

RAPID EVIDENCE REVIEW

EdTech for Learners With Cognitive and Learning Disabilities: A Rapid Evidence Review for the Southeast Asian Region

Date August 2024

Authors Joel Mitchell Rozina Zazai
Sarah Thang Aime Parfait Emerusenge
Annette Zhao Katrina Barnes
Jessica Hinks Jonny D'Rozario
Asma Rabi Nimra Afzal
Noor Ullah

DOI 10.53832/edtechhub.1023

About this document

Recommended citation Mitchel, J., Zhao, A., Thang, S., Hinks, J., Rabi, A., Ullah, N., Zazai, R., Emerusenge, A. P., Barnes, K., D’Rozario, J. & Afzal, N. (2024). *EdTech for Learners With Cognitive and Learning Disabilities: A Rapid Evidence Review for the Southeast Asian Region*. EdTech Hub. <https://doi.org/10.53832/edtechhub.1023>. Available at <https://docs.edtechhub.org/lib/HD58IXI3>. Available under [Creative Commons Attribution 4.0 International](#).

Licence Creative Commons Attribution 4.0 International
<https://creativecommons.org/licenses/by/4.0/>
This licence means you are free to share and adapt for any purpose, even commercially, as long as you give appropriate credit, provide a link to the licence, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. Please refer to the link for more details.



Reviewers Mdm Jamilah Kadir (Director, SEAMEO SEN), SEAMEO SEN Resident Experts, Heikhal Hamzah (Manager, Strategic Planning & Communication Division, SEAMEO SEN)

About EdTech Hub

[EdTech Hub](#) is a global research partnership. Our goal is to empower people by giving them the evidence they need to make decisions about technology in education. Our [evidence library](#) is a repository of our latest research, findings, and wider literature on EdTech.

This publication has been produced by [EdTech Hub](#) as part of the ASEAN-UK Supporting the Advancement of Girls’ Education (SAGE) Programme. The ASEAN-UK SAGE programme aims to enhance foundational learning opportunities for all by breaking down barriers that hinder the educational achievements of girls and marginalised learners. The programme is in partnership with the Southeast Asian Ministers of Education Office, the British Council, the Australian Council for Educational Research, and EdTech Hub.

Rapid Evidence Reviews

This publication is one part of a series of Rapid Evidence Reviews (RERs) that has been produced by EdTech Hub. The purpose of the RERs is to provide education decision-makers with accessible, evidence-based summaries of good practice in specific areas of EdTech. The reviews originally focused on topics which are particularly relevant in the context of widespread global challenges to formal schooling as a result of the Covid-19 pandemic, and now extend to cover further areas. All the RERs are available at <https://edtechhub.org/research/>.

Contents

<i>Abbreviations and acronyms</i>	4
Executive summary	5
1. Introduction	7
1.1. Background	7
1.2. Research questions	8
1.3. Definition and scope of the review	8
1.4. Theme identification	10
1.5. Structure of the RER	11
1.6. Methodology	11
1.9. Limitations	14
2. Systematic review and thematic analysis	16
2.1. Cognitive disabilities	16
2.2. Learning disabilities	22
2.3. Inclusive education	26
2.4. Barriers to using EdTech	29
3. Synthesis and conclusion	31
Bibliography	36
Annex: Search strings	46

Abbreviations and acronyms

ADA	Americans with Disabilities Act
ADHD	Attention deficit hyperactivity disorder
ASEAN	Association of Southeast Asian Nations
EdTech	Educational technology
HPSQ	Handwriting Proficiency Screening Questionnaire
IOM	Internal Organisation for Migration
ICT	Information and communications technology
MOOC	Massive Open Online Courses
OER	Open Educational Resources
PSS	Psychosocial support
RER	Rapid Evidence Review
SEAMEO	Southeast Asia Ministers of Education Organization
SEND	Special educational needs and disabilities
TIGER	These Inspiring Girls Enjoy Reading
UNHCR	United Nations High Commissioner for Refugees
UNSDG	United Nations Sustainable Development Group
VSL	Vietnamese Sign Language
WHO	World Health Organisation

Executive summary

This Rapid Evidence Review (RER) provides an overview of existing literature on the use of educational technology (EdTech) for the education of learners with cognitive and learning disabilities in Southeast Asia. It also summarises the current state and potential benefits of using technology to educate these learners, and its limitations and challenges. The following countries are included in the review's scope: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, and Vietnam.

The RER involved a systematic search for academic and grey literature about using EdTech in the education of learners with special educational needs and disabilities (SEND) in the region, specifically cognitive and learning disabilities. A separate RER focusing on hearing and visual impairments is also available (see [Zhao, 2024](#)). After a two-stage screening process, we analysed 18 publications. Details on the inclusion criteria and the associated limitations, are explained in [Section 1.6](#). The rapid nature of the review required a focused approach to literature discovery and a thematically guided analysis process. As such, the search strategy was not designed to be exhaustive.

The findings of the thematic analysis of the relevant literature are structured along four themes:

1. **'Cognitive disabilities'** explores autism, Down syndrome, and attention deficit and hyperactivity disorder (ADHD) in Southeast Asia, including any promising EdTech interventions.
2. **'Learning disabilities'** explores dyslexia, dysgraphia, and dyscalculia in Southeast Asia, including any promising EdTech interventions.
3. **'Inclusive education'** discusses the importance of inclusive education and meeting learners' needs.
4. **'Barriers to using EdTech'** explores the issues that can arise when using technology.

Key findings from this review

More research is required to determine the most effective EdTech interventions for the varied learning and socio-emotional needs of learners with cognitive and learning disabilities, and how these

interventions can be implemented with fidelity and tailored to the Southeast Asian context.

- More data is needed on learners with cognitive and learning disabilities in Southeast Asia. This will be particularly crucial when determining the appropriate allocation of resources, given the cost of EdTech interventions and their infrastructural and systemic enablers.
- For learners with cognitive and learning disabilities to succeed, education systems need to be set up to be adaptive to these learners' learning needs.
- Supporting learners with cognitive and learning disabilities requires a multifaceted, holistic approach. Countries may consider analysing policy and practice to identify gaps and areas for change.
- Caregivers play a crucial role in their children's education. EdTech could be leveraged to provide caregivers with the necessary information and support.

1. Introduction

This RER provides a summary of the potential benefits of using technology for the education of learners with cognitive and learning disabilities in the Southeast Asian region, as well as its risks, limitations, and challenges. It aims to offer insight and evidence that can assist in developing and implementing effective EdTech interventions in the target region and, particularly, in addressing the needs of learners with special educational needs and disabilities (SEND).

1.1. Background

Despite Southeast Asian countries ratifying the United Nations Convention on the Rights of Persons with Disabilities ([↑United Nations, 2006](#)), children with SEND find it difficult to access a quality education ([↑UNESCO, 2023](#)). According to [↑UNICEF \(no date\)](#), 43 million children in East Asia and the Pacific have a disability. In the Southeast Asian region specifically, [↑UNESCO's \(2023, p.22\)](#) Global Education Monitoring report states that 5% of learners in Malaysia and Cambodia, and 3% in Vietnam and Laos have a disability. These figures may understate the number of learners with disabilities. At least one study has shown that census data may undercount people with disabilities due to factors such as an unwillingness to self-identify, a lack of understanding of disabilities on the part of participants and enumerators, and census options not including a comprehensive list of disability types ([↑United Nations Timor-Leste & Belun, 2018](#)). Learners with SEND often do not have the same access to education as their peers. For example, in Cambodia, children with SEND are eight times less likely to be in school than learners without SEND ([↑UNESCO \(2023, p. 22\)](#)). Many of these inequalities have been exacerbated further by the Covid-19 pandemic, partly due to a lack of access to suitable software and support ([↑UNSDG, 2020](#)). In Timor-Leste, the non-governmental organisation Belun estimates that less than half of youth with disabilities have ever attended school, which is half the rate of their peers without SEND ([↑United Nations Timor-Leste & Belun, 2018](#)). Of those who do attend school, the report states that two-thirds of youth with SEND drop out of school by the time they reach secondary school. Lack of infrastructure, materials, necessary teacher skills, and family beliefs are some of the reasons for this high dropout rate.

Although cognitive and learning disabilities are more prevalent than sensory impairments ([↑Lynch, et al., 2022](#)), there is less research on the former, both globally and in Southeast Asia. This may be due to reduced

awareness of cognitive differences and neurodivergence in many low- and middle-income countries ([↑Greer, et al., 2022](#)) or a broader under-representation of learners with cognitive and learning disabilities.

The needs of learners with cognitive and learning disabilities are difficult to diagnose and can be complex. However, efforts to address these needs are emerging both on an individualised level and across classrooms, such as by incorporating inclusive education models (see [Section 2.3](#)). This potential opportunity is being recognised in Southeast Asia, and many countries are developing appropriate solutions ([↑UNESCO, 2023](#)). However, challenges remain in implementation, including a lack of infrastructure, cost, and the small scale of projects ([↑UNESCO, 2020](#); [↑2023](#)). For example, funding in Indonesia is inadequate to allow specialist schools for learners with SEND to buy assistive technology ([↑Hata, et al., 2023](#)). Further challenges can arise when considering the difficulties of meeting the needs of the individual ([↑Lynch, et al., 2022](#)). Indeed, teachers sometimes lack the training to provide students with personalised learning through technology ([↑UNESCO, 2020](#)). While these issues exist, the full potential of educational technology to aid children with cognitive and learning disabilities cannot be realised.

1.2. Research questions

Two research questions guide the review:

1. What are the key emergent themes in the available literature on the use of technology for the education of learners with cognitive and learning disabilities in Southeast Asia?
2. What are the key learnings and recommendations that can be drawn from the available literature to promote a better quality of education for learners with cognitive and learning disabilities in Southeast Asia?

1.3. Definition and scope of the review

For the purposes of this review, we adopted the following key definitions:

Southeast Asia: Countries that are member states of the Association of Southeast Asian Nations (ASEAN). These are Brunei Darussalam ('Brunei'), the Kingdom of Cambodia ('Cambodia'), the Republic of Indonesia ('Indonesia'), the Lao People's Democratic Republic ('Laos'), Malaysia, the Republic of the Philippines ('the Philippines'), the Republic of Singapore ('Singapore'), the Kingdom of Thailand ('Thailand'), the Democratic

Republic of Timor-Leste ('Timor-Leste'), the Union of Myanmar ('Myanmar'), and the Socialist Republic of Viet Nam ('Vietnam'). Timor-Leste has also been included in this category based on its pending membership of ASEAN. All the countries identified above are member countries of the Southeast Asia Ministers of Education Organization (SEAMEO).

