Department for Education

Identifying and supporting children and young people with sensory and/or physical needs: a rapid evidence review

Research report

September 2025

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Government Social Research

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Background

In the SEND Code of Practice, the area of sensory and/or physical needs includes children and young people with sensory impairments such as those affecting sight or hearing, as well as multi-sensory impairment (MSI), which involves combined difficulties with vision and hearing, and physical disabilities affecting motor skills and coordination (including both fine motor difficulties such as handwriting and gross motor difficulties). These children and young people may have difficulties accessing the standard educational facilities typically available in schools such as classrooms, playgrounds, libraries, and other shared spaces. Those with sensory and/or physical needs may require additional support, adaptations, or specialised equipment to use these facilities effectively.

Sensory and/or physical needs can be age related and may fluctuate over time. Many children and young people with vision impairment (VI), hearing impairment (HI) or a multi-sensory impairment (MSI) will require specialist support and/or equipment to access their learning, or habilitation support. Although some children with sensory and/or physical needs may also have sensory processing difficulties, given they are commonly associated with autism, sensory processing difficulties[1]will be addressed in the rapid evidence review on identifying and supporting the needs of autistic children and young people. Therefore, sensory processing difficulties will not be examined in this report.

Approach

The evidence was collected by means of a rapid evidence assessment (REA). A search of the literature aimed at drawing out key findings for children and young people with sensory and/or physical needs. The literature search focused on systematic reviews and meta-analyses evaluating effective tools and strategies for the identification and support for children and young people with sensory and/or physical needs in mainstream settings as well as reviews evaluating collaborative practices between families, schools, and healthcare providers or specialists.

1 A sensory impairment refers specifically to a diagnosed impairment of vision, hearing, or multi-sensory function that significantly impacts access to learning. Sensory processing difficulties, while they may involve atypical responses to sensory stimuli, are not classified as sensory impairments and are more commonly associated with neurodevelopmental conditions such as autism. See: National Sensory Impairment Partnership (NatSIP,2018)

Key findings

Identification

The findings from this review highlight that sensory and/or physical needs are widely identified and diagnosed by qualified practitioners through specialised clinical and functional assessment. While there are a few strategies that mainstream educators can use to identify and screen for difficulties, it is often best to interpret findings with the help of a specialist. Unsurprisingly, the most effective approach is to carry out a comprehensive assessment using multiple methods of identification. It is recommended that these assessments be understood and organised within the International Classification of Functioning, Disability and Health (ICF) framework, which provides a holistic view of functioning, participation, and context to measure health and disability associated with any health condition.

Although there are some evidence-based strategies to support children and young people with sensory and/or physical needs, the evidence remains limited with a need for larger-scale studies employing randomised controlled trials. However, a few useful techniques were highlighted in this REA. Across these systematic and meta-analyses identified in our REA, several key themes emerged. Positive effects were observed for maths, reading, and phonological awareness interventions, and the use of assistive technology for students with communication needs and sensory and/or physical needs. However, assistive technology, computer-assisted instruction, and the use of some Augmentative and Alternative Communication (AAC) devices including software, hardware, apps, and robotics, often requires specialist support from both technology experts and IT specialists in schools for setup, programming, and troubleshooting.

Support

Multisensory strategies in teaching may help make information more accessible to children and young people with sensory needs which can help with memory and encoding. Similarly, in STEM learning there are many forms of substitution, modification, augmentation, or redefinition to make learning more accessible. However, it is important that these strategies are meaningful to the task. It is important that educators work with specialists and healthcare professionals to identify educational needs of students with sensory and/or physical needs and to design tailored and effective support plans.

The role of the teacher and the individual student are important in delivering effective interventions. Teaching should be well-planned and differentiated using a range of multisensory techniques and explicit instruction. Well-informed teachers who engage in regular reflection of their practice provide more effective provision. Initial teacher training and ongoing development should provide information about sensory and physical needs of children and young people to support this.

The student should be consulted where targeted intervention is planned to account for their individual needs, learning goals, and preferences. Materials and strategies that need substitution, modification, augmentation, or redefinition, should be produced in a timely manner so that students with sensory and/or physical needs can have equitable access to learning materials in line with their peers.

However, inconsistencies in study methodologies and outcome reporting highlight the need for more rigorous research in terms of identification and support of needs of children and young people with sensory and/or physical needs. While assistive technologies show promise, greater replication and standardisation are necessary to confirm their academic benefits. Similarly, computer-assisted instruction (CAI) interventions appear useful for students with vision impairments but require better implementation strategies and educator involvement.

Conclusions

Overall, there is a growing body of evidence on identifying and supporting children and young people with sensory and/or physical needs from which we can draw some preliminary conclusions about best practices for mainstream educators. However, many studies are still very small-scale or low in quality which limit the degree to which we can generalise some of this evidence. Further research is needed to validate these strategies with a representative sample participant and also to evaluate other tools of identification and support that educators without specialist qualifications can use in mainstream settings.

Introduction

In England, during the 2024/25 academic year, approximately 1.44 million pupils with identified special educational needs (SEN) are educated in mainstream state-funded primary and secondary schools (DfE, 2025).

As of 2025, 1.8% of pupils receiving SEN support and 3.3% of those with an Education, Health and Care (EHC) plan have physical disabilities recorded as their primary need. For hearing impairment, the figures are 1.5% on SEN support and 1.4% with an EHC plan. Vision impairment is recorded in 0.8% of pupils on SEN support and 0.9% of those with an EHC plan, while multi-sensory impairment is less common, affecting 0.3% of pupils on SEN support and with an EHC plan. Due to the relative low incidence of these needs, schools may have limited experience in supporting children with these types of need. The impact of coordination, sensorimotor difficulties, or impairment of the senses can affect the learning, cognition, and emotional well-being of children and young people. Diagnoses are highly comorbid with other types of SEND (20-80%) and are associated with difficulties in working memory, phonological processing, executive function, and inattention, leading to large variation in symptoms and routes to identification and support.

While a wide range of physical, motor, and sensory needs fall under this SEND category, our review will focus on the primary needs identified in the studies retrieved from our search. These conditions and needs are briefly defined and examined in the following sections.

Physical and motor difficulties

Children and young people with physical and motor difficulties may face challenges with movement, coordination, strength, and endurance, which can impact their ability to fully participate in learning and daily school activities. Difficulties with gross motor skills, such as whole-body movement, balance, and coordination, can affect walking, running, maintaining posture, and engaging in playground activities. Similarly, fine motor challenges may interfere with writing, cutting, fastening clothing, and using tools like pencils, scissors, or keyboards. These difficulties can limit participation in key developmental activities, including leisure and play, functional tasks, academic work, and social interactions (Wang et al., 2009).

Cerebral palsy

Cerebral palsy (CP) is the most common motor impairment affecting children. CP is a neurological condition that affects movement, muscle tone, and coordination (Mutch et al., 1992). It is caused by damage to the developing brain, usually before, during, or shortly after birth. CP is a lifelong condition, and its severity can vary widely across individuals. Some individuals may have mild motor difficulties, while others experience significant physical and mobility challenges.

Cerebral palsy can impact educational outcomes in several ways. Motor impairments may affect a child's ability to write, use classroom equipment, or participate in physical activities. Communication may also be affected, particularly if muscles involved in speech are impacted. Some children with CP have associated learning difficulties, sensory difficulties, behavioural disorders, and the presence of seizures (Michelsen et al., 2005).

Developmental coordination disorder

Developmental coordination disorder (DCD), sometimes referred to as Dyspraxia, is neuromotor condition characterised by motor impairment which is not due to intellectual disability or any specific congenital or acquired neurologic condition (Blank et al., 2012) . The estimated prevalence of DCD ranges from 5% to 6% internationally (Blank et al., 2019). While DCD is primarily classified as a specific learning difficulty under cognition and learning in the SEND Code of Practice (DfE, 2015), given its link to physical and motor challenges, we have chosen to address DCD in this rapid evidence assessment (REA). However, DCD may also affect processing speed and written expression as well as verbal and non-verbal communication. In addition, DCD often co-occurs with other developmental disorders, most commonly attention deficit hyperactivity disorder (ADHD) (Piek and Dyck, 2004).

Children and young people with DCD may demonstrate poor balance, clumsiness, and difficulty with spatial awareness. The acquisition and function of motor skills is often below expectations for their age.

Sensory difficulties

Vision impairment

Vision Impairment (VI) is an umbrella term for a range of vision difficulties resulting from acquired or congenital monocular, binocular, or brain-based conditions that cannot be corrected by prescription lenses (World Health Organization, 2023). The risk of childhood VI is associated with factors such as prematurity, low birthweight, economically deprived backgrounds, poor maternal health, and learning difficulties.

Children with VI often demonstrate developmental delays, particularly in movement, as non-visual sensory inputs do not provide sufficient spatial, directional, and motivational information. Domains impacted by childhood VI include visual functioning, cognitive implications (such as spatial awareness and depth perception), motor development, language, social interaction and play, self-concept and self-esteem, and other areas like sleep, education, leisure, social development, and health. There may also be fewer opportunities for incidental learning (e.g., observing others).

Hearing impairment

Hearing impairment (HI) refers to the permanent, partial or total inability to hear sounds in one or both ears. HI ranges from mild to profound and can affect speech perception, spoken language acquisition, and overall auditory processing. Within this category, individuals who are deaf typically have little to no functional hearing and may rely on sign language, lip reading, or assistive technology for communication. Those who are hard of hearing (HH) have some residual hearing that can often be supported with hearing aids, cochlear implants, or other assistive listening devices. The degree and nature of hearing impairment can vary widely depending on factors such as the age of onset, severity, and whether it is congenital or acquired.

Risk factors for hearing impairment in children include genetic factors, exposure to loud noises, certain infections, and complications during birth (Olusanya et al., 2014). Hearing impairment can lead to developmental delays in speech and language, social skills, academic performance, and emotional well-being. Children with hearing impairments, for example children who are deaf, often experience limited or altered access to spoken language, as speech perception can be challenging and may impact speech production skills and speech intelligibility (Spencer et al., 2011). Some children with hearing impairments (e.g., those with difficulty acquiring spoken language) may also experience difficulties with literacy (Mayer and Trezek, 2017) which may impact educational outcomes (Appelman, 2012).

