

Addressing Cross-Cutting Themes in the Use of Educational Technology and Digital Learning in Southeast Asia

Recommendations for policy, practice, and
research

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Abbreviations and acronyms

ASEAN	Association of Southeast Asian Nations
CSE	Comprehensive sexuality education
EdTech	Educational technology
EiE	Education in Emergencies
ICT	Information and communication technology
MHPSS	Mental health and psychosocial support
MoE	Ministry of Education
OER	Open Educational Resource
OOSCY	Out-of-school children and youth
QIPEDC	Quality Improvement of Primary Education for Deaf Children
SEAMEO	Southeast Asia Ministers of Education Office
SEND	Special educational needs and disabilities
SEL	Social and emotional Learning
UNICEF-EAPRO	UNICEF East Asia and Pacific Regional Office

Key definitions

For this paper, we adopt the following key definitions:

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). The term ‘information and communication technology’ (ICT) is also used to refer to hardware and software for learning, and how these are deployed for educational purposes is highlighted in each instance.

Southeast Asia: Countries that are member countries of the Southeast Asia Ministers of Education Organization (SEAMEO). 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’), Timor-Leste, the Union of Myanmar (‘Myanmar’), and the Socialist Republic of Viet Nam (‘Vietnam’) ([↑SEAMEO, no date](#)).

Out-of-school children and youth (OOSCY): The study adopts the definition stated in the ASEAN Declaration on Strengthening Education for OOSCY ([↑ASEAN Secretariat, 2016](#)). Accordingly, OOSCY are recognised as children or young people in one or more of the following situations:

- Children and youth who do not have access to a school in their community;
- Children and youth who have not yet enrolled at a school, despite the availability of a school;
- Children and youth who have enrolled but do not attend school or are at risk of dropping out;
- Children and youth who drop out of the education system;
- School-based learners at risk of dropping out.

Catch-up education: Refers to targeted learning interventions designed to help students recover academic ground they have lost or missed. Its purpose is to bridge learning gaps so that learners reach age-appropriate or grade-level competencies after disruptions (e.g., pandemics, conflict, dropouts). Catch-up programmes typically condense or remediate curriculum content and often focus on foundational skills (literacy,

numeracy) to bring learners up to speed ([↑ASEAN Secretariat, 2022](#)).

Common formats include:

- **Remedial classes or tutoring:** Extra lessons (after-school or during breaks) to revisit missed topics and reinforce understanding
- **Accelerated learning programmes:** Intensive courses that compress several months or years of schooling into a shorter period for overage or out-of-school youth.
- **Bridging programmes:** Transitional courses helping learners re-enter formal schooling by covering essential content or skills they missed.
- **Extended learning time:** Holiday ‘boot camps’, summer classes, or extended school days dedicated to reviewing and practising lagging competencies ([↑BIMP-EAGA, 2022](#)).

Students with special educational needs and disabilities (SEND):

Students with SEND include children and youth who experience long-term physical, mental, intellectual, or sensory impairments, such as visual, hearing, cognitive, or psychosocial disabilities, that may hinder their full participation in education on an equal basis with others. These impairments can affect learning, communication, mobility, and social interaction, and often intersect with other factors like poverty, gender, and geography to exacerbate exclusion from quality education. Inclusive education systems must therefore address a wide spectrum of needs to ensure equitable learning outcomes for all students ([↑UNESCO & SEAMEO, 2023](#)).

Executive summary

Across Southeast Asia, digital learning and educational technology (EdTech) have expanded rapidly in response to both long-standing challenges and the disruptions of the Covid-19 pandemic. Countries across the region have made visible progress in integrating EdTech into national education strategies, increasing access to devices and connectivity, and piloting diverse delivery modalities such as radio, mobile, and online platforms. However, this expansion has not been equally experienced by all learners. Out-of-school children and youth (OOSCY), girls, learners with disabilities, and those in crisis-affected settings remain underserved regarding both access and inclusive design of such digital systems. Many EdTech interventions are not tailored to their needs, and fragmented data systems limit the ability to monitor inclusion or guide equitable investment.

This paper identifies and explores the following five cross-cutting themes that shape how EdTech can address exclusion and improve educational access and quality. Each theme reflects recurring challenges that affect both those children and youth already out of school and school-based learners at risk of dropping out. The paper highlights the need for more responsive, inclusive, and coordinated approaches to digital learning. While OOSCY are the primary focus of the analysis, in-school learners are also included, given their interaction with the following themes.

