

## Educational participation of children born preterm: The contemporary role of school-based occupational therapy

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### Abstract

Advances in neonatal intensive care have transformed the survival rates of infants born prematurely, resulting in a growing demographic of children with early-arrival histories entering formal education systems. While severe, high-risk neurodevelopmental diagnoses are typically established during infancy, the more subtle, low-severity "echoes" of prematurity frequently remain dormant, manifesting later as significant barriers to occupational participation in the classroom. This narrative literature review synthesizes contemporary evidence regarding the educational experiences of children born preterm and examines the role of school-based occupational therapy (SBOT) in promoting occupational participation within inclusive educational environments. Deliberately shifting away from traditional bottom-up, deficit-remediation models that seek to "normalize" the child, this paper explores how the nuanced legacy of prematurity impacts the core occupations of the student—specifically academic performance, social participation, and play. Grounded in the Occupational Therapy Practice Framework: Domain and Process (4th ed.) and neurodiversity-affirming paradigms, the review highlights the central role of SBOTs in utilizing Universal Design for Learning (UDL), Multi-Tiered Systems of Support (MTSS), and environment-centric adaptations. Ultimately, the paper advocates for a top-down, collaborative, and systemic approach to optimize the occupational engagement of students navigating the late-emerging challenges of premature birth.

**Keywords:** prematurity, occupational participation, school-based occupational therapy, neurodiversity-affirming practice, multi-tiered systems of support.

## Participação educacional de crianças nascidas prematuras: O papel contemporâneo da terapia ocupacional no contexto escolar

### Resumo

Os avanços nos cuidados intensivos neonatais transformaram as taxas de sobrevivência de bebês nascidos prematuramente, resultando em um grupo demográfico crescente de crianças com histórico de nascimento prematuro que ingressam nos sistemas de educação formal. Embora diagnósticos de neurodesenvolvimento graves e de alto risco sejam tipicamente estabelecidos durante a primeira infância, os "ecos" mais sutis e de baixa gravidade da prematuridade frequentemente permanecem adormecidos, manifestando-se mais tarde como barreiras significativas à participação ocupacional na sala de aula. Esta revisão narrativa da literatura sintetiza as evidências contemporâneas sobre as experiências educacionais de crianças nascidas prematuras e examina o papel da terapia ocupacional escolar na promoção da participação ocupacional em ambientes educacionais inclusivos. Afastando-se deliberadamente dos modelos tradicionais de "baixo para cima" (bottom-up) de remediação de déficits que buscam "normalizar" a criança, este artigo explora como o legado matizado da prematuridade impacta as ocupações centrais do estudante — especificamente o desempenho acadêmico, a participação social e o brincar. Fundamentada na Estrutura da Prática da Terapia Ocupacional: Domínio e Processo (4ª ed.) e em paradigmas de afirmação da neurodiversidade, a revisão destaca o papel central dos terapeutas ocupacionais escolares na utilização do Desenho Universal para a Aprendizagem (DUA), dos Sistemas de Suporte de Múltiplas Camadas

(MTSS) e de adaptações centradas no ambiente. Por fim, o artigo defende uma abordagem "de cima para baixo" (top-down), colaborativa e sistêmica para otimizar o engajamento ocupacional de alunos que enfrentam os desafios de surgimento tardio associados ao nascimento prematuro.

**Palavras-chave:** prematuridade, terapia ocupacional escolar, participação ocupacional, neurodiversidade, desenho universal para a aprendizagem.

## **1. Introduction**

Over the last decade, advances in neonatal intensive care have altered the developmental trajectories of infants born preterm, defined as those born before 37 weeks of gestation. Consequently, an expansive and growing cohort of children with histories of extreme, very, moderate, and late prematurity is now navigating formal education systems (Behboodi et al., 2025; Daskalou et al., 2024; Doyle et al., 2021; Rossetti et al., 2024, 2025).

During infancy and toddlerhood, early intervention services typically focus on establishing foundational motor, feeding, and early cognitive milestones. However, as these children transition away from the highly scaffolded environments of early childhood into the complex, multifaceted, and highly demanding context of the formal school system, a new array of challenges frequently emerges. Neurodevelopmental differences associated with preterm birth may not become fully apparent until children encounter the increasing cognitive, behavioral, attentional, and social demands of formal schooling (Doyle et al., 2021; Kollndorfer et al., 2025; Twilhaar et al., 2018).