Multi-sensory impairment (deafblindness)

Children and young people with multisensory impairment (MSI) experience impairments in both sight and hearing, and many also have medical conditions or physical disabilities (e.g., Kamenopoulou, 2022). While a very small number are completely blind and deaf, most have some useful vision and/or hearing. Deafblindness is defined as a combined sight and hearing impairment that causes difficulties with communication, access to information, and mobility, and it includes those with progressive sight and hearing loss (Department of Health, 1995).

MSI can affect development in several ways, including limited communication, distorted perception of the environment, limited capacity to anticipate events and outcomes, lack of basic extrinsic motivation, and developmental delays due to medical conditions. These challenges impact various domains such as acquiring information and building world knowledge, expressing, and receiving messages, moving around independently (orientation and mobility), emotional development (self-confidence and motivation), and social development (social skills, interactions, and relationships) (McInnes and Treffry, 1982, Kamenopoulou, 2012). Addressing the needs of children and young people with MSI requires a comprehensive approach that integrates support across these domains to ensure their overall development and well-being.

Sensory needs often associated with autism

Our Autism Report provides some discussion of sensory needs often associated with autism. Sensory processing disorder (SPD) can be linked to autism and ADHD, but all people have a sensory profile, especially those who are neurodivergent. Sensory response can be hypersensitivity (over-responsiveness), hyposensitivity (under-responsiveness), or a combination of both. Environments can be overstimulating (i.e., with multiple visual, auditory or tactile input) and can lead to sensory overload or anxiety, exhaustion, or burnout (Autism Speaks, 2024).

Types of sensory and/or physical needs addressed in this REA summary

- Cerebral palsy
- Development Coordination Disorder (also referred to as dyspraxia)
- Vision impairment
- Hearing impairment
- Multi-sensory impairment

Aims

The goal of this rapid review was to synthesise evidence-based strategies for the (1) identification, (2) support, and (3) collaborative practices available to mainstream teachers in supporting children and young people with sensory and/or physical needs. Our research questions were as follows;

Identification:

- Which formal and informal methods and measurement tools are available to practitioners to identify sensory and/or physical needs within diverse classroom settings?

    - For which ages or age ranges can these tools be used?
    - What are the performance parameters of these measurement tools (e.g. reliability/validity/specificity)?
- How can these tools be used to guide decisions regarding the provision of universal, targeted or specialist support?

Support:

- What are the most effective universal and targeted strategies, approaches, or adaptations for supporting children and young people with sensory and/or physical needs to improve educational outcomes?
    - What is the most appropriate level of delivery (universal, targeted or specialist) for each of these interventions?
    - What specific age groups are targeted by these interventions?
- What types of approaches/interventions do children with sensory and/or physical needs respond best to?

Working with others:

- What components and characteristics foster effective collaboration between teachers, specialists, and parents/caregivers in the identification and support for children and young people with sensory and/or physical needs, and how can clear role boundaries and knowledge-sharing frameworks support this process?
- What examples are there of different models of collaboration between the multidisciplinary team?

Methods

To address these research questions, a Rapid Evidence Assessment (REA) was conducted following Cochrane rapid review guidance (Garritty et al., 2024). This REA followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement when selecting relevant articles.

We conducted a targeted search in October 2024 of two academic databases (i.e., Scopus: PsychINFO and EBSCO: ERIC) as well as grey literature using specific keywords related to the research questions (see Appendix A: Search terms). We identified systematic reviews and meta-analyses published in English between 2014 and 2024, focusing on children and young people aged 0-25 with identified physical or sensory impairments in mainstream educational settings. Included studies evaluated identification, support, or collaborative practices that are feasible in UK educational settings, excluding medical, home-based, or highly resource-dependent interventions (e.g. beyond what is typically available in a mainstream classroom such as animals, robotics and virtual reality). Included studies could be UK-based or international but had to be relevant to the UK educational context (e.g., a study examining the role of classroom-based occupational therapists in mainstream schools may not be relevant, as this model of in-school provision is not routinely available within the UK education system). Identification tools had to be usable by mainstream staff (not clinicians), and SEND status were independently verified through diagnosis, EHC plan, or standardised measures. Studies relying solely on teacher judgement or reporting only behavioural, emotional, physical, or motivational outcomes were excluded. Only studies reporting measurable educational attainment outcomes were included.

Titles and abstracts were initially screened for relevance by trained members of the team, followed by full-text review. This resulted in the inclusion of 29 studies in the final review, with 11 studies on identification and assessment, and 18 studies on support and intervention (see Table 1). Given the central role of collaboration across both the identification and intervention processes, this strand is not presented as a standalone section. Instead, within each review strand, we highlight where collaborative practices are necessary and effective. Additionally, as many studies identified for inclusion relate to collaborative practices in general SEND provision or across different areas of need, a breakdown of studies specific to sensory and/or physical needs is not included here, with collaborative practices across the categories of SEND addressed in the Cross-Cutting Themes Report.

Table 1. Number of identified studies informing each strand

Strands	Number of studies included
Identification and assessment	11
Support and intervention	18
Total	29

Data from each study were then extracted by trained members of the team. We extracted descriptive information regarding the characteristics of each study as well as information about identification tools and support strategies from the included paper(s) where available.

Our search efforts prioritised high-quality and relevant research, ensuring the inclusion of peer-reviewed studies and robust methodologies. All studies identified in the final sample are either systematic reviews or meta-analyses. To evaluate the quality of these studies, we used the Assessing the Methodology Quality of Systematic Reviews tool 2 (AMSTAR2) (Shea et al., 2017). Findings suggest that the evidence base is mixed according to this tool. Most studies were rated as high or moderate confidence in the results, with some rated as low due to a ‘critical flaw’ (detailed in our Technical Report). The typical critical flaw was that many studies did not conduct a formal risk of bias assessment using a recognised tool (e.g., ROBINS-I, Cochrane Risk of Bias).

A full account of our methodology including search terms, inclusion, and exclusion criteria, PRISMA flow diagram, extraction variables, and quality appraisal can be found in our Technical Report.

Identification and assessment of need

The aim of this section is to review the studies identified in our search that focused on identification and assessment strategies suitable for use by mainstream education professionals in identifying the needs of children and young people with sensory and/or physical impairments.

It is important to emphasise that subject and class teachers are not responsible for the formal identification or assessment of learners' needs. In line with the SEND Code of Practice (Department for Education & Department of Health and Social Care, 2015), their role is to support the early recognition of students who may be experiencing difficulties, particularly those affecting educational progress. Therefore, these approaches reviewed in this REA are not intended to diagnose any conditions, but they can help mainstream educators in recognising children and young people's strengths and challenges to guide decisions about support or to highlight cases where referral for specialist assessment may be warranted. Where concerns are identified, these should be discussed with the school's Special Educational Needs Coordinator (SENCo) and the child's family to determine appropriate next steps, including referral and formal assessment where necessary.

Further, although many screening and assessment tools may be effective at identification and needs-based assessment, these tools should be interpreted with caution by mainstream educators without specialist qualifications. This is because many screening tools and assessments are founded on psychometric principles (e.g., reliability, validity, and standardisation) which determine how the results should be interpreted and used. Without specific training in these areas, it may be difficult to interpret how scores compare to typically developing populations, whether they represent meaningful results, or what it means when scores fall within clinical ranges. In practice, this ambiguity places greater reliance on professional judgment, which can lead to variability in how results are interpreted, particularly among assessors with less experience or limited training. While educators play a vital role in completing these tools as informants, accurate interpretation should typically be assisted by an individual with specialist training. While the strategies detailed in this REA can be useful for intervention planning or flagging potential issues, they should not be used for labelling or identifying specific personality traits or diagnosis. Rather, these tools should be used to identify critical areas of need that may impact a student's academic performance.

The purpose of identification is to verify the existence of an educational need, while assessment aims to characterise the nature and extent of the child's difficulties in terms of differing skills (e.g., cognitive, language, literacy) (McCauley, 2001). The terms 'identification', 'screening', 'assessment', and 'profiling' are often used inconsistently across research, policy, and practice and can have different meanings in relation to educational versus clinical practice. For example, the term ‘screening’ in an educational context typically refers to the process by which a tool or a strategy is used to flag potential needs in a population (e.g., whole-school or whole-class) to provide timely support or targeted interventions in educational settings. In contrast, screening for clinical purposes is typically carried out by health or mental health professionals using standardised tools to determine whether a child meets criteria for a specific diagnosis, such as DCD, with the goal of planning for further assessment or clinical treatment. However, some processes may overlap. For example, a functional vision assessment could be used by educational staff to help identify visual processing difficulties that may impact classroom learning, or it could be used as part of a formal assessment by a specialist teacher or clinician to inform decisions around access arrangements or assistive technology, or to monitor a pupil’s progress in adapting to visual supports or mobility training. For clarity throughout this document, we define each term within an educational context. Definitions of terms are provided in Table 2.

Table 2. Definitions of identification terms in the educational and clinical context

Term	Educational use	Clinical use
Needs-based identification	The process of recognising that a child may have additional needs (whether they do or do not have a diagnosis), often based on parental or child concern, observations, or professional judgement. However, this process can also include informal assessments. Informal assessments are flexible methods of gathering data to identify areas of need, guide interventions and monitor progress. These tools include checklists, questionnaires, or more structured assessments (e.g., listening comprehension, reading fluency).	Not a formal clinical term; overlaps with early signs that may prompt diagnostic referral but is not sufficient for diagnosis.

Term	Educational use	Clinical use
Screening	A brief, tool or procedure used to flag or identify potential concerns across a population. In educational contexts, the goal is to flag potential needs early so that timely support or targeted interventions can be put in place within the school setting. However, given that screeners are typically quick to complete and usually measure only a specific area of concern, they should be interpreted with caution.	Tools used to determine whether further diagnostic assessment is warranted, often as a first step in a medical or psychological evaluation pathway. Typically, these tools should be administered by a trained specialist.
Assessment	Refers to a systematic structured process of data gathering from standardised tools to understand individual strengths and needs in order to plan intervention or monitor progress. For educational purposes, these can be informal or formal assessments. Formal assessments are structured, standardised tools used to evaluate a student's performance against national or normative standards. These include GCSEs and A-levels but also standardised assessments of literacy or other types of skills. Formal assessments sometimes require input from specialists to administer and/or interpret results.	A systematic and structured process of data collection for diagnostic purposes. Assessment is conducted by specialists (e.g., educational psychologists) and involves standardised diagnostic tools to determine specific conditions or developmental profiles.
Profiling	A holistic summary of a child's functioning, strengths, and areas of difficulty, often used to guide provision. Includes data from multiple informants and through multiple methods.	Less commonly used as a standalone concept; elements of profiling are embedded in comprehensive diagnostic assessments that explore functional impact across domains.