- Gender equity
- Special educational needs and disabilities (SEND)
- School-related violence and bullying
- Education in emergency and climate-resilient settings
- Social and emotional learning (SEL) and mental health and psychosocial support (MHPSS).

Drawing on regional and global evidence, the paper outlines common barriers across themes. These include affordability and infrastructure gaps, low digital literacy among caregivers and educators, underdeveloped safety and protection systems, and the absence of flexible and localised learning models. At the same time, promising practices across the Southeast Asian region demonstrate that when EdTech is designed with equity in mind, it can enable flexible access, support differentiated learning, and extend essential services to the most marginalised.

The paper concludes with four strategic recommendations, with specific reference to regional policy frameworks and ongoing efforts. First, digital literacy and protection must be strengthened across learner, teacher, and caregiver groups. Second, national systems should prioritise human support by equipping educators and caregivers with training and resources. Third, governments and partners should invest in flexible, low-tech, and hybrid delivery models that are better suited to reach excluded populations. Fourth, stronger monitoring, evaluation, and evidence-sharing mechanisms are needed to inform adaptive policy and practice.

Overall, the report calls for a shift from fragmented efforts to system-wide planning that embeds EdTech and digital learning into broader education reform. Only through inclusive, context-aware strategies can digital learning support resilient, equitable education systems across Southeast Asia.

1. Introduction

Across Southeast Asia, the state of EdTech and digital learning reflects both significant progress and persistent challenges. Key regional successes include the widespread adoption of digital platforms during and after the Covid-19 pandemic, greater policy integration of EdTech into national education strategies, and the use of diverse modalities, such as radio, television, mobile applications, and digital learning environments, to expand access to learning opportunities ([↑Barnes et al., 2024](#)). Connectivity and device ownership have improved in many areas, and there is growing interest in leveraging technology to support inclusive and flexible learning. However, challenges remain substantial. These include persistent digital divides between urban and rural areas, limited digital literacy among educators and learners, affordability issues, and weak infrastructure in underserved communities ([↑UNESCO & South-East Asian Ministers of Education Organization \[SEAMEO\], 2023](#); [↑UNICEF & UNESCO, 2021](#)).

In 2024, as part of the ASEAN-UK SAGE programme, the SEAMEO Secretariat and EdTech Hub published *Out-of-School Children and Youth in Southeast Asia: A Rapid Scoping Study*, which found that a central concern continues to be the estimated 11.8 million out-of-school children and youth (OOSCY) in the region, whose exclusion is driven by intersecting financial, social, and systemic barriers ([↑Afzal et al., 2024](#)). While some EdTech initiatives have reached OOSCY through non-formal and low-tech channels, most are not tailored to their specific needs, and data systems to track and support this population remain fragmented. Ensuring that EdTech equitably benefits all learners will require stronger cross-sector coordination, targeted investment, and more rigorous, disaggregated evidence to guide policy and practice ([↑Barnes et al., 2024](#); [↑Barnes et al., 2025](#)).

In response to a growing body of evidence surrounding EdTech and digital learning in Southeast Asia, and project meetings with the SEAMEO Secretariat and partners following the publication of [↑Afzal et al.'s \(2024\)](#) Rapid Scoping Study, the themes in [Table 1](#) below were identified as having cross-cutting relevance for OOSCY specifically and education systems more broadly.

Table 1. *Cross-cutting themes in the use of educational technology and digital learning in Southeast Asia*

Theme	Description
Gender equity	Covers disparities in digital access, use, and engagement between girls and boys in education, examining barriers such as cultural norms, device access, safety concerns, and support systems that affect gender equity in EdTech and digital learning.
Students with special educational needs and disabilities (SEND)	Addresses the inclusion of learners with disabilities in digital and online education, focusing on accessibility barriers, assistive technologies, inclusive pedagogies, infrastructure gaps, and the adaptation of content for diverse needs.
School-related violence and bullying	Examines the prevalence, forms, and impacts of physical, verbal, and online violence within school and digital learning environments, especially as they affect marginalised groups, and highlights gaps in data collection, prevention systems, and digital safety measures.
Education in emergency settings and for climate resilience	Explores how education systems in Southeast Asia are affected by crises such as conflict, displacement, pandemics, and climate disasters, and how digital learning and EdTech can support education continuity, resilience-building, and crisis preparedness.
Social and emotional learning and mental health and psychosocial support (MHPSS)	Covers the integration of SEL competencies and psychosocial support into education systems, emphasising emotional well-being, resilience, mental health needs, and the role of digital and low-tech tools in delivering support to diverse learners.

