial: una revisión sistemática

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Abstract

Learning strategies for students with multiple disabilities are crucial because they promote inclusivity, autonomy, and the strengthening of learning, skills, and emotional development. To achieve this, teachers must adapt teaching, technological, and play-based strategies that generate balanced and meaningful learning experiences for all students. Based on this premise, a systematic review was conducted using the PRISMA methodology. This review analyzed the scientific output related to learning strategies applied to students with multiple disabilities in Special Basic Education Centers during the period 2018–2026, as recorded in major databases such as SciELO, Scopus, and VOSviewer. The search was conducted using the keywords “learning strategies,” “multiple disabilities,” and “special education.” The study concluded that research on learning strategies for students with multiple disabilities has shown global expansion, focused on inclusion, technological innovation, and teacher training in special education settings.

Keywords: special education, learning strategies, inclusion, multiple disabilities.

Resumen

Las estrategias de aprendizaje para estudiantes con multidiscapacidad son muy importantes porque favorecen la inclusividad, autonomía y el fortalecimiento de aprendizajes, habilidades y emociones, para ello los docentes deben adaptar estrategias de enseñanza, tecnológicas y lúdicas que generen aprendizajes significativos equilibrados para todos. Tomando en cuenta esta premisa, se realizó una revisión sistemática, bajo la metodología PRISMA, que permitió analizar la producción científica relacionada con las estrategias de aprendizaje aplicadas a estudiantes con multidiscapacidad en los Centros de Educación Básica Especial, durante el período 2018–2026, registrada en importantes bases de datos como Scielo, Scopus y VOSviewer. La búsqueda se realizó mediante las palabras clave “learning strategies”, “multiple disabilities” y “special education”. El estudio concluyó que la investigación sobre estrategias de aprendizaje para estudiantes con multidiscapacidad ha mostrado una expansión

global, orientada hacia la inclusión, la innovación tecnológica y la formación docente en entornos de educación especial.

Palabras clave: educación especial, estrategias de aprendizaje, inclusión, multidiscapacidad.

Introduction

Inclusive education has become a cornerstone in guaranteeing the right to education for all individuals, regardless of physical, sensory, cognitive, or social condition. Putting this principle into practice, however, remains an uphill battle: schools continue to struggle with implementing effective inclusive strategies, and one persistent obstacle is that teachers are often inadequately prepared to work with students who have special learning needs (León et al., 2025).

Multiple disability refers to the simultaneous presence of two or more disabilities that interact with one another, producing substantial limitations in communication, mobility, perception, and learning. Addressing this condition calls for comprehensive educational support that combines assistive technology, multisensory strategies, and sustained involvement from both teachers and families (Tocre et al., 2025).

Within this framework, students with multiple disabilities constitute a population with particularly complex educational needs, requiring diversified pedagogical responses, specialized resources, and learning strategies tailored to their individual characteristics. Given the significant barriers they face to their overall development, comprehensive programs that engage families and the broader educational community are essential (Basu et al., 2023).

Over the past few decades, education systems around the world have pursued reforms aimed at inclusion and equity, recognizing that classroom diversity offers real opportunities for collaborative learning and pedagogical innovation (UNESCO, 2020). Despite this regulatory progress, however, Special Basic Education Centers (CEBE, by their Spanish acronym) continue to face considerable challenges. Among the most pressing are a shortage of adapted materials, insufficient specialized teacher training, and a limited body of empirical research to guide educational practice with students who have multiple disabilities (Rodríguez & Gallego, 2019). These shortcomings hinder the implementation of effective teaching strategies capable of fostering functional skills, augmentative communication, and active student participation in the school environment.

It is worth noting that learning strategies comprise a set of procedures, techniques, and resources designed to support comprehension, retention, and the transfer of knowledge (Pérez & La Cruz, 2014). Within special education, such strategies must be individualized and built around each student's strengths. Recent work, including that of López et al. (2024), indicates that multisensory strategies, assistive technologies, and structured visual routines contribute meaningfully to the cognitive and socioemotional progress of students with multiple disabilities. Even so, the scientific literature remains fragmented as to which approaches are most effective and under what conditions, underscoring the need for systematic studies that synthesize and critically examine the current state of knowledge in this field.