These approaches can help teachers and school staff in recognising students' strengths and challenges, guide decisions about support, or highlight cases where referral for specialist assessment may be warranted. Of these 11 studies on identification and assessment, 3 addressed hearing impairment, and 8 covered physical and motor difficulties (including DCD) (see Table 3). No studies were found for vision or multi-sensory impairment.

Table 3. Number of studies addressing identification and assessment

Area of Need	Number of Studies
Vision Impairment	0
Hearing Impairment	3
Physical and Motor Difficulties (including DCD)	8
Multisensory impairment	0

The path to identification and support for children and young people with sensory and physical needs is typically initiated through medical channels. Concerns may first be raised by parents, teachers, or healthcare professionals who notice signs such as difficulties with vision, hearing, movement, or coordination. Here, signs of challenges might include delayed gross motor milestones (e.g., difficulty walking, poor balance), fine motor challenges (e.g., difficulty holding a pencil, using scissors, or fastening buttons), clumsiness or coordination difficulties (e.g., struggling with PE, frequent tripping), fatigue, pain, or posture issues that affect participation. Parents may notice signs of vision impairment, such as lack of eye contact, delayed tracking, or sensitivity to light. They may also notice signs of hearing impairment such as delayed speech development, inattentiveness, or difficulty responding to sounds.

Key considerations for identification of sensory and/or physical needs

The SEND Code of Practice (Department for Education & Department of Health and Social Care, 2015) highlights the importance of parents' early observations and notes that signs of complex developmental or sensory needs can be identified in early development through methods such as health assessments, assessments via the Early Years Foundation Stage Profile, and formal progress checks (e.g., two-year development reviews). The UK also has a universal newborn hearing screening programme. Early concerns often lead to a referral to healthcare professionals, such as a general practitioner (GP) or directly to paediatric services. From there, the child is usually assessed by specialists; this might include audiologists for hearing impairments, ophthalmologists for vision impairments, Occupational Therapists (OT) for difficulties with fine motor skills (e.g., handwriting, self-care tasks), or Physiotherapists may be consulted for concerns about mobility, strength, coordination, or chronic pain.

Health professionals must inform parents if they believe a child under compulsory school age has SEND, notify the local authority, and offer support, including signposting to relevant organisations. Early support may involve home visits from specialists, parent training, and structured home-based programmes. In addition to the formal checks, early years practitioners working with children should monitor and review the progress and development of all children throughout the early years.

A diagnosis is generally made by a medical professional, based on clinical testing and observations. Ongoing support typically involves multidisciplinary collaboration, bringing together health and education professionals to coordinate care and ensure that adaptations, equipment, and tailored support are provided in both educational and home settings. Because of its grounding in clinical assessment and medical terminology, this route is generally more medicalised than pathways for many other types of special educational needs (Farrell, 2006). See Table 4 for a list of specialists and healthcare professionals who may be involved in the identification and support processes for children and young people with sensory and/or physical needs.

Table 4. Specialists and healthcare providers who may be involved in collaboration

Specialist	Role
Audiologist	Conducts hearing assessments. Diagnoses hearing loss and recommends hearing aids or other devices
Clinical Psychologist / Educational Psychologist	Supports cognitive and functional assessments; explores emotional impact of sensory/physical needs
Ear, Nose and Throat (ENT) Specialist	Investigates medical causes of hearing issues. May recommend surgery or further medical treatment
Neurologist	Assesses neurological causes of physical or sensory difficulties
Occupational Therapist (OT)	Assesses fine motor skills, daily living skills, and sensory processing. Recommends adaptations to support functional independence
Ophthalmologist	Diagnoses vision impairments and prescribes treatments or corrective lenses

Specialist	Role
Optometrist	Performs vision tests and prescribes glasses. Identifies functional vision issues
Orthopaedic Surgeon	May assess structural or musculoskeletal conditions (e.g., scoliosis, joint issues)
Orthoptist	Assesses and treats eye movement and coordination issues
Paediatrician	Coordinates assessment of complex developmental or physical needs. Screens for conditions like cerebral palsy, muscular dystrophy, or global developmental delay
Physiotherapist	Assesses movement, posture, and muscle function. Designs physical therapy programmes to support mobility and motor development
Speech and Language Therapist (SLT)	May be involved where motor needs affect speech production (e.g., DCD, cerebral palsy, hearing impairment)
Specialist Nurses (e.g., Community Children's Nurses, Epilepsy Nurse)	Provide health monitoring, care planning, and parent support for long-term conditions
Teacher of the Deaf (ToD)	Educational specialist who supports children with hearing loss in accessing the curriculum
Teacher of the Visually Impaired (QTVI)	Supports access to learning materials and the environment for children with vision impairment

The International Classification of Functioning, Disability and Health (ICF) is a framework developed by the World Health Organisation (WHO), which provides a comprehensive and standardised way of understanding health conditions, disabilities, and their impact on daily life. The ICF is particularly useful in the assessment and identification of physical and sensory impairments in children as it provides a holistic approach. It considers not only the medical diagnosis but also the functional abilities, activity limitations, and participation restrictions a child may experience in various contexts such as school, home, and community settings. Typically, both clinical and functional assessments are used to inform tailored support programmes and may feed directly into the process of obtaining an EHC plan.

The ICF explicitly includes activities of daily living (ADLs) and activities and participation as a key part of its framework. ADLs are typically assessed in the process of identification and diagnosis. Assessment of capacity in ADL should comprise a representative set of items from all three domains of ADL: ‘self-care and self-maintenance’, ‘productivity and schoolwork’ and ‘leisure and play’ (Sugden, 2006). Activities and participation are also often assessed. These include barriers to participation in different contexts including in educational environments. Insight into ADLs and activities and participation are essential for diagnosis and treatment planning.

The ‘F-words’ are a child-friendly and family-centred way to apply the principles of the ICF (Gonzalez Lopez et al., 2023). They were introduced by Rosenbaum and Gorter (2012) to shift the focus from a deficit-based model of disability to a more holistic, strengths-based approach. The F-Words can be used to guide identification and support and support collaboration with parents and children and young people.

The six ‘F-words’ used to guide identification and support are:

- Function: What the child can do (not what they can’t); emphasises activities rather than limitations
- Family: The essential environment for a child’s development and well-being
- Fitness: Physical activity, health, and well-being
- Fun: Enjoyment, play, and activities that are meaningful to the child
- Friends: Relationships and social development
- Future: Setting goals, growing up, and planning for the child’s life ahead

Although our review found relatively few studies focused on non-clinical methods of identification and assessment, several practical strategies emerged that educators could use to better identify and support children and young people with physical and sensory impairments in educational settings. This review highlights several tools and strategies that mainstream educators can use to help recognise strengths and challenges to coordinate support or refer for further assessment.

In general, identification of needs should be a collaborative effort with a multidisciplinary team. While some tools can be administered or completed by teachers or other educational staff, these tools often require specialist input to interpret the results and help to make suggestions for support. Further, risk assessments and professional advice (e.g., from OTs, physiotherapists, or VI specialists) can also guide reasonable adjustments and support. It is also important to note that most studies in our review emphasise the need for a multi-method assessment approach, combining different tools (e.g., physical examinations, observations, and structured interviews) within each area of concern to ensure a comprehensive evaluation.

Identification of sensory needs

Many methods of identification and diagnosis of vision and hearing impairments are administered and interpreted by specialists or trained healthcare professional and therefore will not be reviewed here. However, there are a few things teachers may do to flag concerns. Our search resulted in three systematic reviews addressing the identification and assessment of children and young people with hearing impairments (one of these studies is discussed in the literacy assessments section). However, no studies were found that addressed the identification and assessment strategies available to mainstream educators of children and young people with vision impairments or multi-sensory impairments.

Stefánsdóttir et al. (2023) investigated the measures and methods that have been used when examining the speech intelligibility of children and young people with hearing impairments aged 6 months to 31 years. Speech intelligibility refers to how clear a person's speech is, or how much of a person's speech is understood by a listener (Spencer et al., 2011). Speech intelligibility may be important to measure in children with hearing impairments who use spoken language as part/all of their communication system to evaluate intervention progress when connected speech is the goal (Coppens-Hofman et al., 2016; Ertmer, 2011). Speech intelligibility is measured by how speech is produced by the speaker and how it is perceived by the listener (McLeod, 2020). Speech intelligibility may be determined by various aspects of spoken language such as speech perception, phonological knowledge, and motor control of articulation, timing, and intonation (Freeman, 2018). However, speech intelligibility may also be determined by factors related to the listener such as their relationship with the speaker, the speaker's native language, and the listener's attitudes and understanding of communication patterns and those that may be involved in communication disorders or hearing impairments (McLeod, 2020).

Stefánsdóttir et al. (2023) identified 204 studies reporting on a speech intelligibility measure used by a range of different listeners including audiologists, naïve listeners (e.g., has no specialist training in speech, language, or communication disorders) parents, Speech and Language Pathologists/Therapist, students, and other professionals. The most common subjective rating scale was the Speech Intelligibility Rating scale (SIR) (Allen et al., 2001). Two of the most commonly used objective measures of speech intelligibility were the Percentage of Consonants Correct (PCC) and the Beginners' Intelligibility Test (BIT).

1. The SIR is a five-point rating scale that measures the level of speech intelligibility (i.e., the ease of understanding), with reference to everyday situations. This measure can be used for children and young people of all ages.

2. PCC is used for children and young people aged 3 and older and estimates the severity of speech sound disorders by calculating the proportion of correctly produced consonants in a speech sample.

3. BIT is used for children between the ages of 4 and 9 and is a sentence repetition task designed for young children with hearing impairments; listeners transcribe short, familiar sentences and accuracy is scored as the percentage of words correctly transcribed.