EdTech: Educational technology. *“Technologies—including hardware, software, and digital content—that are either designed or appropriated for educational purposes.”* (↑[Hennessy, et al., 2021](#), p. 8)

EdTech solutions can be categorised as low-tech, mid-tech, and high-tech (↑[Global Education Monitoring Report Team & SEAMEO Regional Centre for Special Educational Needs, 2023](#)). Low-tech solutions do not typically involve specialised software, while high-tech interventions use technology to meet learners' needs. For example, pencil grips and canes are considered low-tech, while text-to-speech software and hearing aids are classified as high-tech.

Cognitive and learning disabilities: Article 1 of the Convention on the Rights of Persons with Disabilities defines persons with disabilities as

“those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.” (↑[United Nations, 2006](#))

As discussed by ↑[Lynch, et al. \(2022\)](#), it is difficult to define disability due to its multidimensional nature. Additionally, there is a broad spectrum of capabilities and conditions which may or may not be considered disabilities by different communities, and which are categorised similarly despite vastly different levels of functioning and integration. As one example, some individuals diagnosed with “Autism Spectrum Disorder” may find that certain aspects of their learning are helped or accelerated more than hindered, while some are non-verbal and have very different learning needs to others diagnosed with the same condition.

Neurodivergent refers to individuals “whose brain differences affect how their brain works” (↑[Cleveland Clinic, no date](#)). These can include both strengths and challenges. The Cleveland Clinic notes that conditions

which may result in learning or other challenges include but are not limited to:¹

- Autism Spectrum Disorder
- Attention-Deficit Hyperactivity Disorder (ADHD)
- Down syndrome
- Dyscalculia²
- Dysgraphia³
- Dyslexia⁴
- Intellectual disabilities and conditions which may lead to developmental delays
- Mental health conditions ([↑Cleveland Clinic, no date](#))

Cognitive and learning disability: This broad term encompasses severe and less severe conditions that may impair an individual's cognitive development or mental functioning. Down syndrome and autism are examples of more severe cognitive disabilities; less severe conditions, also known as learning disabilities ([↑ADA Site Compliance, 2021](#)), may affect a person's ability to *"understand or use spoken or written language, do mathematical calculations, coordinate movements, [or] direct attention"* ([↑National Institute of Neurological Disorders and Stroke, 2023](#)).

1.4. Theme identification

We conducted a systematic search for evidence on the use of EdTech for learners with SEND. [Section 1.6](#) details the process, including inclusion and exclusion criteria.

After conducting a thematic analysis of the papers on cognitive and learning disabilities, we classified these into four themes, all of which have sub-themes. The themes and sub-themes, which are discussed in depth in [Section 2](#) of this review, are:

¹ For the full list from the Cleveland Clinic, see their page on neurodivergence <https://my.clevelandclinic.org/health/symptoms/23154-neurodivergent>. Retrieved on 14 August 2024.

² Difficulty with maths.

³ Difficulty with writing.

⁴ Difficulty with reading.

1. **‘Cognitive disabilities’** explores autism, Down syndrome, and ADHD in Southeast Asia, including any promising EdTech interventions.
2. **‘Learning disabilities’** explores dyslexia, dysgraphia, and dyscalculia in Southeast Asia, including any promising EdTech interventions.
3. **‘Inclusive education’** discusses the importance of inclusive education and meeting the learners’ needs.
4. **‘Barriers to using EdTech’** explores the issues that can arise when using technology.

1.5. Structure of the RER

In [Section 1.6](#), we discuss the methodological approach, including details of the literature search, eligibility criteria, and possible limitations of the methodology. [Section 2](#) presents detailed findings under the separate themes that emerged from a thematic analysis of identified literature. [Section 3](#) concludes the report with a synthesis of the findings from the literature.

1.6. Methodology

The methodological approach is informed by the Cochrane Collaboration Rapid Reviews Methods Group interim guidance on producing rapid reviews ([↑Garritty, et al., 2021](#)). This permits a rigorous and systematic approach while defining the scope narrowly enough so that it can be completed within a short time frame.

While the intention was to model this RER on a systematic, thematic review of primary studies, it quickly became apparent that there are significant evidence gaps on this topic, particularly in terms of rigorous, quality evaluations or impact studies. Consequently, we decided to include reviews of other literature or systematic reviews.⁵

The research process therefore comprised a systematic sequence of searching and screening. After the research questions and inclusion criteria had been defined, keywords were combined into comprehensive search strings (see [Annex A](#)), which were then input into Google Scholar.

⁵ [↑Higgins, et al. \(2023\)](#) distinguish a systematic review thus: “Systematic reviews seek to collate evidence that fits pre-specified eligibility criteria in order to answer a specific research question. They aim to minimize bias by using explicit, systematic methods documented in advance with a protocol.”

The search results were then screened according to the inclusion criteria, first based on paper titles and abstracts, and then on full content.

1.6.1. Literature search

Google Scholar constituted the primary source of literature. [Figure 1](#) below details the process used to arrive at the articles that were ultimately thematically analysed for this review. It is important to highlight that unlike a more traditional systematic review process, which may screen all search results, the rapid review methodology used herein relied on a system of quotas. As such, only the most relevant results (up to a maximum of 500), as ranked by Google Scholar, were selected for the first round of screening. Four hundred articles were initially captured for further screening.

Additionally, these results were not screened and ranked for quality or limited to peer-reviewed/academic publications. Relying solely on peer-reviewed academic articles would have resulted in a narrower, less generalisable review. Crucially, this would also have excluded a larger number of voices from low- and middle-income countries due to the systemic factors that exclude many academic researchers in low- and middle-income countries from mainstream peer-reviewed journals.

1.6.2. Screening and eligibility criteria

The title and abstract screening, as well as all subsequent screenings, were conducted according to the eligibility criteria in [Table 1](#).

Table 1. *Eligibility criteria for literature searches and screening*

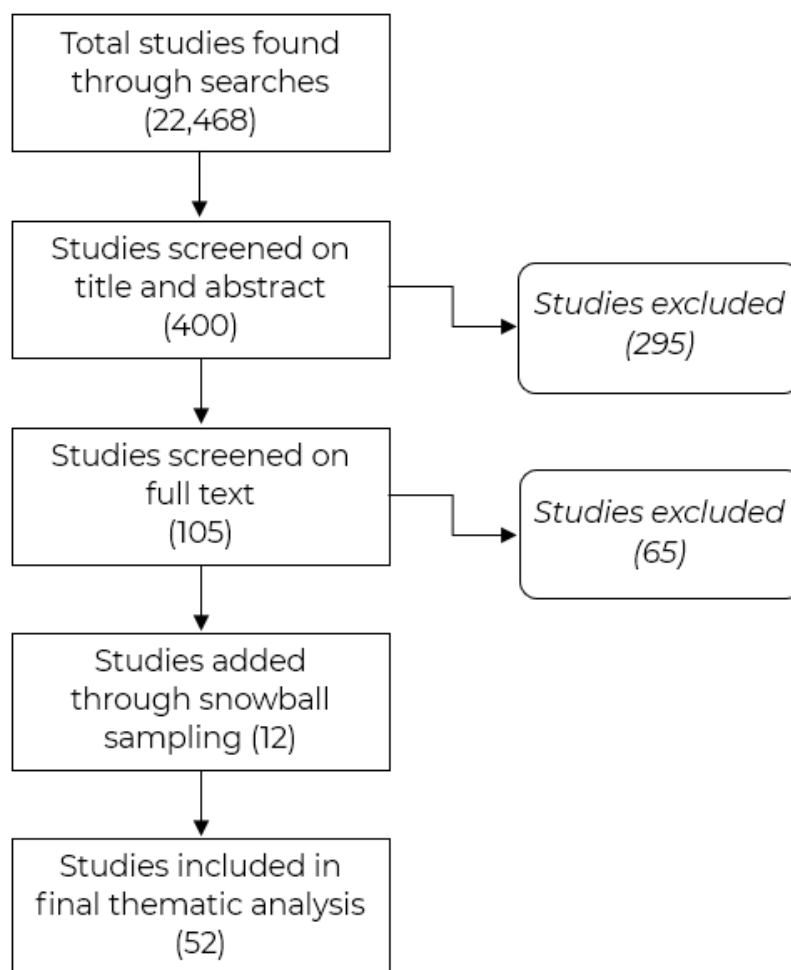
Criterion type	Inclusion criteria
Focus demographic	Students with SEND
Education level	Pre-school, primary, secondary, tertiary
Geography	Southeast Asian countries
Literature type	All
Date range	2009–2024

The range of the disabilities included in this research was initially limited to what was covered in literature discovered through the searches within the more general literature search on SEND. This search and screening

process surfaced 18 papers which fell into thematic categories aligned with cognitive and learning disabilities. These papers largely discussed autism, ADHD, and dyslexia within an education context, as well as how inclusive education practices can provide a better learning experience for learners with these disabilities. The importance of these thematic categories led us to expand our searches to include specific research on some of the more prevalent cognitive and learning disabilities, namely dyslexia, dysgraphia, dyscalculia, and Down syndrome.

These additional targeted searches led to more specific clinical and medical articles besides those from the education sector, so the inclusion criteria have limited our scope to research including a specific EdTech component. Of course, there are likely to be many more articles with less emphasis on education or technology that might be relevant to a more far-reaching review. However, we have opted for a more limited scope for this RER.

[Figure 1](#) below shows the total number of papers included and excluded in each stage. The initial total number of papers screened included studies on all disabilities, including cognitive and learning disabilities, and the numbers *after* full-text review reflected studies on cognitive and learning disabilities only.

Figure 1. Literature search and screening process

1.9. Limitations

Some limitations to this review stem from the rapid time frame and the nature of available evidence. These are listed below.

1.9.1. Limited availability of data

This review highlights a research gap in the evidence base on EdTech and education for learners with SEND in the Southeast Asian region. Much of the literature examined evaluates an example of EdTech in one specific setting. In addition, some of the methodologies in the papers reviewed lacked rigour — while the titles and abstracts may have demonstrated the necessary relevance captured initially, the reports often proved to be of poor quality. These reports were therefore filtered out only after the full text had been read. Most of the literature also lacked detailed case studies, thus limiting the number of such discussions in the analysis

section of this RER. Furthermore, due to the academic nature of publications on Google Scholar, the available literature mainly focuses on the viewpoints of teachers, learners, parents, and policymakers. This means that information from other stakeholders, such as technologists and non-governmental organisations, which tends to be found in grey literature, is beyond the scope of the RER.

1.9.2. Inclusion of all eligible countries

Research gaps are more apparent in some countries than others. For example, a large proportion of the literature selected for this RER concerns Indonesia, while suitable literature for other countries, such as Brunei, was not found. EdTech initiatives exist in other Southeast Asian countries, but the data available for them is not presented in a format that meets our inclusion criteria (e.g., web pages). This means that our discussion is not applicable to the region as a whole, and this gap in country data further highlights the need for more research.