Globally, academic interest in the education of individuals with multiple disabilities has grown considerably, particularly in countries with well-established inclusive education policies, such as the United States, the United Kingdom, Canada, and Spain. These nations have developed research programs centered on inclusive curricular planning, collaborative learning, and the implementation of assistive technologies. In Latin America, by contrast, scientific output in this area remains in its early stages, although notable efforts are underway in Mexico, Colombia, Chile, and Peru to strengthen teacher training around diversity (Solórzano & Membreño, 2026). This landscape ultimately highlights the importance of examining how international research has evolved, so as to inform education policy and guide improvement efforts at the local level.

Methodology

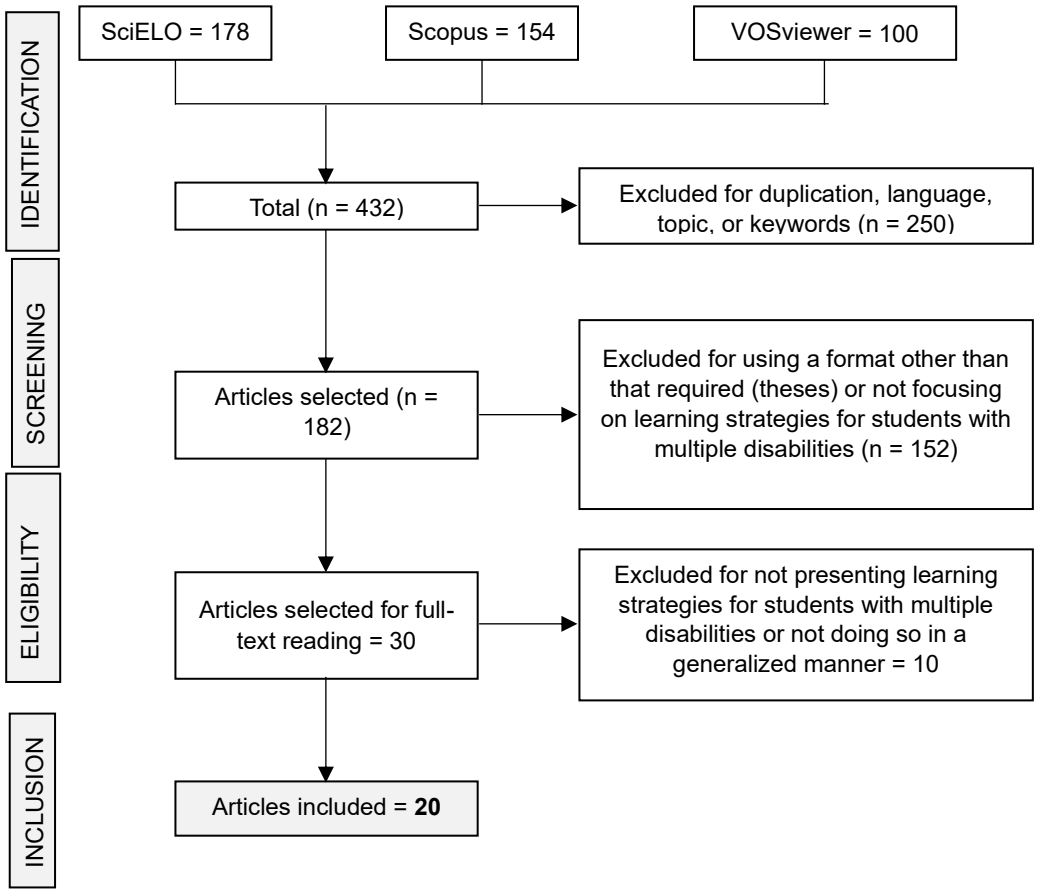
This systematic review set out to analyze internationally indexed scientific output on learning strategies for students with multiple disabilities in special basic education centers between 2018 and 2026. The study further sought to identify publication trends, the most influential authors, leading countries in output, collaboration networks, and predominant thematic areas, with the aim of tracing how the field has evolved and highlighting the progress, challenges, and future directions of research on teaching strategies that foster these students' overall development and educational inclusion. To this end, searches were carried out in established databases (SciELO and Scopus) using bibliometric analysis tools such as VOSviewer.

Document selection followed predefined inclusion and exclusion criteria. Boolean search strings combining key terms in English and Spanish were constructed (for example: "*learning strategies*" *AND* "*multiple disabilities*" *AND* "*special education*"), and information was extracted from titles, abstracts, and keywords. Results were limited

by language (English, Spanish, and Portuguese), publication period (2018–2026), document type (scientific articles), full-text availability, and thematic relevance to pedagogical strategies for students with multiple disabilities. After the data were normalized and duplicate records removed, an initial set of 432 articles was obtained.