This systematic review did not compare the effectiveness of different scales but did report the most commonly used measures. Additionally, it was unclear which assessments were used by which types of listeners, although naive listeners were used in 33 of the 204 included studies. Therefore, it is not possible to conclude whether these three assessments can be used independently by mainstream educators, and it is recommended that administration and interpretation is supported by a speech and language therapist.

Questionnaires have been identified as one low-cost method of screening for hearing impairments in children and young people (e.g. Newton et al., 2001). Muñoz et al. (2015) explored the effectiveness of parent or teacher-completed questionnaires developed by researchers in screening for permanent hearing loss in school-aged children. Findings suggested mixed results in effectiveness where half of the study authors of the studies included in this review recommended the use of the developed questionnaire tool and half did not recommend questionnaires. Thus, the authors ultimately concluded that there is currently insufficient evidence that parent or teacher-completed questionnaire screening can be used to identify children in need of further hearing assessment.

There is a clear need for validated screening tools that can reliably be used by educators as part of school-based monitoring of vision and hearing impairments.

Identification of physical and motor difficulties

A diagnosis of developmental coordination disorder (DCD) before the age of 5 is typically not recommended as there may be spontaneous recovery in young children with motor delay, a possible lack of cooperation to perform motor evaluations, and the age-dependent variability for the acquisition of skills necessary for daily life activities (Blank et al., 2019). However, signs of DCD or motor impairment may occur early in development. Four studies included in our review addressed the identification and assessment of children and young people with DCD.

Lee and Zwicker (2021) reviewed the evidence supporting early identification of DCD (i.e., before age 5). Their review suggests there is emerging evidence that children, particularly those at higher risk of DCD, can be identified before starting school, enabling earlier intervention that may improve developmental outcomes and reduce secondary difficulties. Health professionals are encouraged to use the term “at risk of DCD” explicitly. However, it is important to note that many of the questionnaires currently used to assess DCD have not yet been fully validated for use as general screening tools in mainstream settings. Further research is needed to confirm their reliability and accuracy before they can be confidently used to identify children who may require additional support. Although these studies involved children pre-school aged, these findings suggest with further research there may be scope for children to enter school with a diagnosis of DCD or be considered ‘at risk’ which could help to support further support plans and school-based interventions.

González López et al. (2023) investigated the early signs of impairment in body functions and structures, activities, and participation in children with or at risk of DCD between the ages of 0 and 6 years. They reviewed what types of features are typically measured, and who the informant is. They found that most parents observed differences in motor level before the age of 4. However, the diagnosis tends to occur over two years after families first report these differences. Further, in most studies, the parents are the informants, meaning they are the ones that complete the assessments. These findings highlight the important role of including families in the identification and diagnostic processes and in the subsequent support plan. Therefore, mainstream educators may consider working directly with parents in the assessment of these domains.

Bieber and colleagues (2016) systematically reviewed manual function outcome measures for children with DCD aged 3-18 years. They found that several questionnaires that can be used by teachers to investigate movement, coordination, and motor control without the need of a specialist qualification or training. However, the review concluded that a combination of different assessments was needed for a comprehensive assessment of manual function in children with DCD. These assessments should consider physical and motor difficulties in relation to how they impact activities of daily living and participation, including attention to participation in educational settings.

1. The Children’s Activity Scale for Parents and Teachers (ChAS-P/T) (Rosenblum, 2006) can also be administered by parents and teachers to identify children at risk of DCD based on measures of fine motor skills, gross motor coordination, activities of daily living (ADLs), and organisation in space and time. This test is suitable for children aged 4-8 years old. Teachers can use the teacher-specific version to assess motor coordination and organisational skills in their settings.

2. The Movement Assessment Battery for Children – Second Edition Checklist (MABC-2 Checklist) (Henderson, 2007) is aimed at addressing a broader population of children with motor difficulties. This assessment can be used for

children aged 5 to 12 years. Specifically, this assessment screens for motor coordination difficulties in self-care, classroom, and physical activities. While, teachers can complete the checklist based on classroom observations, a specialist (e.g., OT, physiotherapist) should analyse the results and assist in interpretation if concerns arise.

3. The Developmental Coordination Disorder Questionnaire 2007 (Wilson et al., 2009) can be administered by parents or teachers to identify children at risk of DCD based on observable movement control, fine motor skills, and general coordination. This test is suitable for children ages 5-15 and can be completed by teachers based on classroom observations of handwriting, PE performance, and coordination in daily school activities.

Van der Linde et al (2015) also reviewed instruments for assessment of capacity in activities of daily living in children with DCD. Seven assessments were considered in this review: (1) the Bruininks-Oseretsky Test of Motor Performance-2 (BOT-2) (Bruininks, 2005), (2) the Do-Eat (Josman et al., 2010), (3) the Movement Assessment Battery for Children-2 (MABC-2) (Henderson, 2007), (4) the School-Assessment of Motor and Process Skills (School AMPS) (Fisher et al., 2002), (5) the Tuffts Assessment of Motor Performance (TAMP) (Haley et al., 1992), (6) the Test of Gross Motor Development (TGMD) (Ulrich, 1985), and (7) the Functional Independence Measure for Children (WeeFIM) (Msall et al., 1994). While most assessment instruments in this review were standardised clinical or functional tools designed to be administered by trained professionals, there was one tool that could be administered by educators; the Test of Gross Motor Development. This test was also reviewed as part of another systematic review identified in our search (Lee and Zwicker, 2021). However, it is important to note that this assessment only assesses one domain of activities of daily living (play/leisure). While it could be used as a screening tool for this domain, the other domains of activities of daily living (self-care and productivity, and schoolwork) should also be considered for a more holistic understanding of need.

The Test of Gross Motor Development (TGMD) is sometimes used in physical education or educational settings and assesses gross motor development. This test involves activities such as running, jumping, catching, or throwing and is suitable for children aged 3-10 and may be administered by teachers with guidance or after some basic training. This test consists of two subtests with a total of 12 items: Locomotor (6) and Object Control (6).

Teacher-friendly tools to identify DCD and motor difficulties summary

- The Developmental Coordination Disorder Questionnaire 2007
- The Children's Activity Scale for Parents and Teachers (ChAS-P/T)
- The Movement Assessment Battery for Children – Second Edition Checklist
- The Test of Gross Motor Development (TGMD)

Literacy assessment

Children with sensory and/or physical difficulties may also experience challenges with literacy development, which can impact their ability to read, write, and engage with learning materials effectively. Vision impairments, even relatively common issues such as near-sightedness or far-sightedness, can have a significant impact on reading ability. For instance, children may struggle to see text clearly on the board or on a page in front of them, which can affect their engagement and comprehension. Similarly, children with hearing impairments may experience delays in oral language development, which in turn can hinder the acquisition of reading skills. In both cases, what may initially appear to be reading difficulties could in fact stem from underlying sensory difficulties. Some children with multisensory impairment may experience delayed oral language development and literacy skills development.

Regular physical, vision, and hearing checks are considered good practice and can help identify or even correct certain difficulties early on. However, these routine screenings may not capture the full range of challenges faced by children and young people with sensory and/or physical needs. Some associated difficulties may go undetected, or the results may not fully explain the underlying issues affecting a child's learning or participation. However, assessing cognitive functions and literacy may be difficult for some children and young people with sensory and/or physical needs as many formal and informal measures use visual stimuli or are administered orally.

In the Cross-Cutting Themes Report of our collection of reviews we report several different ways of assessing reading and writing that could apply to children and young people with physical, motor, or sensory difficulties. However, one study in our review addressed the identification of reading difficulties specifically for readers with hearing impairments (Lam et al., 2020).

The identification of reading difficulties in children with hearing impairments and who use sign language may be different compared to children without hearing difficulties. Curriculum-based measurements designed to assess reading skills in children without hearing impairments may not be appropriate at measuring reading skills in children and young people who use sign language as their first language given that sign language does not have a written form. Lam and colleagues (Lam et al., 2020) examined the use of curriculum-based reading measures[2] in benchmarking literacy skills and informing interventions for children with hearing impairments. Types of reading measures included signed and silent reading fluency, cloze assessments, and maze assessments. In a cloze assessment, children are asked to read passages where some words are removed or left blank. Children are asked to fill in the blanks with appropriate words based on context. This task typically measures reading comprehension, vocabulary, and language prediction skills. Maze assessments have the same structure, but here children are provided with multiple choice options to fill in the blanks.

Lam et al.'s (2020) findings demonstrated that research on reading fluency assessments for students with hearing impairments highlights significant variability in reliability, validity, and scoring approaches across different measures. Studies examining signed reading fluency (where participants read the presented passage to the examiner using sign language) found that student responses varied depending on expressive sign language skills, task difficulty, and scoring methods, making it unclear whether the same construct was being measured across studies. These findings suggest challenges in assessing reading fluency through sign language due to inconsistencies in administration and interpretation. Thus, performance on signed fluency cannot be interpreted the same way as performance via oral fluency.

Similarly, the studies on silent reading fluency (Lam et al., 2020; Rose et al., 2008) revealed inconsistent findings, likely due to differences in methodology, with Rose reporting stronger reliability and validity than Lam. The cloze assessments showed moderate to strong reliability in two studies, though the validity evidence varied depending on how it was assessed. Maze assessments demonstrated strong reliability across four studies, particularly for younger students (primary and early secondary) when short task durations and clear scoring methods were used. Overall, while maze tasks appear promising, all three tools should be used with caution and alongside other methods to provide a well-rounded evaluation of reading proficiency in children and young people with hearing impairments.

Identification and assessment summary

Our review identified few systematic reviews dedicated to the identification tools and methods that mainstream teachers can use to identify physical, motor, or sensory difficulties. This may reflect the relatively medicalised pathway to diagnosis and support

[2] Curriculum-based assessment are informal, teacher-led assessments that measure a student's progress aligned with the setting's curriculum.

for children and young people with these types of needs, which suggests that sensory and/or physical needs are usually perceived within the context of medical or clinical research and in the periphery of teaching and learning (Miller & Hodges, 2025; Kamenopoulou, 2022). For example, our REA found no studies evaluating tools available to mainstream educators in identifying educational needs associated with vision impairments. Although it is possible that there may be tools available that were not identified by our REA search, the lack of findings in this strand may highlight a gap in the research. There is a pressing need for tools that are specifically designed and validated for use by mainstream educators to identify difficulties related to sensory and/or physical needs, assess their severity, and understand their impact on educational access and participation. This may be important particularly given that access to medical professionals and specialist support may be limited or delayed.