1.9.3. The search and inclusion strategy

An inherent limitation of the RER is that the search and inclusion strategy is not, by design, exhaustive. Therefore, not all relevant literature may have been located and included.

2. Systematic review and thematic analysis

This section covers the primary analysis and synthesis of the literature surfaced through the search, discovery, and screening process. We present the findings in four themes, with analytical categories discussing recurring topics in each theme.

2.1. Cognitive disabilities

The [IRIS Center \(no date, paragraph 1\)](#) defines characteristics of significant cognitive disabilities as having *“one or more disabilities that significantly affect[s] [a learner’s] intellectual functioning and adaptive behaviour (e.g., social skills, activities of daily living).”*

As such, and in contrast to the learning disabilities discussed below, which generally characterise learners in mainstream schooling, students with significant cognitive disabilities often require extensive and individualised accommodations and support. However, several cognitive disorders occur on a spectrum, thus affecting a student’s ability to function independently to varying degrees and influencing the level of support required. It is therefore important to be aware of the spectrum of disabilities characterised in this category.

The umbrella term ‘cognitive disability’ covers a broad range of disorders and conditions, such as Autism Spectrum Disorder, Down syndrome, and ADHD, to name but a few. Given the scope of this study, we explore a subset of three of the conditions below.

2.1.1. Autism

Autism, also sometimes referred to as Autism Spectrum Disorder, is defined by the Autism Research Institute as a development disorder with two main symptom areas: *“deficits in social communication and interaction [and] restricted, repetitive behaviours, interests, or activities”* ([Autism Research Institute, no date, paragraph 3](#)). It has the same rate of prevalence in Southeast Asia as elsewhere in the world (0.6%), but rates of diagnosis and levels of support available vary by country and within countries, depending on factors such as rurality.

Teacher knowledge and attitudes

Surveys of teachers in Indonesia found that teachers generally lacked knowledge about autism or had incorrect information about the condition. One survey of 180 early childhood teachers in Central Java, Indonesia, revealed that 88% of teachers surveyed had little knowledge or understanding about autism and its characteristics. Those who did report some knowledge about autism shared that they obtained information through mass media rather than professional development resources ([↑Budiyanto, et al., 2020](#); [↑Kristiana & Widayanti, 2015](#)). Some respondents noted that further training opportunities would be welcome ([↑Budiyanto, et al., 2020](#)). Likewise, a survey of 404 teachers (of whom 100 had a degree in special education) across Bangkok, Thailand, and a research report in Laos highlighted the need for adequate teacher training and teachers with specialised skills ([↑Fielding, et al., 2017](#); [↑Little, et al., 2014](#)). Importantly, however, decision-makers should consider how training is delivered to ensure proper uptake and implementation. In Cambodia, although short courses on autism were delivered by the National Institution of Special Education and several non-governmental organisations, only a few teachers accessed these resources ([↑Rose, et al., 2023](#)).

Parental knowledge and attitudes

A study on autism services and support in Singapore revealed that despite significant progress in services for individuals with autism over the past 20 years, more work is needed to equitably provide parents with the necessary information and support. The study revealed that although some parents appeared knowledgeable about the condition and resources available, parents who were less educated or did not speak English may struggle to reach similar levels of understanding and access ([↑Han, et al., 2021](#)).

Ethnographic interviews of Vietnamese parents of children with autism found that some parents were sceptical about the effectiveness and/or safety of the available intervention programmes. They faced a lack of understanding from the public about their children's condition (and therefore were met with blame for their children's behaviour), felt professionals themselves lacked knowledge about autism, and expressed concerns about teacher attitudes and their children's isolation in regular schools ([↑Hoang, 2017](#)).

Access to services

In Cambodia, a 2023 analysis found that limited expertise, facilities, and services were available to support people with autism. Improved

equitable access to specialist schools across urban and rural schools is a critical need, although access to support is limited even in urban areas ([↑Rose, et al., 2023](#)). In Singapore, despite efforts to increase the physical accessibility of services via transportation, distance continues to be a challenge for some families ([↑Han, et al., 2021](#)). Distance was also a cited barrier to service access in Vietnam, with some parents noting that centres that provided more comprehensive services were further away and therefore required more time and resources ([↑Hoang, 2017](#)).

Promising programmes

In Depok, Indonesia, the Rumah Autis Depok institution is an initiative designed to provide comprehensive support to individuals with autism and create a more inclusive environment where everyone can thrive ([↑Ayuningtyas, et al., 2022](#)). The programme includes tailored, specialised education and therapeutic interventions as well as vocational training and employment opportunities. These aim to enhance the overall well-being and community inclusion of individuals on the autism spectrum. It also provides services and resources to better equip families to care for their loved ones. Moreover, the programme seeks to foster greater acceptance and inclusion of individuals with autism through awareness campaigns and advocacy efforts. Information on the incorporation of EdTech is limited; however, the programme introduced technology (e.g., WhatsApp, Zoom) during the Covid-19 pandemic to support their daily monitoring activities.

In Malaysia, a user interface design application and augmented reality have been tested ([↑Kamaruzaman, et al., 2017](#); [↑Mahayuddin & Mamat, 2019](#)). The user interface has been designed to help children with autism learn numeracy and includes games for the learners ([↑Kamaruzaman, et al., 2017](#)). Meanwhile, augmented reality is being used on mobile devices to improve literacy and the learning of phonics ([↑Mahayuddin & Mamat, 2019](#)). The results suggest that children with autism respond well to visual and audio elements, including 3D visuals.

Other considerations

[↑Ayuningtyas, et al. \(2022\)](#) noted that when delivering distance learning to children with autism, the development of individualised learning plans was particularly important as they more appropriately accommodated the variety of ways in which children with autism responded to having to learn at home (especially during the disruptive period of the Covid-19 pandemic). Tailoring study schedules this way ensured that every child

could maximise their engagement with distance learning tools ([↑Ayuningtyas, et al., 2022](#)).

2.1.2. Down syndrome

Down syndrome is a genetic condition whereby an individual is born with a partial or complete additional copy of chromosome 21. In addition to differences in physical features, individuals with Down syndrome also face developmental delays and intellectual disabilities (which can vary in severity) as well as increased risk of health conditions such as heart and gastrointestinal disorders ([↑Mayo Clinic, no date](#)). It is one of the most common genetic causes of intellectual disability in children ([↑Boston Children's Hospital, no date](#)).

In Myanmar, one study of 166 children under the age of 16 with Down syndrome found that although 80.7% of children in the study were born in regional hospitals, some parents⁶ remained unaware of Down syndrome until their children were symptomatic ([↑Ko, et al., 2021](#)). Similarly, a study in the Philippines that included 16 parents of children with Down syndrome found that parents lacked information about the condition from their medical providers. Most parents noted that they did not receive additional information about Down syndrome following their child's diagnosis, either via a prenatal screening test or at birth ([↑De Castro-Hamoy, et al., 2022](#)).

Several studies of children with Down syndrome in the Philippines focused on the experiences and well-being of caregivers. In general, parental reactions to their child's diagnosis were negative, ranging from grief, anger, anxiety, and denial to frustration ([↑De Castro-Hamoy, et al., 2022](#); [↑Masanda & Masanda, 2019](#)). Cultural factors also came into play, with some families viewing having a disabled child as a punishment, while others viewing it as lucky ([↑Carandang, 2004](#), as cited in [↑Masanda & Masanda, 2019](#)). However, shifts in appraisal systems (e.g., learning more about the condition) and appropriate coping mechanisms (e.g., seeking social support through family and friends) were found to alleviate some of these initial negative responses.

Finally, caregivers in both Myanmar and the Philippines expressed concerns about access to services. Barriers to service access in Myanmar included location, with those in rural areas facing more significant challenges, as well as financial and social difficulties ([↑Ko, et al., 2021](#)). In

⁶ Most caregivers in the study had received a middle-school level of education; half had graduated from higher education.

the Philippines, parents also expressed financial concerns, with some parents noting that financial support for services such as therapy sessions was inadequate ([↑De Castro-Hamoy, et al., 2022](#)).

Promising programmes

In Indonesia, an application called ‘Mathema’ was developed to help children Down syndrome learn mathematics ([↑Amatullah & Annisi, 2023](#)). The application is for mobile phones and can be used offline. Results indicate that the learners with Down syndrome were able to understand the concepts being taught and that the use of visual features enabled them to learn for longer. The following example from Spain highlights an innovative EdTech intervention designed for learners with Down syndrome, that had a significant impact on their motivation and communication skills.

Figure 2. *EdTech interventions for learners with Down syndrome in a global context*

In Spain, an educational video game was designed to help children with Down syndrome learn communication skills ([↑González-Ferreras, et al., 2017](#)). Results suggest that both participants and professionals approve of the game. Teachers reported that learners remained focused on the game and were motivated to play. There is also some indication that pronunciation improved due to playing the game.

2.1.3. ADHD

ADHD is a “developmental neurological disorder that has three basic characteristics: attention deficit, hyperactivity, and impulsivity” ([↑Salari, et al., 2023](#), paragraph 1). Global estimates of ADHD prevalence are between 5% and 7.6% of children and youth ([↑Abdelnour, et al., 2022](#); [↑Salari, et al., 2023](#)). It is “one of the most frequent neurodevelopmental disorders in childhood and adolescence, which is typically first diagnosed in childhood and often persists into adulthood” ([↑Salari, et al., 2023](#), paragraph 5).

Although the overall prevalence of ADHD in Southeast Asia has not been identified, one study estimated prevalence at 7.7% among primary school children in South Vietnam, with a prevalence level in urban areas 2.2 times that of rural areas ([↑Pham, et al., 2015](#)). Another study of 7,188 Thai students in Grades 1–5 estimated a national prevalence rate of 8.1%, with higher rates for boys (12%) than girls (4.2%) ([↑Weerakul & Patigburt, 2023](#)).

Taken together, the rates from these two studies match the overall levels of ADHD globally.

Studies in Southeast Asia suggest a need for greater awareness about the condition. A case study in Indonesia found that across 38 elementary school teachers, most had no to low knowledge of ADHD. Of the teachers who had an awareness of ADHD, most could only provide general characteristics of the condition ([↑Hapsari, et al., 2020](#)). Similarly, a study of two primary schools in a rural community in central Thailand found that the 12 teachers interviewed were aware of the condition from their professional development but did not know how to apply that knowledge and thus differentiate symptoms of ADHD from typical behaviour. The eight caregivers interviewed were unaware that ADHD was a condition; some felt that their child's behaviour was normal, while others perceived characteristics such as naughty, forgetful, agitated, or slow. The local health centre was also unable to diagnose or treat ADHD, with both teachers and caregivers unaware of treatment options. ([↑Sakboonyarat, et al., 2018](#)).