Contemporary occupational therapy practice has undergone a significant and necessary paradigm shift. As articulated in the Occupational Therapy Practice Framework: Domain and Process, Fourth Edition (OTPF-4), education is no longer viewed merely as a passive cognitive endeavor, but rather as a primary and dynamic occupation of childhood (American Occupational Therapy Association [AOTA], 2020). Successful engagement in the role of a student requires a continuous, fluid transaction between the child's intrinsic capacities, the physical and social contexts of the school environment, and the specific performance patterns expected within the classroom ecosystem.

For the student born prematurely, minor neurological differences - stemming from interrupted third-trimester brain development and early environmental stressors experienced in the Neonatal Intensive Care Unit (NICU) - can create significant, compounding barriers to occupational participation (Burstein et al., 2026; Daskalou et al., 2024, 2025, 2026; Doyle et al., 2021; Spittle et al., 2018). This literature review synthesizes research detailing the educational outcomes and lived experiences of children born prematurely. Furthermore, it delineates the evolving, modern role of school-based occupational therapy (SBOT).

By moving away from anachronistic medical models that prioritize the remediation of isolated physiological deficits, this paper highlights how contemporary SBOT utilizes top-down, neurodiversity-affirming frameworks to foster occupational participation, autonomy, and a critical sense of belonging for students with a history of preterm birth.

This review aims to synthesize current evidence regarding the long-term educational challenges experienced by children born preterm and to discuss the role of school-based occupational therapy in promoting occupational participation within inclusive educational environments.

## **2. Materials and Methods**

### *2.1 Study design*

This narrative literature review aimed to synthesize current evidence regarding educational participation among children born preterm and the role of school-based occupational therapy in supporting participation within inclusive educational environments.

### *2.2 Literature search strategy*

A literature search was conducted in PubMed, Scopus, Web of Science, and Google Scholar between April and June 2026. Search strings were adapted to the syntax of each database and combined terms related to prematurity, school participation, and occupational therapy.

Core terms included: "preterm birth", "prematurity", "school participation", "school readiness", "occupational participation", "academic performance", "executive functioning", "attention", "sensory processing", "inclusive education", "school-based occupational therapy", "Universal Design for Learning", and "Multi-Tiered Systems of Support".

The search strategy used Boolean combinations such as ("preterm birth" OR prematurity) AND ("school participation" OR "school readiness" OR "academic performance") and ("school-based occupational therapy" OR "occupational therapy") AND ("inclusive education" OR "Universal Design for Learning" OR "Multi-Tiered Systems of Support"). Reference lists of relevant reviews and practice guidelines were also hand-searched to identify additional foundational sources.

### *2.3 Study selection*

Study selection followed a staged narrative-review process. First, titles and abstracts were screened for relevance to preterm birth, school-age participation, educational outcomes, occupational therapy, or inclusive school practice. Second, potentially relevant full texts were examined for conceptual fit with the aims of the review. Third, the selected sources were organized thematically according to the occupational domains most frequently affected in school contexts: academic participation, written productivity, sensory participation, social participation, and school routines or transitions.

### *2.4 Eligibility criteria*

Inclusion criteria were:

Peer-reviewed empirical studies, systematic reviews, meta-analyses, practice guidelines, or theoretically relevant books;

Literature addressing children born preterm, school-age educational participation, or school-based occupational therapy;

Sources published primarily between 2018 and 2026 to reflect contemporary evidence;

Earlier landmark publications are necessary to support historical or foundational arguments.

Exclusion criteria were:

Editorials, conference abstracts, dissertations, and non-peer-reviewed publications;

Studies not addressing childhood, school participation, education, occupational therapy, or developmental consequences of prematurity;

Sources focused exclusively on acute neonatal medical outcomes without implications for later participation.

### *2.5 Data synthesis*

Following the staged selection process, the final synthesis comprised 22 sources, including empirical studies, systematic reviews and meta-analyses, practice guidelines, international school-based occupational therapy papers, and foundational publications relevant to preterm neurodevelopment and occupational participation.

Consistent with narrative review methodology, findings were synthesized thematically rather than through formal systematic review procedures. No formal risk-of-bias assessment was conducted because the purpose of this review was conceptual synthesis rather than evidence grading. Nevertheless, the search strategy, eligibility criteria, and study selection process were explicitly reported to improve transparency and reproducibility.