In summary, a multidisciplinary approach between families, education professionals and healthcare professionals is needed to identify key strengths and challenges and to coordinate tailored support. Practitioners should recognise the interaction between a child’s health condition, functional abilities, environmental factors, and individual characteristics in the identification and support process. Assessment strategies should align with the ICF by taking a holistic, multidimensional approach to identification of need.

While the role of identification falls predominately on the multidisciplinary team, there were a few observations, checklists, and screening tools that mainstream teachers, and non-clinicians could administer to identify and flag concerns. However, these tools often should involve some training, and interpretation should be aided by a healthcare professional.

Support and intervention

The aim of this section is to review the studies from our search that focused on support and intervention strategies suitable for use by mainstream education professionals. We focus specifically on approaches that are effective in supporting educational outcomes including literacy, writing, maths, science, and general attainment. Our search identified 6 studies on vision impairment, 7 on hearing impairment, and 5 on physical and motor difficulties (including DCD) (see Table 5). No studies were found for multisensory impairment.

Due to the overlapping nature of approaches to support children and young people with different types of sensory and/or physical needs, this section is structured by approaches rather than by need.

Table 5. Number of studies addressing support and intervention

Area of need	Number of studies
Vision impairment	6
Hearing impairment	7
Physical and Motor Difficulties (including DCD)	5
Multisensory impairment	0

When reporting on intervention and support strategies in this REA, we sometimes refer to effect sizes that were reported in the studies reviewed. Effect sizes range from 0 to 1 and refer to how much of a difference an approach or intervention makes, beyond just whether it works. A small effect (around 0.2) means a modest improvement, a medium effect (around 0.5) suggests moderate improvement or progress, and a large effect (0.8 or more) indicates a strong impact on learning. Additionally, evidence can come from various study designs, each differing in the strength and type of reliability they offer. Single-case designs provide strong evidence for the consistency of effects within individuals, making them valuable for understanding how interventions work in specific cases. However, their findings may not be widely generalisable (i.e., applicable to other individuals and/or settings). In contrast, group-design studies such as randomised controlled trials offer more generalisable results across larger populations but may overlook important individual differences in how students respond to interventions. Ideally, a strong body of evidence should be based off multiple types of study designs.

High quality teaching and universal support

The SEND Code of Practice (DfE, 2015) asserts that high-quality teaching that is differentiated and personalised will meet the individual needs of the majority of children and young people. Inclusive practice and accessibility are essential for children and young people with sensory and/or physical impairments to meaningfully participate in education. While these factors are not direct educational outcomes, they contribute to improved learning and achievement. Adjustments and approaches can be incorporated at as part of universal design and high-quality teaching. The approaches identified in our rapid review include adjustments to the physical environment, the use of assistive technology, and alternative communication techniques. Each of these will be discussed in turn.

Physical environment

In the Cross-Cutting Themes Report of our collection of reviews, we highlighted several effective strategies to design inclusive settings which benefit children with different types of special educational needs. These strategies can also be applicable to children and young people with sensory and/or physical needs and will not be repeated in the current review. Here we review more specific adjustments that can be put into place for children and young people with sensory and/or physical needs.

Physical and social environmental adaptations, specialist equipment, and support from physiotherapists, occupational therapists, speech and language therapists, teaching assistants, and early years practitioners can play a key role in promoting access to learning and helping students with sensory and/or physical needs reach their learning potential. Early intervention and inclusive practices are particularly important in supporting positive educational outcomes. However, there is no one-size-fits-all approach to inclusion and accessibility. Each setting and individual student will vary and thus it is important to understand the specific barriers and address them (Opie et al., 2017).

There are numerous changes or adaptation that schools can consider to make their settings more inclusive. Settings can ensure level access to spaces in the school (e.g., by installing ramps or lifts, and widening doorways). Similarly, the layout of the physical environment in a setting can be arranged to allow independent movement with clear pathways. Small changes (like where a child sits, or how they transition between lessons) can enhance accessibility and inclusion.

Children with hearing impairment may find it difficult to focus on tasks in a noisy environment (Greenaway et al., 2022). For example, research into secondary pupils' impressions of their school's acoustic environment found that noisiest spaces were sports halls, assembly halls, corridors and dining rooms. Pupils with additional learning needs (e.g., hearing impairment or receiving learning support) reported being significantly more affected by poor school acoustics, school location and build (Connolly et al., 2013). Therefore, settings may consider reducing excess noise and sounds. Educators can minimise background noise with sound-absorbing materials such as carpeting, wallpaper, curtains, or soft-furnishings. Teachers can also ensure that their faces can be seen when speaking and giving instructions.

Attending to the 'three Cs' can support environmental access and inclusion of learners with physical and sensory needs: limiting visual clutter, reducing cacophony, and prioritising comfort. Minimising visual and auditory stimuli can help to reduce overstimulation, helping to improve attention and concentration. Prioritising physical comfort such as ambient lighting, temperature, or seating can also help children and young people maintain focus and improve physical wellbeing (Barrett et al., 2015; Zihl & Dutton, 2015).

Targeted support

In this section, we review several findings that address targeted support techniques for children and young people with sensory and/or physical needs. Although many of these approaches are targeted to the individual needs of the students, we have specified where some approaches can also be implemented in universally.

Assistive technology

Assistive technologies are tools or devices that aim to remove barriers to learning for students with different types of SEND. This synthesis of seven studies identified in our rapid review highlights key findings on assistive technology (AT) and evidence-based interventions for students with physical, hearing, and vision impairments. Examples of assistive technology include screen readers or screen magnifiers, braille displays, braille notetakers (e.g., BrailleNote Touch), Electronic Magnifiers (i.e., devices for enlarging printed text), audiobooks, Text-to-Speech (TTS) software, or Speech-to-Text (STT) software and voice command software. It is important to note here that a common misconception is that all people with vision impairment/blindness use Braille. Braille is a tactile phonetic alphabet system that can be useful for some children with vision impairments however, only a small percentage (around 4% to 7%) of school-aged children with vision impairments in the UK use Braille (RNIB, 2020). Assistive technologies such as screen reading software can be helpful in supporting children and young people with vision impairments and with multisensory impairments.

Computer-assisted instruction is a teaching method using computers and software to deliver instruction. Examples include: educational software, digital learning modules, online tutorials, and interactive simulations. Findings from two systematic reviews (Tuttle & Carter, 2022; 2023) focused on computer-assisted instruction (CAI) for students with vision impairments across different year groups. CAI was found to be effective for developing vocabulary and maths skills, particularly in learning the Nemeth code for braille mathematics. However, despite some positive outcomes, the review identified significant methodological concerns, including inadequate reporting of participant demographics, minimal educator involvement, and a lack of pre-intervention technology training. As a result, these reviews concluded that CAI is not yet considered an evidence-based practice for students with VI.

Hoskin et al. (2024) investigated technology used as a tool for teaching and learning braille literacy. However, across the studies they reviewed, they found that the quality of research was low with little evidence to support the use of assistive technology for braille literacy education. They concluded that clear standards are needed to ensure that the evaluation of assistive technologies is consistent across researchers and clinicians, ultimately supporting better outcomes. Technologies designed to support braille literacy for children and young people should offer real-time auditory and tactile feedback, promote independent learning and editing, and be user-friendly, motivating, and engaging to encourage regular use and meaningful learning experiences.

A review (Bell & Foiret, 2020) on assistive technology (AT) for students in secondary school or university (age not reported) with hearing impairments examined the impact of AT in educational settings. Findings highlighted the effectiveness of technologies such as C-Print (real-time transcription) and real-time captioning in mainstream education. Speech-to-text technologies (e.g., such as C-Print (real-time transcription) and real-time captioning) that provide live transcription of what is being said in class were effective tools. As the teacher speaks, a trained captionist or specialised software converts their spoken words into written text that appears on a screen (e.g., a laptop or tablet in front of the student). This helps students with hearing impairment follow the lesson more easily.

A second scoping review (Guiberson & Crowe, 2018) on multilingual children with hearing loss explored evidence-based interventions in areas such as audition, speech, language, and literacy. Promising interventions included auditory verbal therapy, phonics with vision support, story grammar techniques, and explicit vocabulary instruction. While this review identified 35 effective interventions it also stressed the importance of individualised intervention planning. However, research on the academic impact of AT for children and young people with hearing impairment remains limited, with a strong need for rigorous and replicable intervention studies.

One major limitation across these studies on AT in our REA was the lack of technology training for students, and general usability for educators which is concerning given that limited technology proficiency contributes to AT abandonment. Moreover, the involvement of specialists in implementing AT was limited, with less than one-third of studies involving Qualified Teachers of Visually Impaired Children and Young People (QTVIs) AT specialists, or special educators. Findings from Hoskin et al. (2024) suggest that teacher competence and reflective practice are important for improving outcomes in students with VI. Many studies also failed to specify educators' roles in troubleshooting devices, navigating applications, or providing instructional support.

The use of robotic-assisted interventions for rehabilitation, education, play, and social interaction (e.g., NAO™, Lego™, IROMEC, etc.) were explored in one systematic review (Cruz et al., 2017). Robots were used for students with Cerebral Palsy and autism in a variety of settings for an average of 9.76 sessions across eight and a half weeks across these studies. The most commonly used robot was the NAO™ with autistic children and the Lego™ in children with CP. The most versatile robot was the IROMEC, which was used with both autistic and CP participants. However, the findings on the use of this technology use were mixed with some studies reporting a positive effect and others reporting no significant improvement in engagement, playfulness, cognitive and social skills, and motor control. There were also difficulties with the usability of this technology. Parents, caregivers, and teachers were not always able to readily implement these devices and needed specialised support for technical adaptations and programming. In addition, the quality and validity of this evidence is low as the majority of these findings were from case studies rather than more robust methodologies such as randomised controlled trials. Although these outcomes may show potential; more evidence is needed to establish reliability of this technology.

Finally, it is important to recognise that not all children and young people will find it easy to use different types of technology. While some tools may be intuitive and quickly adopted, others may present challenges depending on a student's individual needs and preferences. When trialling assistive technologies, it is essential to consider the child's comfort, confidence, and sense of independence. Their views should play a central role in selecting tools that genuinely support their learning. Educators should approach this process with patience and flexibility, offering encouragement and support as students explore what works best for them. Research on the academic impact of AT for children and young people with hearing impairment remains limited, with a strong need for rigorous and replicable intervention studies.