[↑Hata, et al. \(2023\)](#) claim that there is a lack of assistive technology for children with ADHD in Indonesia. One school reported using a limited number of audiobooks, but others described sending the learners to a separate resource room rather than using assistive technology in the classroom. The lack of initiatives suggests that further work is needed to examine the potential of using technology to improve the learning of children with ADHD.

Figure 3. *EdTech interventions for learners with ADHD in a global context*

International practices for using EdTech to support students with ADHD include using timers to help learners maintain their focus, mobile apps to help with setting deadlines, and computer-based training to meet individual needs. [↑Hata, et al. \(2023\)](#) argue that timers are low-tech and easily accessible and could thus be beneficial in low- and middle-income country contexts where there may be a barrier to accessing more high-tech solutions.

2.2. Learning disabilities

'Learning disabilities' is a general term covering a range of neurodevelopmental conditions that affect learning. Learners with learning disabilities may have cognitive disabilities or other kinds of impairment; however, these are not the same thing, and learning

disabilities are not considered a consequence of these conditions ([↑Learning Disabilities Association of America, 2012](#); [↑Swanson, 1991](#)).

Because learning disabilities are so varied, it is impossible to cover them all in this review. Based on the available literature, we cover several more common or commonly known learning disabilities in the following sections. These include dyslexia, dysgraphia, and dyscalculia.

2.2.1 Dyslexia

One of the most common learning disabilities affecting learners is dyslexia. The [↑International Dyslexia Association, \(2002, paragraph 1\)](#) defines dyslexia as

“a specific learning disability that is neurobiological in origin. It is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities.”

Statistics about the overall prevalence of dyslexia in Southeast Asia are unavailable. However, data from the Dyslexia Association of Singapore suggests that dyslexia affects up to 10% of students in Singapore [↑Chiao-Yi \(2022\)](#), and [↑Balakrishnan, et al. \(2016\)](#) estimate that there were some 314,000 Malaysian students with dyslexia in 2010, rising to 400,000 in 2013.

Linguistic diversity

A key aspect of dyslexia in Southeast Asia is the linguistic diversity prevalent in the region. With hundreds of languages spoken, each with a distinct script and phonetic system, dyslexia manifests differently across various linguistic backgrounds, and interventions must be tailored to accommodate linguistic differences ([↑See & Koay, 2014](#)). Additionally, a learner’s mother tongue can influence their pronunciation of the language they are learning ([↑Balakrishnan, et al., 2016](#)), presenting further challenges for learners who struggle with phonology and decoding. Additional research is therefore needed to enable practitioners to determine the most suitable diagnostic tools and support.

Societal attitudes to dyslexia

Socio-cultural factors play a significant role in shaping attitudes to dyslexia and access to resources for individuals affected by the condition, with studies in Malaysia and Thailand revealing generally negative perceptions and misconceptions of dyslexia ([↑Fawcett, 2022](#); [↑Lerthattasilp,](#)

et al., 2022; ↑Oga & Haron, 2012). Stigma and misconceptions surrounding dyslexia often hinder early identification and support (↑Mather, et al., 2020), which is problematic as research has shown early intervention to be critical to students' academic and future success. This research points to the importance of dyslexia advocacy and education, which technology could support.

Education system structures

At the school and education system levels, challenges remain in addressing the needs of students with dyslexia. Entrenched teaching practices in some Thai schools, such as an emphasis on rote memorisation, pose challenges for individuals with dyslexia, especially as attention to individual learners' needs is limited (↑Maneeratanayon, et al., 2022). In Malaysia, some of the challenges identified by ↑Balakrishnan, et al. (2016) include a lack of suitable materials, particularly in English. They found that most English language learning materials for children with dyslexia were from the UK and unsuitable for the local context due to phonological differences between the way Malaysians and British speakers pronounce English words. The authors thus advocate for using culturally responsive approaches, including a framework for designing multimedia tools. Promisingly, they also identify several ICT or multimedia resources used to support students with dyslexia and the potential for their use in Malaysia. These examples suggest the importance of considering the education system as a whole when making policy and practice changes to support students with learning disabilities.

Research and interventions

Despite the challenges listed above, there have been recent efforts to raise awareness and develop interventions tailored to the region's needs.

In Thailand, there is growing recognition of the importance of diagnosing and addressing dyslexia early to ensure that learners do not fall behind on key literacy milestones (↑Lerthattasilp, et al., 2022).

Research on dyslexia in Indonesia has also gained momentum, reflecting growing recognition of the disorder's impact on educational outcomes. Scholars such as ↑Putri, et al. (2020) have investigated the prevalence and characteristics of dyslexia among Indonesian students, shedding light on how learners can be identified and included within the educational system. Additionally, studies like ↑Suryanto & Akhadiah (2019) explore effective interventions tailored to Indonesian learners to improve literacy skills and academic performance, including through phonology-based

instruction ([Novianti, et al., 2019](#)). These efforts signify a crucial step towards understanding and addressing challenges in supporting students with dyslexia in Indonesia.

In Malaysia, a checklist was developed in 2001 to screen Standard 1 children (i.e., at the primary school level) for the condition. The Specialist Teacher Training College in Kuala Lumpur offers courses on special educational needs, including dyslexia, and a handful of local universities have started offering courses on dyslexia to increase awareness of the condition and to train teachers. Since 1995, the Kuala Lumpur Dyslexia Association and the Bureau of Learning Disabilities in Penang have also conducted seminars, workshops for the community, diagnostic assessments, and tutoring support for learners with dyslexia ([Gomez, 2004](#)).

EdTech interventions

Despite the efforts mentioned above, however, there are few structured interventions focusing on literacy over cognitive skills. Traditional teaching methods often fall short, prompting exploration of EdTech solutions. EdTech interventions and multisensory teaching approaches show potential, although further research on their efficacy and cultural suitability is imperative ([Yuzaidey, et al., 2018](#)). Promisingly, initiatives like computer-based multisensory learning and video games have demonstrated positive impacts on reading proficiency and attention skills among Malaysian dyslexic children, warranting further exploration and integration into educational practices ([Kast, et al., 2011](#); [Yuzaidey, et al., 2018](#)).

Another study in Malaysia used tactile letters to teach the alphabet via an interactive iPad app, with students practising letter names and pronunciation in a gamified format. Researchers found promising results in this small study of four children, including improvements in letter reversals ([Mohamed & Tan, 2017](#) as cited in [Lynch, et al., 2022](#)).

During the Covid-19 pandemic, some children with learning disabilities, including dyslexia, were taught online. In Indonesia, some children used technology such as WhatsApp, Zoom, and Sway (Office 365) ([Rachmawati, et al., 2022](#)). One student with dyslexia said they rely on their teacher to explain the lesson slowly as they sometimes struggle to type the Zoom address correctly, suggesting the technology made learning more difficult for the learner. Meanwhile, another learner interviewed stated that they enjoyed watching the videos used during online teaching.

All in all, research on dyslexia and related learning difficulties shows significant awareness at the research and policy levels about supporting learners with these disabilities. However, gaps remain in practical implementation and identification, as the disabilities continue to be stigmatised as representative of unwillingness to learn instead of being accepted as specific learning challenges. EdTech measures to aid learning for those with dyslexia show promise, and this potential is starting to be integrated into regional teaching practices.

2.2.2 Dysgraphia

Dysgraphia is to writing, what dyslexia is to reading, with the attendant difficulties in decoding, interpreting, and producing written work. While dysgraphia has not been studied as widely as dyslexia in Southeast Asia, some initial research has begun, with foundational work, such as localising metrics, standards, and assessment tools representing a first step. For example, in [Thichanpiang, et al. \(2022\)](#), the development of a Thai-language dysgraphia assessment tool is a notable step towards appropriate localisation of an international assessment tool known as the Handwriting Proficiency Screening Questionnaire (HPSQ). This study aimed to translate and adapt the HPSQ for use in Thailand, aligned with the World Health Organization's protocol for translation and adaptation. [Thichanpiang, et al. \(2022\)](#) also assessed the internal consistency, validity, and reliability of the Thai version of HPSQ, aiming to facilitate its use by occupational therapists and teachers in evaluating handwriting proficiency among Thai school-aged children.

2.2.3 Dyscalculia

Dyscalculia is defined as a *“learning disorder that affects a person’s ability to understand number-based information and mathematics”* ([Cleveland Clinic, 2022](#), paragraph 2). Unfortunately, limited information is available on the prevalence of dyscalculia in Southeast Asia or the kinds of support provided to learners with this learning disability.

One study in Taskimalaya, Indonesia⁷ suggests that students identified with this condition are not well-supported, have a poor overall learning experience, and poor learning outcomes. Students across Grades 4 to 6 at four inclusive schools (i.e., schools where students with disabilities are accepted into public schools and placed in classrooms with students without disabilities) were included in this study. Researchers found that most of the study schools lacked specialised teachers to provide support

⁷ A city in West Java, Indonesia

to students with cognitive and learning disabilities, and most mainstream classroom teachers had no training in supporting students with these disabilities. They found that students were overwhelmed, less engaged with the content, and had low levels of participation overall. Additionally, students were unable to complete assessment tasks such as addition, subtraction, multiplication, and division of numbers less than 25, sorting numbers, and understanding logical operator signs (> and <) ([↑Ratnaningsih, et al., 2019](#)).

According to the study, education systems must evaluate the breadth of special education needs in their student population and the corresponding structural supports. Additionally, although inclusive education is broadly considered a good practice for supporting students with learning disabilities, structural support and appropriate teacher training are critical if students are to benefit from it. More is needed to ensure that educators in these schools have the necessary tools and skill sets to support a student body with diverse learning needs.

Figure 4. *EdTech interventions for learners with dyscalculia in a global context*

In Australia, an adaptive digital game was piloted to test if it helps children, including those with dyscalculia, learn basic mathematics ([↑Laurillard, 2016](#)). Results indicate that the game has the potential to help learners aged 5–7 learn independently. Independent learning is essential for these learners because they may need more time to understand a concept. Not only did the game increase learning independence, but the learners also reported that they enjoyed playing it, emphasising how much fun it was.

2.3. Inclusive education

One of the cornerstones of educational provision for learners with SEND, particularly those with cognitive and learning disabilities, is ensuring that learners are not forced to adapt to the system. Rather, the education system should adapt to the needs of learners and include all learners. This ensures that disabilities are not stigmatised and promotes the diversity of all learners, which is particularly important as greater understanding of cognitive disabilities and neurodivergence emerges.

An inclusive education system is defined as “one that caters to all students, regardless of their abilities or needs, across all levels” ([↑UNICEF, 2017](#)). The foundational concept of inclusive education emphasises the diversity of all individuals, not solely those with disabilities. It advocates for the belief that children with disabilities can effectively learn within

mainstream schools when the entire system has been adapted to accommodate the needs of all children.