### *2.6 Conceptual framework*

The thematic synthesis of the reviewed literature supported the development of a conceptual framework summarizing the pathway from preterm birth to educational participation and highlighting the contemporary role of school-based occupational therapy in promoting occupational participation (Figure 1).

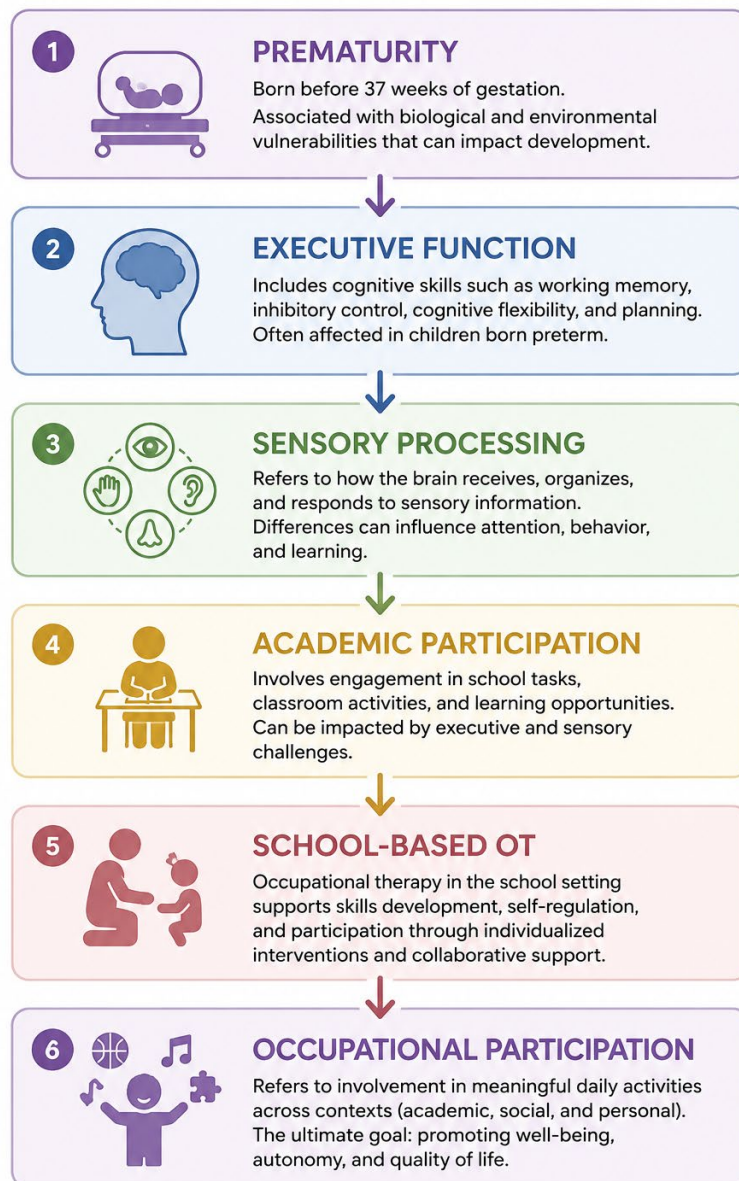


Figure 1. Conceptual framework illustrating the relationship between prematurity, neurodevelopmental consequences, barriers to school participation, and the contemporary role of school-based occupational therapy in promoting occupational participation. Source: Authors, 2026.

### 3. The Echoes of Prematurity on Occupational Participation

The neurodevelopmental sequelae of preterm birth are highly heterogeneous, existing on a broad spectrum of clinical impact. While severe impairments, such as cerebral palsy or significant intellectual disabilities, are typically identified before school entry, high-prevalence, low-severity differences often remain undetected until the child is confronted with the rigorous, simultaneous occupational demands of the formal classroom. Recent evidence indicates that children born preterm remain at increased risk for cognitive, attentional, executive-functioning, behavioral-emotional, and academic vulnerabilities that may persist into school age (Behboodi et al., 2025; Daskalou et al., 2024, 2025, 2026; KolIndorfer et al., 2025; Rossetti et al., 2024, 2025). Current literature emphasizes the necessity of categorizing these challenges not simply as isolated skill deficits, but as active,

contextual barriers to key areas of occupational participation: academic engagement, social participation, and play (Ziviani et al., 2022).