Effective assistive technology support approaches summary

- Computer-assisted instruction for children and young people with vision impairments
- Importance of user training, IT support and educator confidence in using assistive technology

Augmentative and Alternative Communication

Augmentative and Alternative Communication (AAC) systems refer to a range of tools or strategies to aid in communication for children and young people who may have difficulties with language production or comprehension. Types of AAC include gestures and facial expressions, writing, or signing systems such as Makaton, spelling words by pointing to letters, the use of apps, and using a computer with a “voice", sometimes called a speech-generating device.

One review (Prinsloo et al., 2024) investigated elements of participation outcomes of AAC interventions with children with complex communication needs in early years and primary school settings. Findings demonstrated that different metrics of participation were reported across studies including attendance, involvement, activity competence, preference, as well as personal-related outcomes, such as symbol use, rather than subjective participation experiences. Access to AAC systems was linked to engagement levels comparable to those of typically developing peers across various activities, while also enhancing the duration of play and improving communication, including participation in group work and peer interactions. Another review identified in our search (Bunning et al., 2014) also reported greater social inclusion and positive parent perceptions regarding their children’s communication following highly tailored approaches to AAC.

This increase in participation may allow children and young people to experience a larger range of activities and cultivate different preferences which may in turn boost their internal motivation resulting in engaging in meaningful activities, enjoyment, and success. A child’s perception of competence and activity preference can shape their sense of self (Imms et al., 2017).

STEM (science, technology, engineering, and maths) interventions

Three systematic reviews identified in our search investigated STEM interventions for children and young people with sensory and physical impairments. Of these, two reviews investigated programmes and technologies to support STEM in children with sensory and physical impairments.

Ahmed and Chao (2018) reviewed 14 studies that investigated assistive learning technologies to support maths learning for students with vision impairments in upper primary to secondary school students, roughly aged 11 to 18 years. They investigated techniques that used the ‘SAMR’ model of learning technology integration. The SAMR model is a framework designed to help educators reflect on and improve the way technology is integrated into teaching and learning. It outlines four levels of technology use: Substitution, Augmentation, Modification, and Redefinition, which move from simple enhancement to transformational change.

Substitution refers to when technology is used as a direct replacement for traditional tools, without altering the task itself. For example, a student might type an essay on a word processor instead of writing it by hand. While this can make the task more efficient, it doesn't add new functionality or deepen the learning experience. The authors categorised three approaches under the 'Substitution' level. Students with vision impairments demonstrated better maths outcomes when using these approaches.

1. AnimalWatch curriculum (Beal and Rosenblum, 2015, Beal et al., 2011), which replaces visual text with audio feedback to make the curriculum accessible for students with VI in learning to solve mathematics problems.

2. The i-Math project involves the development of an audio reader designed to read mathematics documents and text. i-Math can read equations, mathematical descriptions, and other notation in LaTeX format and other common mathematics markup languages (Wongkia et al., 2012)

3. Finally, Van Scoy, McLaughlin, and Fulmers (2005) developed a graphic tool that combined auditory output and tactile graphs for maths teaching. Here it was found that using a combination of auditory and tactile feedback resulted in better outcomes then using only one of these strategies.

The second level, Augmentation, still involves substitution, but with added functional improvements. Using features such as spellcheck, formatting tools, or voice typing introduces efficiency and accessibility that were not possible with traditional tools. Although the task remains largely the same, the technology enhances how it is performed. The authors categorised three approaches that were categorised under the 'Augmentation' level. However, the authors of the review did not note whether these tools resulted in better outcomes compared to typical maths delivery.

1. The Graph and Number Line Input and Exploration (GNIE) project is an innovative approach that helps students, particularly those with vision impairments, to access and understand graphs and numerical data through sound. Instead of relying solely on visual representations, GNIE uses multimodal input, combining auditory cues with minimal visuals, to represent features like points on a number line or data trends in a graph. For example, different pitches or tones might correspond to different values, allowing students to "hear" the shape or direction of data. This method provides an alternative way for students to engage with mathematical concepts that are often inaccessible through traditional visual formats. While still under development, GNIE highlights how assistive technology can expand access to core curriculum content in more inclusive and creative ways.

2. High-resolution refreshable tactile devices, such as TeslaTouch, are emerging technologies designed to provide real-time tactile feedback, similar to how a screen display changes visual information. These devices can present both textual and non-textual digital content through touch, making them particularly promising for students with vision impairments. Rather than relying on static braille or simple vibrations, these tools create detailed, changing tactile sensations that allow users to explore information more dynamically, like feeling the shape of a graph or the layout of a diagram. However, these technologies are not yet widely available in schools, and early research suggests that they require significant training to use effectively. Importantly, they are not one-size-fits-all, meaning students may need personalised support to benefit fully from them.

3. The Tactile Graphics with Voice (TGV) (Baker et al, 2014), is a system designed to support students with vision impairments, especially those who are not fluent in Braille. TGV combines raised tactile graphics with embedded audio prompts that students can access on demand, typically by touching specific areas of the graphic. This allows learners to explore mathematical content such as charts, shapes, or graphs, using both touch and sound, creating a multisensory learning experience. Research showed that for students who were not confident Braille readers, TGV provided an efficient and accessible way to engage with maths materials, supporting greater independence and understanding.

With Modification, technology begins to change the nature of the task itself. For instance, students might use a shared Google Doc to collaborate on writing, provide peer feedback using comment functions, and revise their work in real time. This level promotes more interactive and collaborative learning, moving beyond individual engagement. However, the authors of the review did not note whether these tools resulted in better outcomes compared to typical maths delivery.

1. The Math in the Dark project, developed by McDermott-Wells (2015), aimed to improve real-time communication in mathematics learning for students with vision impairments. It combines two key tools: a Nemeth Braille editor, which supports the specialised Braille code used for mathematical notation, and a real-time instant messaging system. By integrating a translator that converted between Nemeth Braille and MathML (Mathematics Markup Language), this tool enables students to engage in mathematical conversations with their sighted peers and teachers through instant messaging.

2. The Talking Tactile Tablet (TTT), described by Landau and colleagues (2003), offers an innovative way for students with vision impairments to access and interact with mathematics assessments. The device allows students to place special raised-line or textured graphic sheets on its touch-sensitive surface. When

the student touches specific shapes, icons, or areas on the sheet, the TTT provides audio feedback, helping them understand and respond to mathematical content.

Finally, Redefinition refers to technology that allows for the creation of new tasks that were previously inconceivable. An example would be students producing a multimedia documentary, conducting interviews via video calls with people from different countries, and publishing their work online. This kind of learning fosters creativity, authentic communication, and global collaboration, offering students transformative educational experiences.

1. The Graph Sketching Tool (GSK), developed by Balik (2013), was designed to allow both students with vision impairments and sighted peers to work with graphs using a variety of input methods, such as keyboards, mice, touchscreens, voice commands, and screen readers. In a study involving ten students with VI, Balik found that the flexibility of input and output options enabled all students to interact with each other's graphs, fostering meaningful mathematical discussion and collaboration. Most notably, the GSK empowered those with vision impairments to independently construct and interpret graphs, making it a valuable tool for supporting mathematical ownership, engagement, and accessibility.

A second systematic review reviewed methods by which STEM programs support the engagement of a range of neurodiverse adolescents (aged 9 to 19) including children and young people with sensory and physical needs (Jenson & Lee, 2024). This study investigated a variety of maths programmes included in the review by Ahmed and Chao (2018) as well as additional programmes including: (a) Inventing, Designing, and Engineering for All Students (IDEAS) Maker Program, (b) 3D iSTAR Engineering Summer Program, (c) ADHD Engineering Summer Camp, (d) Virtual Mentoring Program, (e) Mentor-Matching Program, (f) National Aeronautics and Space Administration (NASA) Neurodiversity Network (N3) Program, (g) For Inspiration and Recognition of Science and Technology (FIRST) Robotics Club, (h) self-voicing computer programme for pre-algebra maths. The synthesis of findings from these programs highlights a set of consistently effective strategies for fostering STEM interest and confidence among neurodiverse students in upper primary to secondary school. Key elements included the use of hands-on activities, flexible, student-led learning opportunities, and thoughtful accommodations tailored to individual needs. Informed by the perspectives of students, parents, and program leaders, these approaches not only supported meaningful engagement but also strengthened learners' confidence and enthusiasm for STEM subjects.

A third review by Klingenberg et al. (2019) examined the attitudes and experiences of pupils and teachers regarding the use of abacuses, tactile graphics, and strategies for developing mathematical concepts among children and young people with vision impairment. This review suggests that environmental factors significantly influence performance and emphasised the importance of parental involvement in school life. Although the low prevalence of vision impairment often means only one child with vision impairment is in a mainstream class, many of the adaptations made for these students, such as more descriptive explanations, benefit all learners. However, accurate instruction and tailored feedback was underscored, with teacher expertise shown to have a direct impact on VI learner outcomes.

Increased teacher knowledge of vision impairment enhances inclusive participation, and when teachers are actively involved in creating alternative resources, both they and their students report positive experiences. For example, learners with VI often use their bodies as tools for measuring and counting. Teachers play a key role in helping these students connect their informal, physical experiences with formal mathematical concepts. Well-informed and teachers who reflect on their practice are linked to better outcomes for VI learners, unless there are additional cognitive difficulties. The Klingenberg et al. (2019) review found that with appropriate curriculum materials, 10 out of 12 students with VI performed as well as their sighted peers. However, this success was closely linked to the quality of the learning environment and teacher competence. Reflective practice and teacher attitudes were found to be particularly influential.

Finally, a central concern raised across the body of research in this REA was the inconsistency in research approaches, with the authors calling for more randomised controlled trials (RCTs) to strengthen the evidence base.