Inclusive education includes providing support for access to learning and creating a safe, comfortable and learner-friendly environment for all students, including those with special educational needs ([↑Asri, et al., 2021](#), p. 1064). The success of inclusive education requires 'shadow teachers' who help the main teacher in the classroom, caregiver involvement ([↑Sholikhati, et al., 2021](#)), social interaction, and support from all schools ([↑Chan & Yuen, 2015](#) as cited in [↑Asri, et al., 2021](#), page 1065).

2.3.1. Technology change

This section discusses the evolution of EdTech within inclusive education, highlighting technologies used in the past and current practice. Literature on the use of technology with students with SEND during the Covid-19 pandemic highlights the need to ensure teachers are adequately trained to navigate and incorporate the technologies into their practice; and in particular, to meet the unique learning needs of students with cognitive and learning disabilities. [↑Rachmawati et al.'s study \(2022\)](#) mentions that online distance learning became the main way of sustaining student learning, including for students with SEND during the pandemic. However, teachers found lesson preparation a challenge since they had not received prior training on using assistive technology devices ([↑Sholikhati, et al., 2021](#)).

The literature points to various inclusive online applications and innovations tailored for learners with different cognitive and learning needs. These include quizzes and word walls that gamify the learning experience and present information in novel ways ([↑Hata, et al., 2023](#)). The use of videos, including from YouTube, and audio resources, in a way that allows learners to repeat, skip, or slow down different learning sessions can be particularly beneficial ([↑Hata, et al., 2023](#); [↑Sholikhati, et al., 2021](#), [↑Yunita, et al., 2021](#)). In addition, the increased use of video-conferencing during the Covid-19 pandemic through apps such as WhatsApp and Zoom has helped to ensure learners with cognitive and learning disabilities can have frequent touchpoints to stay on track, even when learning remotely ([↑Dianito, et al., 2021](#); [↑Sholikhati, et al., 2021](#)). Additionally, the benefits of transcripts and subtitles (and even translation) in such applications allows not just learners with cognitive and learning disabilities, but all learners to engage more fully and review key interactions for learning repetition. These examples demonstrate how new and existing apps and platforms can be leveraged to meet the needs

of learners with cognitive and learning disabilities. While these tools and apps are not necessarily always innovative, the research indicates how teachers and learners can appropriate ubiquitous platforms as an easily accessible means of reaching learners with different needs.

2.3.2. Effectiveness of solutions

The types of EdTech intervention discussed in the literature demonstrate varying levels of effectiveness in supporting learners with cognitive and learning disabilities. For instance, hybrid learning models incorporating online platforms like WhatsApp, Zoom, and Sway have been instrumental in providing flexibility and adaptability in instruction delivery, particularly for children with cognitive and learning disabilities in inclusive settings ([↑Rachmawati, et al., 2022](#)). In Indonesia, video-calling platforms such as Zoom have been commended for allowing teachers and learners to interact with each other during the Covid-19 pandemic ([↑Sholikhati, et al., 2021](#)). Furthermore, WhatsApp was shown to be an effective choice in Indonesia as it allows for communication with the learners' caregivers and is also a tool familiar to many before the pandemic ([↑Sarwendah, et al., 2023](#)). Clear instructions tailored to the diverse needs of learners, assistance from caregivers, and the use of multimedia learning materials have been highlighted as facilitating factors contributing to the success of hybrid learning approaches ([↑Rachmawati, et al., 2022](#)). Despite the number of papers addressing this topic and the range of innovations they highlight, none of the papers emerging from the literature discovery process provided any rigorous empirical evidence about the effectiveness of EdTech solutions for learners with cognitive and learning disabilities. This is disappointing for comparative analysis and indicative of the relative immaturity of this area. However, the number of papers on the topic demonstrates a promising level of interest in researching cognitive and learning disabilities and the role of inclusive education. While current research on the subject remains nascent, the number of researchers engaged with it shows it is an active and diverse area of enquiry.

2.3.3. Other EdTech interventions

Some of the literature found through our searches used general terms to describe disability and did not always specify which learning or cognitive disability a given intervention was designed for. This means that not all of the literature was clear about how the interventions were adapted to specific needs.

Many papers describe how children with cognitive and learning disabilities were taught during the Covid-19 pandemic. Referring to primary school in Indonesia, [↑Asri, et al. \(2021\)](#) specify some cognitive and learning disabilities, such as dyslexia and ADHD, but also use the terms 'slow learner' and 'learning disability'. The authors state that the learners in the school were assigned work through WhatsApp with parental help during the pandemic. Furthermore, [↑Sholikhati, et al. \(2021, p. 146\)](#) note that children with disabilities, described as children with physical, mental, social and emotional "*limitations*", were taught the Indonesian language through visual, audiovisual, and multimedia. The authors argue that more interactive media produced better learning outcomes.

2.4. Barriers to using EdTech

Barriers to using EdTech for learners with cognitive and learning disabilities are always complex and multifaceted. The ability of learners with cognitive and learning disabilities to express and advocate for their needs may be more limited than for learners with physical impairments ([↑Asri, et al., ~2021](#); [↑Dianito, et al., 2021](#); [↑Hata, et al., 2023](#); [↑Rachmawati, et al., 2022](#)). A significant obstacle is the indiscriminate use of assistive technologies (AT), which may only cater to the needs of learners with hearing or visual impairments ([↑Dianito, et al., 2021](#)). In addition to issues such as poor user interfaces, unreliable internet connectivity or social and financial constraints may disproportionately affect the use of EdTech by learners with cognitive and learning disabilities ([↑Dianito, et al., 2021](#)).

Infrastructure challenges, including inaccessible facilities, lack of teacher training, and insufficient funding, can exacerbate disparities in access to resources and support for students with cognitive and learning disabilities in Southeast Asia ([↑Hata, et al., 2023](#)). In Indonesia, for example, [↑Hata, et al. \(2023\)](#) attribute these problems to a lack of government support and argue that the central government believes that teachers themselves can overcome any issues with assistive technology. However, if teacher training remains poor, teachers will struggle to implement the technology effectively.

For schools and learners at home, the infrastructure cost can also be a barrier to accessing EdTech. Acquiring assistive technology is expensive for schools ([↑Lersilp, et al., 2018](#)). In the case of learners, [↑Asri, et al. \(2021\)](#) found that some Indonesian learners with cognitive and learning disabilities, including autism, dyslexia, and ADHD, could not afford the technology required for distance learning during the Covid-19 pandemic. Some learners could not access teaching conducted via phones, and

families struggled with the cost of paying for internet connectivity and data. Learners with cognitive and learning disabilities in the Philippines also struggled with access to internet connectivity during the pandemic, as did children living in mountainous areas in Indonesia ([↑Manguilimotan, et al., 2022](#); [↑Yunita, et al., 2021](#)). All learners could face these issues, but the problems for children with disabilities are further compounded.

Our research indicates that much work is needed around the provision of adequate information for caregivers and families on how best to care for their children's unique learning needs ([↑De Castro-Hamoy, et al., 2022](#); [↑Han, et al., 2021](#); [↑Ko, et al., 2021](#)). For parents and caregivers to make informed educational decisions for their children, including when and how EdTech could best be used, governments, teachers, and medical professionals must be better placed to provide the best counselling for families.

3. Synthesis and conclusion

This section synthesises the themes and subthemes covered in this rapid review and highlights the four key findings from the main discussions in the previous section.

Key Takeaway 1

More research is required to determine the most effective EdTech interventions for the varied learning and socio-emotional needs of learners with cognitive and learning disabilities. We also need further research on how to implement these interventions with fidelity and tailor them to the Southeast Asian context.

Learners with cognitive and learning disabilities have a wide range of needs, which vary in severity and the type of support needed. Even learners diagnosed with the same condition (e.g., Autism Spectrum Disorder) can require extremely diverse types or levels of intervention. In order to facilitate learning and inclusivity, accommodations and interventions must be tailored to specific learner needs. Consideration should also be given to the intersections of marginalisation (e.g., SEND and girls, SEND and location, SEND and SEND etc.).

Therefore, when conducting targeted research, researchers should identify or reference specific disability types and needs rather than grouping learners into a broad category (e.g., cognitive disability). This will enable practitioners to better identify what works for specific disabilities and incorporate the corresponding interventions into tailored support plans for learners with SEND.

Additionally, there is a shortage of research on social inclusion and the best ways to facilitate socio-emotional development in learners with cognitive and learning disabilities. More research is needed on how EdTech may help or hinder learners' development in these areas.

Finally, research should consider the learner user experience, ensure that interventions are culturally and contextually appropriate, and include considerations of cost-effectiveness, given that financial considerations are often a barrier to access.

Key Takeaway 2

More data is needed on learners with cognitive and learning disabilities in Southeast Asia; this is particularly crucial to determine the appropriate allocation of resources. The cost of EdTech interventions and attendant infrastructural and systemic enablers is often prohibitive. Examples of the kind of data needed include information on the process for appropriate identification of disabilities, barriers to identification, the number of students with specific disabilities, and any variation in the concentration of students across schools, districts, or regions. EdTech may be particularly useful for the collection of such data. Further information will allow for targeted interventions, but must be updated regularly to ensure that the right learners are accessed.

When considering the cost-effectiveness of interventions, policymakers and practitioners should also note that accommodations for students with cognitive and learning disabilities can often support other students in the classroom, including students who struggle academically but do not have a disability as such. To determine this, it may be beneficial to pilot interventions in inclusive schools so that their impact on all students can be examined.

Key Takeaway 3

For learners with cognitive and learning disabilities to succeed, education systems need to be set up to be adaptive to learners' learning needs. This includes having schools that cultivate a culture of inclusivity across learners and staff and have adequately resourced and trained teachers and teaching aids. In particular, teachers need to be able to identify students who may require testing and accommodation and adapt curriculum and lesson plans to meet student needs. Teachers will likely require training on how to achieve this. Furthermore, teacher perception and beliefs about students with cognitive and learning disabilities are often correlated with student achievement, and successfully teaching students in a classroom with diverse needs requires a high level of experience and proficiency. Thus, education systems need to embed teacher training related to students with cognitive and learning disabilities in pre- and in-service training to instil an inclusive culture and growth mindset across the system. Training should include teaching children with disabilities and making them feel like they belong and are empowered to achieve academic success. A point of contact who can

address follow-up questions from school staff throughout the school year may also be helpful.