### *3.1 Academic engagement and executive functioning overload*

In the modern, fast-paced classroom, academic engagement relies on intact executive functioning (EF). EF encompasses the higher-order cognitive skills responsible for working memory, cognitive flexibility, sustained attention, and inhibitory control. EF difficulties are among the most consistently reported long-term outcomes of preterm birth. Recent systematic reviews, meta-analyses, and empirical findings suggest increased risk for difficulties in attention regulation, working memory, cognitive flexibility, goal setting, verbal reasoning, and visuospatial performance, all of which may influence classroom participation, academic performance, and social functioning (Daskalou et al., 2025; Kollndorfer et al., 2025; Rossetti et al., 2024; Twilhaar et al., 2018).

From a strict occupational perspective, these EF differences have cascading effects on a student's daily routine. Consider the immense cognitive load required to transition from a math lesson to a reading block:

- The student must actively inhibit the impulse to continue the previous task.
- They must accurately recall the instructions for the newly assigned task.
- They must physically organize their workspace to accommodate the new materials.
- Finally, they must regulate their attention amid the environmental noise of twenty other transitioning peers.

For a child with a history of prematurity, this routine transitional demand can lead to cognitive overload and subsequent occupational avoidance. Rather than misinterpreting these moments as behavioral non-compliance or a lack of motivation, contemporary SBOTs recognize them as valid occupational performance barriers that directly stem from early neurodevelopmental vulnerabilities.

### *3.2 Tool use, written expression, and physical fatigue*

While historical occupational therapy literature emphasized visual-motor integration (VMI) and the mechanical remediation of fine motor dexterity, current paradigms focus on the actual outcome and functional purpose of these skills: written expression and functional tool use (AOTA, 2020). Preterm children frequently demonstrate subtle but highly impactful differences in postural stability, core strength, and graphomotor efficiency (Aarnoudse-Moens et al., 2009; Anderson; Doyle, 2003).

In the classroom setting, these sensorimotor differences translate directly into physical fatigue during prolonged writing tasks, difficulties managing standard school supplies (such as manipulating compasses or scissors), and significant academic frustration. When a student must dedicate excessive cognitive bandwidth and physical effort merely to grasp a pencil and maintain an upright posture at their desk, their ability to participate in the higher-level occupation of creative, expressive writing is severely compromised. The occupation shifts from "expressing thoughts" to "surviving the physical act of writing," altering the child's academic experience and output.

### *3.3 Sensory contexts and the impact on social participation*

The atypical sensory environment of the NICU involves invasive tactile procedures, continuous auditory alarms, and bright, unvarying lighting during critical periods of fetal brain maturation. Consequently, this early exposure can lead to long-lasting alterations in how the central nervous system processes and integrates sensory information, while prolonged NICU hospitalization may also relate to later functional and behavioral-emotional vulnerability (Daskalou et al., 2026; Johnson; Marlow, 2017).

When placed in a highly stimulating educational context—characterized by buzzing fluorescent lighting, echoing cafeterias, visually cluttered classroom walls, and the unpredictable physical movements of peers—a student with altered sensory modulation may experience significant physiological dysregulation. Current research highlights that these sensory processing differences significantly and negatively impact social participation (Daskalou et al., 2026; Spittle et al., 2018). A child who is forced to withdraw from a chaotic, noisy playground or who responds defensively to an accidental tactile brush while standing in the lunch line is often marginalized by their peers. This social isolation critically impacts their overarching occupational identity, self-esteem, and ability to form meaningful peer relationships, all of which are foundational to a successful school experience. Table 1 summarizes the principal occupational consequences associated with prematurity and illustrates contemporary school-based

occupational therapy strategies that promote participation across school environments.

Table 1. Occupational consequences of prematurity and contemporary school-based occupational therapy approaches.