The selection process followed the PRISMA statement. During the identification phase, SciELO, Scopus, and VOSviewer were consulted; after excluding duplicates and records that did not meet the language or thematic criteria, the sample was narrowed to 250 articles. Screening then eliminated documents in formats other than scientific articles, as well as those that did not address learning strategies for students with multiple disabilities, reducing the sample to 152 articles. In the eligibility phase, studies lacking sufficient relevance to the review's object were excluded. After applying all criteria, 20 articles were ultimately included in the analysis.

Figure 1
PRISMA flow diagram



Results and Discussion

The findings were discussed in light of the specialized literature to interpret prevailing trends and existing gaps in research on learning strategies for students with multiple disabilities. Building on this analysis, recommendations for future research were formulated, emphasizing the need to strengthen teacher training, foster international cooperation, and consolidate research networks on inclusive education and multiple disability within Special Basic Education Centers.

Using the PRISMA methodology, this review examined academic publications on learning strategies for students with multiple disabilities in CEBE in depth. The aim was to identify trends, core themes, and relevant findings within the international scientific literature, as well as to pinpoint the strategies that have proven most effective in teaching–learning processes (Chuchon, 2024). The included studies were cross-compared to provide a comprehensive, contextualized picture of the field.

Among the most representative studies, Castillo-Acobo et al. (2023) argue that supporting students with multiple disabilities requires personalizing learning by adapting curricular goals to each student's individual

capacities. Along similar lines, Herrera et al. (2026) found that effective strategies rest on the use of visual supports, augmentative and alternative communication (AAC), and collaboration between teachers and therapists. Ilbay-Guaña et al. (2023) further noted that interventions fostering active participation and functional autonomy promote genuine educational inclusion within CEBE.

The analysis also revealed a steady increase in scientific output since 2020, reflecting growing interest in improving pedagogical practice within special education settings. In this regard, Giangreco and Doyle (2021) stand out as influential authors for their contributions to universal design for learning (UDL) and to functional curricular adaptations for students with multiple disabilities. More recent authors, such as Galarza et al. (2025), have proposed theoretical frameworks that integrate collaborative teaching and person-centered planning as guiding principles for addressing diversity in the special education classroom.

Several studies further underscored the importance of evidence-based interventions, the use of assistive technologies, specialized teacher training, and learning centered on functional communication. Among the most frequently cited works are Fernández-Blázquez and Echeita (2022), who examine the effectiveness of systematic instruction in inclusive settings, and Lizcano-Gómez et al. (2022), who explore the integration of multisensory resources to boost motivation and participation among students with multiple disabilities.

Patterns of international collaboration show that most of this research originates in the United States, Spain, the United Kingdom, and Australia, countries that host the most active scientific cooperation networks in special education. Ponce et al. (2023) argue that educating students with multiple disabilities calls for a shift away from traditional instructional models toward more flexible, functional approaches oriented toward daily-living skills. Consistent with this view, Valderrama-Puscan (2024) maintains that ongoing teacher training is essential to equip educators with the pedagogical and technological resources needed for genuinely effective inclusion.

Meza et al. (2023) likewise contend that adapted strategies benefit not only students with multiple disabilities but the classroom as a whole, as they strengthen cooperative work, empathy, and appreciation for diversity. Such practices, in turn, foster social participation and emotional self-regulation, both key components of holistic development.

Taken together, the literature reviewed agrees that the most effective pedagogical strategies combine personalized learning, augmentative communication, and collaborative teaching, all of which contribute to improved performance and well-being among students with multiple disabilities (Mendoza, 2021). Implementing these strategies requires institutional support, active family involvement, and interdisciplinary coordination among educators, therapists, and specialists (Mesías et al., 2023). CEBE should therefore move toward inclusive, flexible, and humanistic educational models that guarantee access, retention, and progress for all students, treating difference as an opportunity for shared learning.

Conclusions

The in-depth analysis of the 20 selected studies indicates that research on learning strategies for students with multiple disabilities has advanced considerably in terms of thematic diversity, institutional collaboration, and methodological development.

The content analysis further shows that the most effective practices center on personalized learning, the use of multisensory resources, augmentative and alternative communication, and collaborative teaching between educators and specialists. These approaches not only advance educational inclusion but also strengthen the cognitive, communicative, and socioemotional development of students with multiple disabilities.

This systematic review therefore provides a solid foundation for future research, underscoring the need to deepen teacher training, expand the use of assistive technologies, and implement public policies that ensure inclusive, equitable environments within Special Basic Education Centers.

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