Key Takeaway 4

Supporting learners with cognitive and learning disabilities requires a multifaceted, holistic approach. In particular, education and healthcare systems should strive to think holistically about how learners and their caregivers interact across the system, what set of experts are necessary, and the appropriate role of EdTech given a learner's varied and intersectional needs. Countries may consider analysing policy and practice to identify gaps and areas for change. Changes could include working collaboratively with other ministries (e.g., ministries of health) to ensure that learners have the right health and psychological support and can work with appropriate experts to develop personalised learning intervention plans. Collaborative work should include the development of coherent policies and implementation plans across the relevant ministries or departments. Such collaboration would ensure that the use of EdTech is streamlined, user-friendly, and meets all the needs of the children (rather than using EdTech as a one-size-fits-all approach). Education and healthcare systems must strive to think holistically about how children and their caregivers interact across the system and the appropriate role of EdTech, considering each child's varied and intersectional needs.

Key Takeaway 5

Caregivers play a crucial role in their children's education. EdTech could be leveraged to provide caregivers with the necessary information and support. Research has consistently shown that parental engagement is positively associated with student learning outcomes and that providing parents with education and support is positively associated with child development outcomes ([↑Nicolai, et al., 2023](#)). However, many caregivers of Southeast Asian children with cognitive and learning disabilities require further information about their children's conditions and how best to support them. Technology could be a key facilitator for disseminating this information, just as mobile phones have been effective for communicating other health information. However, more research is required to understand how caregivers of learners with cognitive and learning disabilities could be best supported through the use of technology. For example, since caregivers may not have access to the required technology, it is essential to provide other options for disseminating information or existing inequalities could be exacerbated.

As with the use of EdTech in schools, we recommend cost-effectiveness analysis to establish the feasibility of using technology for this purpose. Appropriately designed, technology could be a key facilitator for disseminating information, with global research suggesting potential positive learning outcomes for learners with SEND. The following examples highlight the significance of EdTech in supporting caregivers, demonstrating how interactive modalities and campaigns have resulted in effective engagement (see [Figure 5](#)).

Figure 5. *Educational technology to support caregivers*

A 2023 background paper on EdTech and parental engagement prepared for the UNESCO Global Education Monitoring Report found a range of technology-based interventions helped parents obtain information and skills. The interventions had a wide range of modalities, including “mobile apps, online resource hubs, blended learning, WhatsApp messages... [and] digital devices via Open Educational Resources (OER)” (†Nicolai, et al., 2023, p. 18). The report also highlights information campaigns targeting various audiences, such as parents or the general public; the goal was to increase knowledge and to try to shift attitudes. Technology-based formats included the use of “social media, websites, radio and video channels [...]cover[ing] a broad range of topics” (†Nicolai, et al., 2023, p. 20). These interventions targeted parents and learners more generally, and were not specific to learners with cognitive and learning disabilities and their needs. However, the broadly positive responses suggest that the strategies used could be adapted and tested for learners with SEND and their caregivers.

To effectively support learners with cognitive and learning disabilities, governments must prioritise education interventions and advocacy to reduce stigma and misconceptions while increasing access to resources and appropriate accommodations. Implementing effective education and communication campaigns are potential methods for information dissemination. Additionally, evidence-based strategies, such as incorporating behavioural science principles, could be tested and used to enhance the effectiveness of these efforts at various educational levels and modalities.

Bibliography

These references are available digitally in our evidence library at <https://docs.edtechhub.org/lib/HD58IXI3>

**Denotes literature that provides context but not examined as part of the rapid evidence review.*

*Abdelnour, E., Jansen, M. O. & Gold, J. A. (2022). ADHD diagnostic trends: increased recognition or overdiagnosis? *Missouri Medicine*, 119(5), 467. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9616454/>. (details)

*ADA Site Compliance. (2021). *Guide to Cognitive Disabilities*. <https://adasitecompliance.com/guide-to-cognitive-disabilities/>. (details)

Amatullah, F. H. & Annisi, M. P. (2023). The “*MATHEMA*” application as a mathematics learning media for children with Down syndrome. *Journal of ICSAR*, 7(2), 321–329. <https://doi.org/10.17977/um005v7i22023p321>. Available from <https://core.ac.uk/reader/578581375>. (details)

Asri, D. N., Cahyono, B. E. H. & Trisnani, R. P. (2021). Early reading learning for special needs students: challenges on inclusive primary school during COVID-19 pandemic. *Linguistics and Culture Review*, 5(S1), 1062–1074. <https://doi.org/10.21744/lingcure.v5nS1.1489>. Available from <http://lingcure.org/index.php/journal/article/view/1489>. (details)

*Autism Research Institute. (no date). What is Autism? *Autism Research Institute*. Retrieved April 29, 2024, from <https://autism.org/what-is-autism/>. (details)

Ayuningtyas, F., Sevilla, V. & Uljanatunnisa, U. (2022). How to manage distance learning for children with autism during the COVID-19 pandemic at Rumah Autis Depok, Indonesia? *International Journal of Multicultural and Multireligious Understanding*, 9(1), 304–315. <https://ijmmu.com/index.php/ijmmu/article/view/3373>. (details)

Balakrishnan, B., Chong, H. B., Idris, M. Z., Othman, A. N., Wong, M. F. & Azman, M. N. A. (2016). Culturally responsive multimedia tool framework for dyslexic children in Malaysia: A preliminary study. *Geografia*, 12(3).

<http://journalarticle.ukm.my/9901/1/11x.geografia-si-mac16-bala-edam.pdf>. (details)

*Boston Children's Hospital. (no date). *Down Syndrome*. Retrieved April 29, 2024, from <https://www.childrenshospital.org/conditions/down-syndrome>. (details)

Budiyanto, Sheehy, K., Kaye, H. & Rofiah, K. (2020). Indonesian educators' knowledge and beliefs about teaching children with autism. *Athens Journal of Education*, 7(1), 77–98. <https://doi.org/10.30958/aje.7-1-4>. Available from <http://www.athensjournals.gr/education/2020-7-1-4-Budiyanto.pdf>. (details)

Carandang, M. L. A. (2004). *Self-worth and the Filipino child*. Anvil Publishing. (details)

Chan, T. & Yuen, M. (2015). Inclusive education in an international school: A case study from Hong Kong. *International Journal of Special Education*, 30(3), 86–97. <https://www.internationalsped.com/ijse/issue/view/17/14>. (details)

*Chiao-Yi, W. (2022). *What do we know about Dyslexia in Our Learners*. National Institute of Education (NIE). <https://www.ntu.edu.sg/nie/about-us/programme-offices/office-of-teacher-education/child-and-human-development/special-educational-needs/what-do-we-know-about-dyslexia-in-our-learners>. (details)

*Cleveland Clinic. (2022). *Dyscalculia: What It Is, Causes, Symptoms & Treatment*. <https://my.clevelandclinic.org/health/diseases/23949-dyscalculia>. (details)

*Cleveland Clinic. (no date). *Neurodivergent: What It Is, Symptoms & Types*. Retrieved April 29, 2024, from <https://my.clevelandclinic.org/health/symptoms/23154-neurodivergent>. (details)

*De Castro-Hamoy, L. G., Tumulak, M. J. R., Cagayan, M. S. F. S., Sy, P. A., Mira, N. R. C. & Laurino, M. Y. (2022). Attitudes of Filipino parents of children with Down syndrome on noninvasive prenatal testing. *Journal of Community Genetics*, 13(4), 411–425. <https://doi.org/10.1007/s12687-022-00597-w>. Available from <https://link.springer.com/10.1007/s12687-022-00597-w>. (details)

Dianito, A. J., Espinosa, J., Duran, J. & Tus, J. (2021). A glimpse into the lived experiences and challenges faced of PWD students towards online learning in the Philippines amidst COVID-19 pandemic. *International Journal of Advance Research and Innovative Ideas in Education*, 7(1). <https://doi.org/10.6084/m9.figshare.14033435.v1>. (details)

*Fawcett, A. J. (2022). Dyslexia World-wide: A View of Emerging Themes. In Elbeheri & S. Lee (Eds.), *The Routledge International Handbook of Dyslexia in Education* (pp. 371–385). Routledge. <https://api.taylorfrancis.com/content/chapters/edit/download?identifierName=doi&identifierValue=10.4324/9781003162520-45&type=chapterpdf>. (details)

*Fielding, A., Gillieatt, S., Thoresen, S., Nguyen, L. & Blundell, B. (2017). *Improving Access to Social and Economic Services for People with Disability in Lao PDR* [Policy Research Report]. <https://espace.curtin.edu.au/bitstream/handle/20.500.11937/48802/Fielding,%20A.%202017.pdf?sequence=1>. (details)

*Garritty, C., Gartlehner, G., Nussbaumer-Streit, B., King, V. J., Hamel, C., Kamel, C., Affengruber, L. & Stevens, A. (2021). Cochrane Rapid Reviews Methods Group offers evidence-informed guidance to conduct rapid reviews. *Journal of Clinical Epidemiology*, 130, 13–22. <https://doi.org/10.1016/j.jclinepi.2020.10.007>. Available from [https://www.jclinepi.com/article/S0895-4356\(20\)31146-X/abstract](https://www.jclinepi.com/article/S0895-4356(20)31146-X/abstract). (details)

Gomez, C. (2004). Dyslexia in Malaysia. In I. Smythe, J. Everatt & R. Salter (Eds.), *International book of dyslexia: A guide to practice and resources* (pp. 158–163). John Wiley & Sons. <https://books.google.com/books?hl=en&lr=&id=7IR65J6NfeQC&oi=fnd&pg=PA158&dq=dyslexia+in+malaysia+gomez&ots=szluJVFGwp&sig=qN4eBY6Jd3hz-6GROXohgHJNbxo>. (details)

*González-Ferreras, C., Escudero-Mancebo, D., Corrales-Astorgano, M., Aguilar-Cuevas, L. & Flores-Lucas, V. (2017). Engaging adolescents with Down syndrome in an educational video game. *International Journal of Human–Computer Interaction*, 33(9), 693–712. <https://doi.org/10.1080/10447318.2017.1278895>. Available from <https://www.tandfonline.com/doi/full/10.1080/10447318.2017.1278895>. (details)

*Greer, J., Sood, S. S. M. & Metcalfe, D. (2022). Perceptions of autism spectrum disorder among the Swahili community on the Kenyan