| Occupational domain             | Common difficulties                                                                                  | Impact on occupational participation                                                                                                 | Contemporary SBOT interventions                                                                                                           |
|---------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Academic participation          | Executive dysfunction, reduced working memory, and attention regulation difficulties                 | Difficulty following multi-step instructions, reduced classroom engagement, incomplete academic tasks, challenges during transitions | Visual schedules, task segmentation, organizational supports, teacher coaching, environmental modifications                               |
| Written productivity            | Graphomotor difficulties, reduced postural control, hand fatigue, decreased fine motor endurance     | Slow handwriting, reduced written output, avoidance of written assignments, increased physical fatigue                               | Pencil adaptations, ergonomic seating, assistive technology (speech-to-text, keyboards), alternative methods of written expression        |
| Sensory participation           | Sensory modulation differences, hypersensitivity to noise, light, or tactile input                   | Dysregulation, reduced concentration, avoidance of noisy environments, limited participation in classroom and playground activities  | Sensory-friendly classroom adaptations, environmental modifications, access to quiet spaces, individualized sensory regulation strategies |
| Social participation            | Difficulties with peer interaction, emotional regulation, and social communication                   | Reduced peer relationships, social withdrawal, decreased participation in cooperative learning, and play                             | Peer-mediated interventions, small-group social participation programs, collaborative teacher support, structured social opportunities    |
| School routines and transitions | Difficulties adapting to changing routines, organization, time management, and cognitive flexibility | Increased stress during transitions, reduced independence, and inconsistent classroom performance                                    | Visual cues, predictable classroom routines, individualized transition supports, environmental prompts, and scaffolding                   |

Source: Authors, 2026.

#### 4. Contemporary School-Based Occupational Therapy

To support students navigating the complex echoes of prematurity, modern SBOTs employ holistic, environment-centric, and intensely inclusive interventions. The profession has undergone a necessary paradigm shift, prioritizing meaningful participation over the localized pursuit of physiological remediation.

#### *4.1 Top-down evaluation and neurodiversity-affirming practice*

Contemporary school-based occupational therapy increasingly emphasizes participation, strengths-based practice, and environmental adaptation in accordance with the Occupational Therapy Practice Framework (AOTA, 2020) and current pediatric practice guidelines (Cahill; Beisbier, 2020). When evaluating a student born prematurely, therapists now utilize a "top-down" clinical approach. Rather than beginning with standardized, decontextualized assessments of grip strength, visual perception, or reflex integration, the therapist first observes and assesses the student's actual level of participation in meaningful, routine school occupations.

Discrepancies in performance are viewed strictly as a mismatch between the rigid demands of the educational environment and the unique profile of the student, rather than an inherent "flaw" or "deficit" residing within the child. This strengths-based perspective ensures that subsequent interventions respect the child's neurological profile. Instead of attempting to normalize the child's brain, the therapist actively modifies the task or the context to enable immediate success and foster autonomy.

#### *4.2 Universal design for learning (UDL) and MTSS integration*

Current educational best practices embed SBOT within the Multi-Tiered System of Supports (MTSS) and Universal Design for Learning (UDL) frameworks, ensuring that therapeutic care remains proactive, systemic, and preventative, rather than reactive and exclusionary (Cahill; Beisbier, 2020; Laverdure; Beisbier, 2021; Silveira-Maia, 2024).

- **Tier 1 (Universal Support):** At this foundational level, SBOTs collaborate directly with educators at the population level to optimize the environment for all learners.
  - For a cohort that includes students with prematurity histories, this involves consulting on the creation of sensory-friendly classroom designs.
  - Specific environmental adaptations include incorporating natural lighting, designing predictable visual routines, and creating designated low-sensory zones.
  - Furthermore, SBOTs advocate for universally available assistive technologies, such as implementing speech-to-text software and audiobooks for the entire class.
  - These universal modifications inherently reduce the cognitive and motor load of academic tasks for all students (Cahill; Beisbier, 2020; Laverdure; Beisbier, 2021).
- **Tier 2 (Targeted Intervention):** Therapists facilitate small-group, push-in interventions focusing on shared occupational goals.
  - This may take the form of executive functioning workshops where small groups of students learn practical skills to color-code and organize their lockers.
  - Alternatively, it involves structured, therapist-led recess groups designed to scaffold social participation in naturalistic settings.
  - These targeted groups actively model conflict resolution and support peer co-regulation.
- **Tier 3 (Intensive/Individualized Support):** For students whose echoes of prematurity create severe barriers to curriculum access, SBOTs provide direct, individualized support embedded entirely within the student's natural routine.
  - Instead of the archaic practice of pulling a child out of class to practice fine motor drills in an isolated therapy room, the SBOT "pushes in" to the classroom environment.
  - This allows the therapist to support the child in real-time, helping them utilize adaptive equipment during a writing block.
  - It also enables the provision of in-the-moment coaching during a stressful transition period.