1.1. Research purpose and questions

The purpose of this paper is to bring together emerging evidence on the use of EdTech and digital learning across the cross-cutting themes to address critical challenges in education across the Southeast Asian region for children and youth who are already out of school, school-based learners at risk of dropping out, and other in-school settings. Its goal is to support policymakers, researchers, and practitioners by presenting actionable strategies and highlighting promising practices that leverage technology to improve learning outcomes and equity. Building on previous efforts to compile evidence in the region ([↑Barnes et al., 2024](#); [↑Barnes et al., 2025](#); [↑Mitchell et al., 2025](#); [Zhao et al., 2024](#)), this report does not aim to be a definitive or comprehensive review of all available research on the identified cross-cutting themes. Rather, it offers an illustrative overview of the themes while offering actionable strategies and recommendations for the Southeast Asian region, designed to support education professionals in understanding how technology is being used to address these cross-cutting themes in education programmes.

Drawing on regional and selected global examples, with a focus on low- and middle-income countries (LMICs), the paper explores how technology is being integrated into education programmes, what approaches show the most promise, and how policy environments can better enable effective and inclusive implementation. It ultimately aims to inform future decision-making and strengthen the role of EdTech in addressing inclusion, equity, and cross-cutting issues in education.

The paper is guided by the following questions:

- How are EdTech tools and approaches currently being used to address the cross-cutting themes for OOSCY, learners at risk of dropout, and school-based education programmes in Southeast Asia?
- Which EdTech interventions and policy initiatives have shown promise in improving outcomes related to these themes, and what are the barriers preventing progress?
- What are actionable and strategic recommendations for policymakers, practitioners, and researchers to address these cross-cutting themes?

1.2. Method and structure of paper

Given the previous Rapid Evidence Reviews (RER) on related topics ([↑Barnes et al., 2024](#); [↑Barnes et al., 2025](#); [↑Mitchell et al., 2025](#); [↑Zhao et al., 2024](#)), a targeted search was conducted rather than a comprehensive literature review. Searches of available academic, grey, and practitioner-focused literature identifying key concepts of interest; conducting keyword searches using platforms such as Google Scholar and Google; and reviewing reference lists from key documents commonly cited by practitioners and researchers involved in intervention design, implementation, and evaluation. The following inclusion criteria were used to select documents that are included in the desk review:

- **Programmes, interventions, policies, and resources** selected for their relevance to OOSCY and at least one of the identified cross-cutting themes (gender, disability inclusion, school-related violence, education in emergencies, or social and emotional learning and mental health and psychosocial support). Some materials are included solely for their thematic relevance when findings are applicable but not specific to OOSCY contexts.
- **International and regional reports** from intergovernmental bodies, development/education organisations, and research consortia that provide insights or guidance on integrating cross-cutting themes into education and EdTech practice.
- **Policy and strategy documents** at national, regional, or institutional levels that outline approaches to addressing one or more cross-cutting themes within education systems.
- **Research and evaluation studies** that present evidence, lessons, and effective practices related to cross-cutting themes in education technology and digital learning.
- **Programmatic and project documentation**, such as implementation reviews, workshop reports, and programme descriptions
- **Geographic focus** includes national examples from Southeast Asia, regional analyses from ASEAN or SEAMEO, and global resources relevant to low- and middle-income countries (LMICs).
- **Timing focus** is on publications from 2020 onwards to capture recent developments and lessons from the Covid-19 period and

beyond, with earlier resources considered when they provide significant contextual or historical relevance.

[Section 2](#) examines each cross-cutting theme in depth, drawing on relevant literature and illustrative case studies. Each theme includes: (1) a brief overview, (2) an analysis of key barriers, (3) a summary of promising policy developments and initiatives, and (4) key insights with actionable recommendations for policy, practice, and research. The report concludes in [Section 3](#) with a synthesis of recommendations across all themes, highlighting common areas for improvement and opportunities for system-wide impact.

2. Cross-cutting themes

As education systems in Southeast Asia work to increase access to quality education while also becoming more inclusive and resilient, technology offers a powerful set of digital tools to support learners who are often left behind. Much attention is placed on the role of EdTech in delivering and facilitating instructional content; however, its potential also lies in how it can be harnessed to strengthen education systems as a whole ([↑UNESCO & SEAMEO, 2023](#)). When thoughtfully implemented, technology can help governments and educators identify OOSCY and learners at risk of dropping out, tailor learning resources for students with disabilities, monitor safety and well-being in school environments, and coordinate rapid responses during emergencies ([↑Barnes et al., 2024](#); [↑Mitchell et al., 2024](#); [Zhao et al., 2024](#)). These uses extend far beyond online lessons to include data management, planning, teacher and caregiver support, and learner engagement across diverse modalities.