Effective STEM support for children and young people with sensory and/or physical impairments summary

- Assistive technology works: Simple adaptations (like audio feedback or tactile graphs) can significantly improve maths outcomes for those with VI
- Combining touch, sound, and speech helps make abstract STEM content more accessible for children and young people with VI
- Well-informed teachers who adapt materials and offer clear, descriptive explanations are valued by children and young people with sensory and physical impairments
- Strategies like verbalising visual information and using physical objects to explore maths support all learners, not just those with VI
- Technology (e.g., refreshable tactile devices, captioning, collaborative platforms) show promise but may require specific training to implement
- Positive attitudes, reflective teaching, and parental involvement enhance engagement and performance

Literacy interventions

Children and young people with sensory and/or physical difficulties may also demonstrate difficulties with various aspects of literacy such as reading, spelling, or writing. For example, children and young people with hearing impairments may decode and process text differently than those without hearing impairments (Marschark, 2006; Marschark et al., 2011). Children with physical difficulties may have difficulties holding books and turning pages which could limit their engagement in reading activities (Smith et al., 2009). Children with hearing loss may have reduced vocabulary outcomes compared to hearing-age-matched peers (Convertino et al., 2014). Taken together literacy support is important for children and young people with sensory and/or physical needs.

A systematic review by Kart (2022) on the use of Visual Phonics[3] for children with hearing impairments examined its impact on developing code-related literacy skills. All 13 studies in their review demonstrated strong evidence of improvement in phonemic awareness, decoding, and letter-sound correspondence. The effectiveness of Visual

[3] Visual Phonics is a system that uses hand cues and written symbols to represent the sounds (phonemes) of spoken language. It is designed to support children with hearing impairments, as well as others with speech, language, or reading difficulties.

Phonics was consistent across varying degrees of hearing loss, different ages, communication methods, and the presence of additional disabilities.

A second scoping review (Guiberson & Crowe, 2018) on multilingual children with hearing loss explored evidence-based interventions in areas such as audition, speech, language, and literacy. The authors cite that the compelling interventions included auditory verbal therapy, phonics with vision support, story grammar techniques, and explicit vocabulary instruction. This meant that these interventions were clearly described in the research papers, the only variable being tested was the intervention itself (i.e., the study controlled for other factors that might affect the outcome). The study used a pretest–post-test design, meaning they measured something before and after the intervention to see if it made a difference, and the results showed positive effects after the intervention. While this scoping review identified interventions with evidence of effectiveness, it also stressed the importance of individualised intervention planning. Further, this scoping review did not comment on the quality of the evidence base, therefore further work needs to be done to establish the quality of this evidence base as well as more implementation studies which consider individualised planning.

Stauter et al. (2017) examined literacy instruction for young children aged 3 to 8 years with severe speech and physical impairments (SSPI) who used augmentative and alternative communication (AAC) systems. The review included six studies focused on developing emergent literacy skills, such as phonological awareness, decoding, and participation in shared reading activities. Participants typically had complex communication needs, often associated with diagnoses like cerebral palsy, and required substantial physical and communicative support to access instruction.

Across the studies, a range of adapted interventions were employed, including modelling AAC use (e.g., aided language stimulation), providing switch-activated or tactile reading materials, using motor-based cues for internal speech, and embedding literacy instruction in meaningful group-based or naturalistic contexts. Despite methodological variation, all studies reported positive outcomes. These included increased engagement, improved decoding and word identification, and enhanced use of AAC systems to communicate during reading tasks. Interventions were most effective when they enabled active participation, included explicit instruction and scaffolding, and were tailored to the child’s abilities and preferred mode of communication.

1. Modelling AAC use (e.g., aided language stimulation), adults modelled the use of AAC devices during shared reading by pointing to symbols or words on a communication board or speech-generating device while reading aloud. This exposed children with SSPI to language input paired with AAC use, helping them learn how to use their own AAC systems functionally during literacy tasks.

2. Providing switch-activated or tactile reading materials is where adapted books with tactile symbols and switch-activated page-turning devices are used. These adaptations allowed children with limited motor control to independently navigate storybooks and engage with content in ways aligned with their physical abilities.

3. Motor-based cues for internal speech is where motor-based interventions like prompting children to use consistent motor movements (e.g., pressing a switch or eye-gaze selection) as a bridge to internal speech strategies are used, helping children rehearse and retrieve sounds or words during literacy activities even when they could not speak.

4. Embedding literacy instruction in meaningful group-based or naturalistic contexts involves integrated phonics instruction into daily routines in classroom settings, involving both children with and without disabilities. Instruction occurred during shared group reading, morning meetings, and hands-on play, enabling children to practice literacy skills in authentic social and learning contexts. This promoted generalisation and motivation for literacy use.

However, the Stauter et al. (2017) review also identified key limitations. Most studies involved very small sample sizes and lacked statistical rigour or standardised outcome measures. Interventions were often delivered by researchers rather than educators, raising questions about implementation in typical classroom settings. Follow-up data on long-term outcomes or skill generalisation were rarely reported. Overall, while the findings demonstrate effective literacy interventions, the authors highlight the need for more robust, teacher-led studies in mainstream settings that examine sustainable and scalable approaches to literacy instruction for children with SSPI.

Finally, in a review of systematic reviews, Wang and Williams (2014) examined studies investigating reading instruction for children and young people (aged 3 to 22) with hearing impairments. There was some evidence that suggested reading outcomes were improved through a number of instructional strategies, including explicit instruction, story grammar instruction, the use of high-interest literature, instruction in the grammatical principles of American Sign Language (ASL) and how to translate ASL into written English, reading comprehension strategy instruction, and teaching of morphological rules, among others. There may also be benefits of repeated reading for fluency improvement. However, the evidence supporting these strategies is limited. They found limited evidence on the effectiveness of phonics and phonological awareness instruction for this group, as well as a lack of research on approaches to teaching reading comprehension.

However, in terms of sight word recognition, Wang and Williams (2014) report on one systematic review which indicated that children and young people with hearing impairments can learn to recognise words automatically similar to their hearing peers and that beginning readers would benefit from matching written words to signs, sign print, or both. Independent oral reading may be an instructional approach that is successful in improving reading fluency for children and young people with hearing impairments.

Wang and Williams (2014) found some evidence that vocabulary knowledge for children and young people with hearing impairment may be improved through a number of different instructional techniques. These included direct or indirect vocabulary instruction (e.g., learning new words incidentally, rather than through explicit teaching), through the use of aural/oral habilitation (i.e., approaches that develop spoken language through listening and speech, typically used with children with hearing loss) following cochlear implantation, through the use of sign language (American Sign Language (ASL) in this instance) and, by using computer software.

Effective literacy support for children and young people with sensory and/or physical impairments summary

- Visual Phonics for children with hearing impairment
- Auditory verbal therapy for multilingual children with hearing loss
- Phonics with vision support for multilingual children with hearing loss
- Story grammar techniques for multilingual children with hearing loss
- Explicit vocabulary instruction for multilingual children with hearing loss
- Modelling AAC use (e.g., aided language stimulation) for children with severe speech and physical impairments
- Providing switch-activated or tactile reading materials for children with severe speech and physical impairments
- Using motor-based cues for internal speech for children with severe speech and physical impairments
- Embedding literacy instruction in meaningful group-based or naturalistic contexts for children with severe speech and physical impairments
- Direct instruction for children with severe speech and physical impairments
- Scaffolding for children with severe speech and physical impairments

Support and intervention summary

Our review identified a total of 18 systematic reviews dedicated to the support and intervention strategies that mainstream teachers can use to support sensory and/or physical needs.

While there are some evidence-based strategies to support children and young people with sensory and/or physical needs, the current evidence base remains limited. There is a clear need for larger-scale studies using randomised controlled trials to strengthen our understanding of what works. Nevertheless, this review identified several promising techniques.

Environmental adaptations such as level access, reduced noise, and minimised visual clutter support engagement and comfort for learners with sensory and/or physical needs. The importance of early intervention, setting-specific adjustments, and collaboration with therapists and specialists was underscored. Teachers can play a key role in reducing visual or auditory overstimulation and managing transitions through simple, low-cost adaptations that prioritise comfort and clarity in the learning environment.

Assistive technology was shown to offer promise, particularly for students with vision impairments, but the quality of evidence was mixed. While some studies showed benefits from screen readers, braille notetakers, and computer-assisted instruction, most lacked robust methodology and educator involvement. Training and usability challenges, as well as low implementation by qualified staff, limited the practical impact of these tools. Similarly, robotic-assisted technologies for children with physical disabilities or autism showed some benefits, but current evidence remains too limited and inconsistent for firm conclusions.

Positive outcomes were observed in areas such as mathematics, reading, phonological awareness, and the use of assistive technology for students with communication needs and sensory or physical impairments. However, implementing tools such as assistive technology, computer-assisted instruction, and advanced AAC devices, including specialised software, hardware, apps, and robotics, often require input from technology specialists and IT staff for setup, programming, and ongoing support.

Multisensory teaching strategies may enhance accessibility and support memory and information retention for learners with sensory needs. In STEM subjects, various approaches, such as substitution, modification, augmentation, or redefinition, can also make content more accessible. However, it is essential that these adaptations are meaningfully aligned with the learning task. To ensure effective and individualised support, educators should collaborate closely with specialists and healthcare professionals to assess each student’s needs and develop tailored interventions.

In literacy, strong evidence supports the use of Visual Phonics for children with hearing impairments and AAC-supported literacy instruction for children with severe speech and physical impairments. Key features of effective interventions included explicit instruction, the use of motor-based cues, tactile books, and embedding instruction in real-life routines. However, most studies were small-scale, researcher-led, and lacked long-term outcome data, highlighting the need for more robust, teacher-led research in mainstream contexts.

Finally, a recurring theme across the review was the inconsistency in research design, limited educator involvement, and lack of standardised outcomes. While some promising practices are emerging, there is a clear need for larger-scale, high-quality studies that evaluate practical, scalable strategies for use by teachers, especially in settings with limited access to specialist support. Engaging learners in choosing tools and adaptations that work for them should also be a key consideration moving forward.

Conclusions

This review aimed to identify effective methods for the identification and support of children and young people with sensory and/or physical needs in mainstream education while highlighting where collaborative practice is essential. These needs included vision impairment, hearing impairment, multi-sensory impairment (MSI), and physical disabilities affecting fine or gross motor skills. While such needs are well recognised in the SEND Code of Practice, our review found that the research on identification and support are still predominantly grounded in medical and clinical models. Children and young people with these needs often rely on specialist assessments and equipment to access the school environment, and teachers may lack the tools or training to identify difficulties early or assess how they affect learning and participation.