#### *4.3 Contextual adaptation and assistive technology*

Adaptation serves as the central mechanism through which SBOTs foster occupational participation. If a student with a prematurity history struggles with the core endurance required for standard, rigid classroom seating, the SBOT modifies the physical context by proactively introducing dynamic seating alternatives, standing desks, or supportive footrests. When executive functioning differences consistently impair a student's ability to navigate the

complexities of the school day, therapists design and implement highly individualized visual schedules, color-coded organizational systems, and environmental cues to extensively scaffold the student's independence (Ziviani et al., 2022). By strategically altering the environment and introducing assistive technologies, the therapist directly targets the occupation, successfully bypassing the neurological barrier and allowing the student to access the curriculum securely alongside their full-term peers.

#### *4.4 Implications for collaborative practice and teacher coaching*

The successful, sustainable inclusion of a student born prematurely requires a firm foundation of ongoing interprofessional collaboration. Educators, while highly skilled in pedagogy, often receive significantly limited formal training regarding the long-term, late-emerging neurological impacts of preterm birth (Doyle et al., 2021; Spittle et al., 2018). In this complex educational landscape, SBOTs serve as essential educational partners and coaches, effectively translating a child's complex medical, sensory, and developmental history into highly practical, classroom-based, and empathetic strategies.

When collaborative practice is actively prioritized, the core culture of the educational team shifts. The professional dialogue moves away from frustrating, deficit-based questions like, "How do we fix this child's illegible handwriting?" or "How do we discipline this child's refusal to transition?" Instead, the team pivots toward empowering, solution-focused inquiries such as "How do we modify this assignment so this child can demonstrate their rich knowledge?" and "What environmental stressors are triggering this child's dysregulation, and how can we remove them?"

This collaborative reframing is essential for building inclusive, psychologically safe school environments that actively validate the child's lived experiences and promote joyful, sustained occupational engagement. Beyond supporting individual students, school-based occupational therapists contribute to school-wide capacity building through teacher coaching, classroom consultation, and collaborative problem-solving. Such practices promote sustainable, inclusive education by equipping educators with practical strategies that benefit not only students born preterm but the broader student population (Kramer-Roy et al., 2025; O'Donoghue et al., 2021; Silveira-Maia, 2024).

## **5. Discussion**

The findings of this narrative review demonstrate that the educational consequences of prematurity extend beyond isolated motor or cognitive impairments and should be interpreted within the broader framework of occupational participation. Contemporary evidence consistently suggests that executive functioning, attention, sensory processing, graphomotor performance, behavioral-emotional regulation, and social participation interact dynamically within school environments, influencing children's ability to engage in meaningful educational occupations (Behboodi et al., 2025; Daskalou et al., 2024, 2025, 2026; Kollndorfer et al., 2025; Rossetti et al., 2024, 2025; Twilhaar et al., 2018).

Recent Greek evidence further supports this participation-based interpretation. A scoping review focused on school-aged children born preterm reported persistent neurodevelopmental vulnerabilities and restrictions in occupational participation, whereas subsequent empirical studies showed that neonatal and early-life factors, including gestational age, NICU stay, breastfeeding, birth weight, and cognitive ability, are associated with later cognitive, behavioral-emotional, and functional outcomes (Daskalou et al., 2024, 2025, 2026). These findings strengthen the rationale for proactive school-based occupational therapy services that connect developmental surveillance with participation-focused supports in everyday classroom routines.

From an occupational therapy perspective, these findings reinforce the transition from impairment-focused intervention toward participation-oriented practice. Rather than attempting to remediate isolated deficits, school-based occupational therapists increasingly modify classroom environments, collaborate with teachers, and implement universal supports that facilitate inclusion (AOTA, 2020; Cahill; Beisbier, 2020; Laverdure; Beisbier, 2021). This orientation is particularly relevant for children born preterm because their difficulties may be subtle, fluctuating, and context-dependent rather than consistently visible across all environments.

The integration of UDL and MTSS provides a practical framework for delivering equitable services while reducing educational barriers for children born preterm. At the universal level, classroom routines, flexible response formats, sensory-aware environments, and accessible materials can reduce unnecessary cognitive, motor, and sensory demands. At targeted and individualized levels, SBOT can offer teacher coaching, environmental consultation, assistive technology, and embedded supports that promote participation without unnecessarily separating the child

from peers (Cahill; Beisbier, 2020; Laverdure; Beisbier, 2021).

Internationally, however, the organization of SBOT varies considerably across educational systems and public policies. In the United States, SBOT has traditionally been integrated into school systems as a related service supporting access to education, while contemporary practice increasingly emphasizes population-level consultation and tiered service delivery. In several European contexts, school-based occupational therapy is developing through more variable health-education partnerships, with differences in funding, referral pathways, professional visibility, and the extent to which therapists are embedded in schools (O'Donoghue et al., 2021). These differences influence whether occupational therapists work primarily with individual pupils, classrooms, teachers, or whole-school systems.