- coast. *Research in Developmental Disabilities*, 131(104370).
<https://doi.org/10.1016/j.ridd.2022.104370>. Available from
<http://www.scopus.com/inward/record.url?scp=85141312875&partnerID=8YFLogxK>. (details)
- *Han, E., Tan, M. M. J., Crane, L. & Legido-Quigley, H. (2021). A qualitative study of autism services and supports in Singapore: Perspectives of service providers, autistic adults and caregivers. *Autism*, 25(8), 2279–2290. <https://doi.org/10.1177/13623613211016112>. Available from <http://journals.sagepub.com/doi/10.1177/13623613211016112>. (details)
- *Hapsari, I. I., Iskandarsyah, A., Joeifiani, P. & Siregar, J. R. (2020). Teacher and problem in student with ADHD in Indonesia: A case study. *The Qualitative Report*, 25(11), 4104–4126.
<https://nsuworks.nova.edu/tqr/vol25/iss11/17>. (details)
- Hata, A., Wang, H., Yuwono, J. & Nomura, S. (2023). *Assistive Technologies for Children with Disabilities in Inclusive and Special Schools in Indonesia*. The World Bank.
<https://documents1.worldbank.org/curated/en/099543306052328820/pdf/IDU01f2788e204497047d60a3ea05db5ca5d1a6b.pdf>. (details)
- *Hennessy, S., Jordan, K., Wagner, D. A. & EdTech Hub Team. (2021). *Problem Analysis and Focus of EdTech Hub's Work: Technology in Education in Low- and Middle-Income Countries* (Working Paper No. 7). EdTech Hub. <https://doi.org/10.5281/zenodo.4332693>. Available from <https://docs.edtechhub.org/lib/PBXBB7LF>. (details)
- *Higgins, J. P. T., Chandler, J., Cumpston, M., Li, T., Page, M. J. & Welch, V. A. (Eds.). (2023). *Cochrane Handbook for Systematic Reviews of Interventions Version 6.4* (updated August 2023). Cochrane.
www.training.cochrane.org/handbook. (details)
- *Hoang, K. M. (2017). *Beyond an Uncertain Future: Vietnamese Parents of Children with Autism Spectrum Disorders and Their Needs for Social Support* [Senior Independent Study Thesis Paper 7870].
<https://openworks.wooster.edu/independentstudy/7870/>. (details)
- *International Dyslexia Association. (2002). *Definition of Dyslexia*.
<https://dyslexiaida.org/definition-of-dyslexia/>. (details)
- *IRIS Center. (no date). *Students with Significant Cognitive Disabilities*. Retrieved April 29, 2024, from
<https://iris.peabody.vanderbilt.edu/module/scd/cresource/q1/p01/#content>. (details)

- Kamaruzaman, M. F., Noor, H. M. & Azahari, M. H. (2017). Modelling basic numeracy learning application for children with autism: A pilot study. *Social and Management Research Journal*, 14(2), 125–141. <https://doi.org/10.24191/smrj.v14i2.5496>. Available from <https://myjms.mohe.gov.my/index.php/SMRJ/article/view/5496>. (details)
- Kast, M., Baschera, G.-M., Gross, M., Jäncke, L. & Meyer, M. (2011). Computer-based learning of spelling skills in children with and without dyslexia. *Annals of Dyslexia*, 61(2), 177–200. <https://doi.org/10.1007/s11881-011-0052-2>. Available from <http://link.springer.com/10.1007/s11881-011-0052-2>. (details)
- *Ko, K. M. M., Linn, K., Aye, A. M. M., Saw, M. T. & Aung, P. P. (2021). Health status of children with Down syndrome in Myanmar. *BMJ Paediatrics Open*, 5. <https://doi.org/10.1136/bmjpo-2021-RCPCH.8>. Available from https://bmjpaedsopen.bmj.com/content/5/Suppl_1/A4.2.abstract. (details)
- *Kristiana, I. F. & Widayanti, C. G. (2015). A Survey of Autism of Knowledge in an Early Childhood Teacher's District of Central Java. In H. Widhiastuti (Ed.), *Psychological Transformation Towards Developing Characterized Human Being* (pp. 51–60). Semarang Private University. <https://core.ac.uk/reader/80599502>. (details)
- Laurillard, D. (2016). Learning number sense through digital games with intrinsic feedback. *Australasian Journal of Educational Technology*, 32(6). <https://doi.org/10.14742/ajet.3116>. Available from <https://ajet.org.au/index.php/AJET/article/view/3116>. (details)
- *Learning Disabilities Association of America. (2012). *What Are Learning Disabilities?* <https://ldaamerica.org/advocacy/lda-position-papers/what-are-learning-disabilities/>. (details)
- Lersilp, S., Putthinoi, S. & Lersilp, T. (2018). Facilitators and barriers of assistive technology and learning environment for children with special needs. *Occupational Therapy International*, 2018, e3705946. <https://doi.org/10.1155/2018/3705946>. Available from <https://www.hindawi.com/journals/oti/2018/3705946/>. (details)
- Lerthattasilp, T., Sritipsukho, P. & Chunsuwan, I. (2022). Reading problems and risk of dyslexia among early elementary students in Thailand. *Journal of Population & Social Studies*, 30. <https://doi.org/10.25133/JPSSv302022.040>. (details)

- *Little, C., Vibulpatanavong, K. & Evans, D. (2014). Investigating Thai teachers attitudes toward students with autism. วารสารวิจัยทางการศึกษา คณะศึกษาศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ, 9(1).
<https://ejournals.swu.ac.th/index.php/jre/article/view/6586>. (details)
- Lynch, P., Singal, N. & Francis, G. A. (2022). Educational technology for learners with disabilities in primary school settings in low- and middle-income countries: a systematic literature review. *Educational Review*, 1–27. <https://doi.org/10.1080/00131911.2022.2035685>. Available from
<https://www.tandfonline.com/doi/full/10.1080/00131911.2022.2035685>. (details)
- Mahayuddin, Z. R. & Mamat, N. (2019). Implementing augmented reality (AR) on phonics-based literacy among children with autism. *International Journal on Advanced Science, Engineering and Information Technology*, 9(6), 2176–2181.
<https://doi.org/10.18517/ijaseit.9.6.6833>. Available from
<https://www.academia.edu/download/71373251/2187.pdf>. (details)
- *Maneeratanayon, P., Ruangdaraganon, N., Pree-lam, P. & Sruansan, B. (2022). Overview of the Situation for Dyslexia in Thailand. In G. Elbeheri & L. Siang (Eds.), *The Routledge International Handbook of Dyslexia in Education* (pp. 317–323). Routledge.
<https://api.taylorfrancis.com/content/chapters/edit/download?identifierName=doi&identifierValue=10.4324/9781003162520-38&type=chapterpdf>. (details)
- *Manguilimotan, R. P., Cabalda, J. A., Arnado, A. M. M., Padillo, G. G., Espina, R. C. & Capuno, R. G. (2022). Parents' satisfaction with online education for learners with special needs at the elementary level. *Cypriot Journal of Educational Sciences*, 17(4), 981–998.
<https://doi.org/10.18844/cjes.v17i4.7106>. Available from
<https://eric.ed.gov/?id=EJ1336596>. (details)
- *Masanda, C. M. P. & Masanda, A. B. (2019). Raising kids with Down syndrome: Experiences of selected parents in the Philippines. *International Journal of Science and Research*, 8(2).
<https://doi.org/10.21275/ART20195774>. Available from
<https://www.ijsr.net/archive/v8i2/ART20195774.pdf>. (details)
- *Mather, N., White, J. & Youman, M. (2020). Dyslexia around the world: A snapshot. *Learning Disabilities: A Multidisciplinary Journal*, 25(1).
<https://doi.org/10.18666/LDMJ-2020-V25-I1-9552>. Available from

https://www.researchgate.net/profile/Nancy-Mather/publication/338910143_Dyslexia_Around_the_World_A_Snapshot/links/5ec2c9bb299bffc09ac54328/Dyslexia-Around-the-World-A-Snapshot.pdf. (details)

*Mayo Clinic. (no date). *Down syndrome – Symptoms and causes*. Mayo Clinic. Retrieved April 29, 2024, from <https://www.mayoclinic.org/diseases-conditions/down-syndrome/symptoms-causes/syc-20355977>. (details)

Mohamed, M. & Tan, A. (2017). Using Tactile Letters As An Assistive Technology In Teaching Alphabet For Dyslexic Children: A Case Study. *Could Technology Support Learning Efficiency?*, 1, 167–173. <https://doi.org/10.12753/2066-026X-17-025>. Available from <https://proceedings.elseconference.eu/index.php?r=site/index&year=2017>. (details)

National Institute of Neurological Disorders and Stroke. (2023). *Learning Disabilities*. <https://www.ninds.nih.gov/health-information/disorders/learning-disabilities>. (details)

Nicolai, S., Rui, T. (Yang), Zubairi, A., Chebet, S. & Kamninga, T. (2023). *Edtech and parental engagement* (Background Paper Prepared for the 2023 Global Education Monitoring Report: Technology in Education No. ED/GEMR/MRT/2023/P1/20). UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000386106>. (details)

Novianti, R., Syihabuddin, S. & Rochyadi, E. (2019). Phonology-based reading instruction to improve dyslexic students' early reading ability. *Indonesian Journal of Applied Linguistics*, 9(2), 443–462. <https://doi.org/10.17509/ijal.v9i2.20242>. Available from <https://ejournal.upi.edu/index.php/IJAL/article/view/20242>. (details)

*Oga, C. & Haron, F. (2012). Life experiences of individuals living with dyslexia in Malaysia: A phenomenological study. *Procedia-Social and Behavioral Sciences*, 46, 1129–1133. <https://doi.org/10.1016/j.sbspro.2012.05.261>. Available from <https://www.sciencedirect.com/science/article/pii/S1877042812013900>. (details)

*Pham, H. D., Nguyen, H. B. H. & Tran, D. T. (2015). Prevalence of ADHD in primary school children in Vinh Long, Vietnam. *Pediatrics International*, 57(5), 856–859. <https://doi.org/10.1111/ped.12656>. Available from <https://onlinelibrary.wiley.com/doi/abs/10.1111/ped.12656>. (details)