Critically, we found a notable gap in research on identification tools suitable for use by mainstream educators. Most assessments are specialist-administered or require interpretation by specialists, and few tools have been adapted or validated for classroom or early years contexts. This is particularly concerning given limited access to medical and specialist services in some schools or regions. There is a pressing need for more research into practical, evidence-based tools that teachers can use to identify and respond to sensory and physical difficulties, particularly those that align with educational goals rather than solely clinical criteria.

Although a small number of systematic reviews demonstrated the potential of certain teaching adaptations, such as multisensory approaches, assistive technology, and adapted STEM resources, there is a lack of large-scale, high-quality evidence (e.g., randomised controlled trials) evaluating their long-term impact. Promising findings were reported in areas such as phonological awareness, reading, and maths, particularly when interventions were well structured and personalised. However, many of these strategies require input from IT specialists, therapists, or other professionals for implementation.

The findings underscore the importance of collaborative planning between teachers and specialists, as well as the need for high-quality, accessible professional development in this area. Teachers must be supported to understand the diverse needs of students with sensory and/or physical difficulties and to confidently make necessary adaptations. Importantly, learners themselves should be engaged in shaping their support plans, ensuring strategies are both relevant and timely.

Inconsistencies in outcome reporting and intervention design across studies limit the generalisability of some findings. Furthermore, due to the rapid nature of this review and our focus on systematic reviews and meta-analyses, it is possible that some tools or interventions currently in use, particularly newer, unpublished, or practitioner-led approaches, may not have been captured. These omissions reflect the current state of the evidence base, not necessarily the effectiveness of those approaches. Future research should prioritise robust study designs, focus on outcomes linked to educational access and attainment, and include mainstream educator perspectives.

In summary, while there are clear examples of effective practice, evidence gaps remain in the areas of teacher-led identification, inclusive classroom strategies, and collaborative models of provision, highlighting the urgent need to develop, test, and scale approaches that are feasible within everyday school settings.

Appendices

Appendix A: Search terms (PICOS criteria)

We conducted 15 separate searches across five rapid review categories, each focused on a distinct population: SEMH, SLCN, autism, sensory and/or physical needs, and cognition and learning. For each population, three searches were performed, focusing on: identification terms, support terms, and working with others. The intervention, comparison, and study type remained consistent across all searches, while the population and outcome terms varied to capture the unique characteristics of each group. This approach ensured a comprehensive examination of the research literature across the different populations. PICOS stands for: (1) Population; (2) Intervention; (3) Comparison; (4) Outcomes; and (5) Study type.

Population:

- Population terms: "adolescent" OR child* OR "children and young people" OR kid* OR "post 16" OR pupil* OR "school aged" OR student* OR teen* OR "young learner*" OR "young people" OR "young person" OR youth
- Educational setting terms: "alternat* educat*" OR class* OR "class* setting" OR "comprehensive school*" OR "early year*" OR educat* OR elementary OR "elementary school*" OR "extra-curricular setting*" OR "further educat*" OR "further educat* setting*" OR "grammar school*" OR "high school" OR "higher educat*" OR inclus* OR kindergarten OR "learning environment*" OR mainstream* OR "middle school*" OR nursery OR preschool OR "primary educat*" OR "primary school*" OR reception OR "remedi* class*" OR "school setting" OR school* OR "secondary education*" OR "secondary school*" OR "special educat*" OR "university" OR "whole school" OR "independent school"
- General SEND terms: SEND OR SEN OR "special educat* need*" OR "special need*" OR "learning difficult*" OR "learning disab*" OR "learning difference” OR "additional need*" OR impair* OR disorder* OR neurodivergent OR "additional learning need"
- Sensory and/or physical needs terms: CVI OR MDVI OR MSI OR PCHL OR PMLD OR SLD OR "sensory impair*" OR "vis* impair*" OR blind* OR "cerebral vision impair*" OR "cochlear implant*" OR "cortical vision impair*" OR deaf OR deafblindness OR "dual sensory impair*" OR "hard of hearing" OR "hearing impair*" OR "hearing loss" OR "low vision" OR "multi* need*" OR "multi* sensory impair*" OR "multiple disabil*" OR "multiple impair*" OR "permanent childhood hearing loss" OR "profound deaf*" OR "residual vision" OR "sensory deprivation" OR "severe deaf*" OR "severe sight impair*" OR "sight impair*" OR "vision loss" OR "visual disab*"

Intervention:

- Identification terms: assess* OR "assessment app*" OR "assessment tools" OR "behavio* checklist*" OR checklist OR "class* assess*" OR "classroom observation" OR "cognitive assess*" OR "computer* app" OR "curriculum-based measure" OR diagnos* OR "dynamic assessment" OR "early screening tools" OR "educational assessment tool*" OR evaluate OR "formal assess*" OR "formative assess*" OR "graduated approach" OR identif* OR "informal assess*" OR measure OR "multi-disciplinary assessment" OR MTSS OR "multi-tiered system of supports" OR "neuro* assess*" OR observ* OR "parent* report" OR "pupil observation" OR "response to intervention" OR RTI OR screen* OR "self-assessment" OR "self-report" OR "smartphone app*" OR "standard* test*" OR "student observation" OR "tablet app*" OR "teacher judgment*" OR "teacher observation" OR tool* OR “performance-based”
- Support terms: "classroom environment" OR "SEN support" OR "SEND support" OR SWPBS OR accommodat* OR adaptat* OR approach OR "assistive tech*" OR "classroom interve*" OR "collaborative teach*" OR curriculum OR "curriculum adapt*" OR "differentiat* instruction" OR “digital learning” OR "early interven*" OR "education* program*" OR "education* support" OR "evidence-based interven*" OR "evidence-informed interven*" OR "exam access arrangement*" OR "exam accommodat*" OR "graduated approach" OR "group intervention" OR "high-quality instruct*" OR "high-quality teach*" OR inclus* OR "inclusive education" OR "inclusive practice" OR "individual support" OR "individual* education plan*" OR "instruct*" OR interven* OR integrat* OR "mainstream class* support" OR "mainstream education" OR “mainstream environment” OR “multimedia learning environment” OR "multi-tiered system* of support" OR "one-to-one" OR "parental support" OR pedagog* OR "peer support" OR personali*ed OR provision OR remediat OR "school support service*" OR "school-based" OR "special* interven*" OR "special* support" OR "specialist teach* support" OR support* OR strateg* OR "targeted interven*" OR "target* teach* strateg*" OR targeted OR "targeted support" OR teach* OR "teach* adaptation*" OR "teach* principle*" OR "teach* strateg*" OR "teach* approach" OR therapy OR "tier 1 interven*" OR "tier 1 support" OR "tier 2 interve*" OR "tier 2 support" OR "tier 3 interven*" OR "tier 3 support" OR treat* OR "universal design" OR "universal interven*" OR "universal provision" OR "universal support" OR "whole-class support" OR "whole-class teaching"
- Working with others terms: collabor* OR parent* OR carer OR caregiver OR famil* OR specialist* OR “specialist teacher” OR teacher OR educator OR TA OR “teaching assistant*” OR “support staff” OR “educational psychologist*” OR EP OR SLT or SLP or “speech and language therapist*” OR “speech and language pathologist*” OR “speech therapist” OR “speech pathologist” OR “health visitor”

OR HV* OR “Ed Psych” OR counsel* OR “mental health support workers” OR “child and adolescent mental health service” OR CAHMS OR psychologist* or therapist* OR “learning support assistant” OR LSA OR “communication support worker” OR QTOD OR QTMSI OR QTVI OR “co-production” OR “joint working” OR “healthcare professional” OR “personal carer” OR “occupational therapist” “Inter-professional collaboration” OR IPC OR expert OR clinician OR nurse

Comparison:

- Left blank to include studies without comparison groups

Outcome:

- Identification terms: N/A - Not needed for identification terms as there is not always a specific outcome
- Behavioural, Inclusion, Motivation, and Engagement terms: attendance OR "behavio* outcomes" OR "behavio* regulation" OR "behavio* improvement" OR "cognitive development" OR "communication skills" OR criminal OR economic OR employment OR engage* OR financial OR "functional independence" OR "functional skills development" OR "access to learning" OR "improvement in learning" OR "inclusive classroom" OR "increase* inclusion" OR "independent living" OR independent* OR "mental health outcomes" OR motivate* OR offend OR "prosocial behavio* " OR "reduce* learning barriers" OR “reduce* symptom*” OR "self-regulat*" OR "school performance" OR "school retention" OR "social inclusion" OR "social-emotional development" OR "teacher perceptions of student progress" OR “well-being” OR workplace
- Educational outcomes (General): "academic achievement" OR "academic progress*" OR "academic attainment" OR "academic measure" OR "academic performance" OR “additional learning support*” OR "educat* achievement" OR "educat* assess*" OR "educat* attainment" OR "educat* measure" OR "educat* outcome*" OR "educat* performance" OR "educat* progress" “executive function*” OR "functional skill* develop*"OR "improve* learning" OR learn* OR "learning progress" OR "problem solving" OR "reduced learning barriers" OR "school outcome*" OR "school performance" OR "school retention"
- Literacy outcomes: read* OR literacy OR “letter recognition” OR “letter-sound knowledge” OR “word reading” OR phonic* OR phonolog* OR “reading comprehension” OR “reading accuracy” OR “reading fluency” OR “reading delay*” OR “print knowledge” OR decod* OR “alphabet knowledge” OR “listening comprehension” OR “word recognition” OR “sentence completion”
- Writing outcomes: writ* OR literacy OR punctuation OR spelling OR “sentence writing” OR “free writing” OR “early writing” OR “emergent writing” OR “guided

writing” OR “writing fluency” OR handwriting OR “interactive writing” OR “letter typing” OR “sentence completion”

- Mathematics outcomes: math* OR numer* OR numb* “number sense” OR arithmetic* OR geomet* OR shape OR calcul* OR algebra OR counting OR addition OR subtraction OR multiplication OR division OR fractions OR statistics* OR “place value” OR “math* competenc*” OR “math* concept*” OR “math* knowledge”
- Working with others terms: collaboration* or partnership* or co-practice* or multidisciplinary* or transdisciplinary or interdisciplinary

Study type:

- Review type: review OR “systematic review” OR “meta-analysis” OR “narrative review”

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Reference: RR1548
ISBN: 978-1-83870-701-9

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