Recent international work also highlights the need to adapt SBOT models to local educational cultures rather than transferring models uncritically from one country to another. For example, inclusive education policies in Portugal have been discussed in relation to biopsychosocial, universal design, and multi-tiered approaches, illustrating how occupational therapy can align with broader educational reform (Silveira-Maia, 2024). Similarly, international communities of practice such as the School-Based Occupational Therapy International Network demonstrate the growing need for cross-country collaboration, shared implementation knowledge, and culturally responsive SBOT models (Kramer-Roy et al., 2025).

These international differences are important for children born preterm because their participation challenges often require coordinated support across health, family, and education systems. In contexts where SBOT is well embedded in schools, therapists may be able to provide early universal and targeted supports before difficulties become entrenched. In contexts where occupational therapy remains primarily clinic-based or individually referred, subtle participation barriers may be recognized later, after academic frustration, fatigue, avoidance, or social exclusion has already emerged. Therefore, school-based policies that support consultation, teacher coaching, early identification, and participation-focused outcomes may be particularly valuable for this population.

Although current evidence supports participation-focused and environment-centered approaches, additional longitudinal studies evaluating participation outcomes following SBOT interventions remain necessary. Future research should move beyond impairment-level outcomes and examine classroom participation, peer engagement, student autonomy, teacher confidence, and quality of educational inclusion. Such outcomes would better capture the occupational impact of intervention and would strengthen the evidence base for SBOT as a preventive and inclusive service for children born preterm.

## **6. Limitations**

This review has several limitations. As a narrative review, it does not follow the methodological rigor of a systematic review and therefore may not include all relevant studies. Although recent literature was prioritized and the search strategy was described in greater detail, the synthesis reflects the interpretation of the available evidence rather than a quantitative meta-analysis. No formal risk-of-bias assessment was conducted, and the review may be influenced by the availability of English-language sources and by differences in how countries define, fund, and implement school-based occupational therapy. Future systematic reviews are needed to strengthen the evidence regarding SBOT interventions for children born preterm and to compare participation outcomes across educational systems.

## **7. Conclusions**

The lifelong developmental journey from the delicate, high-technology environment of the NICU to the everyday demands of the school environment introduces significant occupational challenges for children born prematurely. As educational systems encounter increasing numbers of these resilient students, it is important to address the echoes of early arrival through a contemporary, evidence-informed, and participation-focused lens. Difficulties in executive functioning, attention, motor execution, sensory processing, and social participation should not be viewed solely as isolated medical symptoms to be remediated; they should be understood dynamically as contextual barriers to occupational participation.

School-based occupational therapy provides an evidence-informed framework for promoting participation among children born preterm. Through collaborative practice, environmental adaptations, teacher coaching, assistive technology, and tiered interventions, occupational therapists can support students in accessing the curriculum and engaging more successfully in meaningful school occupations.

Future perspectives should include multicenter and cross-cultural studies, longitudinal follow-up from early childhood into school age, and pragmatic clinical trials evaluating participation-focused SBOT programs. Implementation studies are also needed to examine how universal classroom supports, MTSS models, and consultation-based SBOT can be embedded sustainably across diverse educational systems. Such work may help transform SBOT from a primarily reactive service into a proactive, preventive, and inclusive model of support for children born preterm and for the wider school community.

## 8. Authors' Contributions

*Symeon Dimitrios Daskalou*: conceptualization, methodology, investigation, literature search, formal analysis (thematic synthesis), writing - original draft, visualization, and project administration. *Ioanna Giannoula Katsouri*: conceptualization, methodology, supervision, validation, and writing - review and editing. All authors reviewed and approved the final version of the manuscript.

## 9. Conflicts of Interest

No conflicts of interest.

## 10. Ethics Approval

Not applicable.

## 11. Artificial Intelligence Statement: Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During revision, generative AI-assisted tools (OpenAI ChatGPT, 2026) were used only for language editing, formatting support, and editorial refinement of wording. These tools were not used to generate scientific data, conduct independent evidence appraisal, or make autonomous interpretations. All AI-assisted content was reviewed, verified, and approved by the authors, who take full responsibility for the accuracy, integrity, and final content of the manuscript.

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