- Putri, R. S., Purwanto, A., Pramono, R., Asbari, M., Wijayanti, L. M. & Hyun, C. C. (2020). Impact of the COVID-19 pandemic on online home learning: An explorative study of primary schools in Indonesia. *International Journal of Advanced Science and Technology*, 29(5), 4809–4818. https://www.researchgate.net/profile/Masduki-Asbari/publication/341194197_Impact_of_the_COVID-19_Pandemic_on_Online_Home_Learning_An_Explorative_Study_of_Primary_Schools_in_Indonesia/links/60136c1345851517ef2262c7/Impact-of-the-COVID-19-Pandemic-on-Online-Home-Learning-An-Explorative-Study-of-Primary-Schools-in-Indonesia.pdf. (details)
- Rachmawati, N., Supena, A., Yufiarti, Y., Yarmi, G. & Casmana, A. (2022). Analysis of hybrid learning for students with learning disabilities in primary schools providing inclusive education. *The Qualitative Report*, 27(10), 2185–2201. <https://doi.org/10.46743/2160-3715/2022.5432>. Available from <https://nsuworks.nova.edu/tqr/vol27/iss10/8>. (details)
- Ratnaningsih, N., Arhasy, E. & Hidayat, E. (2019). The analysis of dyscalculia students learning difficulty in inclusive education of primary school level in Tasikmalaya. *Journal of Education, Teaching and Learning*, 4(1), 238–243. <https://doi.org/10.26737/jetl.v4i1.997>. Available from <https://www.learntechlib.org/p/216988/>. (details)
- *Rose, R., Jegannathan, B., Mong, D., Pat, P. & Sok, D. (2023). Investigating the situation for children with autism and their families in Cambodia. *Education Sciences*, 13(6), 565. <https://doi.org/10.3390/educsci13060565>. Available from <https://www.mdpi.com/2227-7102/13/6/565>. (details)
- *Sakboonyarat, B., Chokcharoensap, K., Sathuthum, N., Chutchawalanon, S., Khamkaen, C., Sookkaew, W., Thamwinitchai, J., Phalakornkul, N., Saelim, S. & Liwvorakul, P. (2018). Prevalence and associated factors of attention deficit hyperactivity disorder (ADHD) in a rural community, Central Thailand: a mixed methods study. *Global Journal of Health Science*, 10(3), 60. <https://doi.org/10.5539/gjhs.v10n3p60>. Available from <https://pdfs.semanticscholar.org/b9bc/ce6d2138a20eee5b347f3de3a5c24afb2bc4.pdf>. (details)
- *Salari, N., Ghasemi, H., Abdoli, N., Rahmani, A., Shiri, M. H., Hashemian, A. H., Akbari, H. & Mohammadi, M. (2023). The global prevalence of ADHD in children and adolescents: a systematic review and meta-analysis. *Italian Journal of Pediatrics*, 49(1), 48. <https://doi.org/10.1186/s13052-023-01456-1>. Available from

<https://ijponline.biomedcentral.com/articles/10.1186/s13052-023-01456-1>. (details)

Sarwendah, A. P., Azizah, N. & Mumpuniarti, M. (2023). The use of technology in hybrid learning for student with special needs. *Journal of Education and Learning (EduLearn)*, 17(2), 317–325.

<https://doi.org/10.11591/edulearn.v17i2.20810>. Available from <http://edulearn.intelektual.org/index.php/EduLearn/article/view/20810> (details)

*See, S. J. & Koay, P. S. (2014). The identification of dyslexia in pre-school children in a multilingual society. *Asia Pacific Journal of Developmental Differences*, 1(1), 44–61.

<https://doi.org/10.3850/S2345734114000052>. Available from <https://dyslexia.org.sg/images/publications/apjdd/apjddjan2014/APJD DVol1No1.pdf#page=49>. (details)

Sholikhati, N. I., Prayogo, M. M. & Santoso, J. (2021). The effect of distance learning on learning outcomes of children with special needs in inclusive schools in the new normal. *Indonesian Journal of Disability Studies*, 8(1), 145–154. <https://doi.org/10.21776/ub.ijds.2021.008.01.11>.

Available from <https://ijds.ub.ac.id/index.php/ijds/article/view/291>. (details)

*Suryanto, E. & Akhadijah, S. (2019). Developing a competency-based of language skills and literary abilities in the primary school. *Journal of Physics: Conference Series*, 1339, 012066.

<https://doi.org/10.1088/1742-6596/1339/1/012066>. Available from <https://iopscience.iop.org/article/10.1088/1742-6596/1339/1/012066/meta>. (details)

*Swanson, H. L. (1991). Operational definitions and learning disabilities: An overview. *Learning Disability Quarterly*, 14(4), 242–254.

<https://doi.org/10.2307/1510661>. Available from <http://journals.sagepub.com/doi/10.2307/1510661>. (details)

Thichanpiang, P., Kaunnil, A., Lee, K., Gao, X., Nopparat, C. & Permpoonputtana, K. (2022). Psychometric assessment of the Handwriting Proficiency Screening Questionnaire (HPSQ) — Thai version for primary school-aged children. *Children*, 9(10), 1580.

<https://doi.org/10.3390/children9101580>. Available from <https://www.mdpi.com/2227-9067/9/10/1580>. (details)

- *UNESCO. (2020). *Global Education Monitoring Report 2020: Inclusion and Education – All Means All*. UNESCO.
<https://unesdoc.unesco.org/ark:/48223/pf0000373718>. (details)
- *UNESCO. (2023). *Global Education Monitoring Report 2023, Southeast Asia: Technology in education: A tool on whose Terms?*<https://unesdoc.unesco.org/ark:/48223/pf0000387214>. (details)
- *UNESCO Global Education Monitoring Report Team & SEAMEO Regional Centre for Special Educational Needs. (2023). *Technology in Disability-Inclusive Education* (Background Paper Prepared for the 2023 Global Education Monitoring Report: Technology and Education, Southeast Asia, p. 43).
<https://unesdoc.unesco.org/ark:/48223/pf0000387737?posInSet=2&queryId=N-6d27a1b6-bde5-4632-bee2-f5ea98c59ff8>. (details)
- UNICEF East Asia and Pacific. (no date). *Children with disabilities – Leave no one behind*. UNICEF for Every Child. Retrieved March 15, 2024, from
<https://www.unicef.org/eap/what-we-do/children-with-disabilities>. (details)
- UNICEF. (2017). Inclusive Education—Understanding Article 24 of the Convention on the Rights of Persons with Disabilities. *Inclusive Education*. (details)
- United Nations. (2006). *Convention on the Rights of Persons with Disabilities*. United Nations Human Rights Office of the High Commissioner.
<https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities>. (details)
- United Nations Sustainable Development Group (UNSDG). (2020). *Policy Brief: A Disability Inclusive Response to COVID-19*.
<https://unsdg.un.org/sites/default/files/2020-05/Policy-Brief-A-Disability-Inclusive-Response-to-COVID-19.pdf>. (details)
- United Nations Timor-Leste & Belun. (2018). *Leaving No Youth Behind in Timor-Leste: Young People with a Disability* [Policy Brief].
https://timor-leste.unfpa.org/sites/default/files/pub-pdf/05_DISABILITY_ENG_PRINT%20%281%29.pdf. (details)
- Weerakul, J. & Patigburt, P. (2023). Factors associated with attention deficit hyperactive disorder in school-age Thai children. *Journal of the Medical Association of Thailand*, 106(12).

<https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=01252208&AN=174650624&h=UZwAbNW76vYtpfa55OVgpbbVGASHGjmtlQ8%2B9ygZxO7%2FEG4UXKQomklwnOzrJCHO7tu0RKZopCxkg5G7qFITiw%3D%3D&crl=c>. (details)

Yunita, V. M., Sunardi, S. & Kristiyanto, A. (2021). Special education teachers' perceptions toward online learning during the Covid-19 pandemic. *JPI (Jurnal Pendidikan Indonesia)*, 10(2), 202–211. <https://ejournal.undiksha.ac.id/index.php/JPI/article/view/29773>. (details)

Yuzaidey, N. A. M., Din, N. C., Ahmad, M., Ibrahim, N., Razak, R. A. & Harun, D. (2018). Interventions for children with dyslexia: A review on current intervention methods. *Med J Malaysia*, 73(5), 311–320. <https://e-mjm.org/2018/v73n5/children-with-dyslexia.pdf>. (details)

Zhao, A. (2024). *EdTech for Special Educational Needs for Hearing and Visual Impairments: A Rapid Evidence Review for the Southeast Asian Region*. EdTech Hub. <https://doi.org/10.53832/edtechhub.1028>. Available from <https://docs.edtechhub.org/lib/M6A4ZHJ3>. Available under Creative Commons Attribution 4.0 International. (details)

Annex: Search strings

- (“*Educational technology*” OR “*Education technology*” OR EdTech OR “*distance learning*” OR ICT) AND (SEND OR “*special needs*” OR CWD or disabilit* OR “*learning needs*” OR disable*) AND (Brunei* OR Vietnam* OR Cambodia* OR Indonesia* OR Lao* OR Malaysia* OR Myanmar* OR Burma OR Philippines OR Singapore* OR Thailand OR “*ASEAN*” OR “*South-east Asia*”)
- (“*Educational technology*” OR “*Education technology*” OR EdTech OR “*distance learning*”) AND (SEND OR “*special needs*” OR CWD or disabilit* OR “*learning needs*” OR disable*) AND (Brunei* OR Vietnam* OR Cambodia* OR Indonesia* OR Lao* OR Malaysia* OR Myanmar* OR Burma OR Philippines OR Singapore* OR Thailand OR “*ASEAN*” OR “*South-east Asia*”)
- “*ASEAN*” OR “*South*east Asia*” AND Education* Technolog* OR EdTech OR “*distance learning*” AND SEND OR special needs OR CWD or children with disabilities OR learning needs OR learning disability
- Brunei* OR Vietnam* OR Cambodia* OR Indonesi* OR Lao* OR Malaysia OR Myanmar* OR Burma OR Philippines OR Singapore* OR Thailand AND Education* Technolog* AND Education* Techn* OR EdTech OR “*distance learning*” AND SEND OR special needs
- Brunei* OR Vietnam* OR Cambodia* OR Indonesia* OR Lao* OR Malaysia* OR Myanmar* OR Burma OR Philippines OR Singapore* OR Thailand AND Education* Technolog* AND Education* Techn* OR EdTech OR “*distance learning*” AND CWD or children with disabilities OR learning needs OR learning disability
- “*ASEAN*” OR “*South*east Asia*” AND ICT education OR ICT4E OR “*blended learning*” AND SEND OR special needs OR CWD or children with disabilities OR learning needs OR learning disability
- Brunei* OR Vietnam* OR Cambodia* OR Indonesia* OR Lao* OR Malaysia* OR Myanmar* OR Burma OR Philippines OR Singapore* OR Thailand AND ICT education AND ICT education OR ICT4E OR “*blended learning*” AND SEND OR special needs
- Brunei* OR Vietnam* OR Cambodia* OR Indonesia* OR Lao* OR Malaysia* OR Myanmar* OR Burma OR Philippines OR Singapore* OR Thailand AND ICT education AND ICT education OR ICT4E OR

“blended learning” AND CWD or children with disabilities OR learning needs OR learning disability

- (*“Education technology”* OR EdTech OR *“distance learning”*) AND (SEND OR *“special needs”* OR CWD or disabilit* OR disable*) AND (Brunei OR Vietnam OR Cambodia OR Indonesia OR Lao* OR Malaysia OR Myanmar* OR Burma OR Philippines OR Singapore OR Thailand)
- (*“Education technology”* OR EdTech OR *“distance learning”*) AND (SEND OR *“special needs”* OR disabilit* OR *“learning needs”* OR disable*) AND (Vietnam OR Cambodia OR Indonesia OR Lao* OR Malaysia OR Burma OR Philippines OR Singapore OR Thailand OR *“ASEAN”*)