The justification for integrating EdTech into policy and practice is rooted in its ability to address long-standing gaps in access, equity, and quality ([↑Afzal et al., 2024](#)). Marginalised learners often face overlapping barriers such as poverty, displacement, gender norms, or lack of identification within formal systems ([↑Chrisani et al., 2025](#)). Digital tools, if designed with inclusion in mind, can reduce these barriers by offering flexible pathways into education, supporting the collection of disaggregated data to inform policy, and enabling outreach where traditional systems fall short. Despite the exhibited benefits, caution is also warranted. EdTech and digital learning more broadly, like all education programmes, tools, and approaches, can aggravate inequalities and must be implemented with care. If equity is not prioritised, technology can reinforce existing disparities and exclude the very learners it seeks to support ([↑Mitchell et al., 2025](#); [↑UNICEF EAPRO, 2024](#)).

[Section 2.1](#) introduces how EdTech and digital learning interact with the five cross-cutting themes: gender equity, special educational needs and disabilities (SEND), school related violence and bullying, education in emergency and climate-affected settings, and social and emotional learning (SEL) and mental health and psychosocial support (MHPSS). Each theme presents both opportunities and challenges, illustrating how EdTech and digital learning can support targeted interventions as well as broader reforms to build more inclusive and responsive education systems across Southeast Asia.

2.1. Gender equity

Significant progress has been made towards achieving gender parity in education in Southeast Asia. Countries like Vietnam, Thailand, and the Philippines, for example, have attained near-equal enrolment rates between boys and girls at both primary and secondary levels ([↑World Bank, 2025](#)). However, this parity in enrolment does not fully translate into equity in access to and engagement with digital learning, where disparities persist, particularly among girls from rural, ethnic minority, or low-income backgrounds ([↑Dabrowski et al., 2024](#); [↑UNESCO & SEAMEO, 2023](#)).

The rise of digital learning is transforming education across the Southeast Asian region, especially in the wake of the Covid-19 pandemic. School closures impacted an estimated 140 million children in the region, accelerating government investment in educational technology. By 2021, there were over 100 EdTech providers active across Southeast Asia, and many countries had incorporated EdTech into national education plans ([↑Mitchell et al., 2025](#)). While this rapid expansion opened new opportunities, it also introduced new gendered challenges. Girls generally have less access to devices and the internet than boys, and when they do have access, they often use technology less intensively and in more restricted ways. According to a UNICEF study, only 27% of adolescent girls in Southeast Asia use the internet on mobile phones compared to 46% of boys ([↑UNICEF EAPRO, 2023](#)).

Cultural norms and practical constraints intersect to create this digital gender divide. In many households, if only one device is available, priority is often given to male family members. Girls also face heavier domestic workloads and caregiving duties, which reduces the time they can dedicate to digital learning. In countries where adult literacy for women is lower than for men, such as Vietnam and Cambodia, mothers may be less able to support their daughters' use of technology for learning ([↑UNICEF EAPRO, 2023](#)). The incorporation of open educational practices with learning about information and communication technology (ICT), however, has been shown to help increase functional literacy for girls and women from ethnic-minorities in places like Thailand ([↑Intaratat, 2021](#)).

Girls who are out of school face even greater barriers. OOSCY and learners at risk of dropping out, especially girls, are less likely to have access to digital devices or safe learning environments. Many are engaged in work or have family responsibilities that make formal schooling difficult. In Cambodia and Lao PDR, for example, OOSCY girls often fall through the cracks due to intersecting disadvantages, poverty, gender norms, rural

isolation, and limited infrastructure ([↑Dabrowski et al., 2024](#); [↑UNESCO & SEAMEO, 2023](#)).

2.1.1. Barriers to gender equity across digital learning and EdTech

Although gender parity in enrolment has improved, girls still face significant challenges in digital learning, especially those from rural and disadvantaged backgrounds. Cultural expectations, infrastructure limitations, and safety concerns often restrict their ability to access and meaningfully use educational technology. The paragraphs below explore key barriers affecting gender equity in EdTech.

Social and cultural norms

Deep-rooted gender norms limit girls' time and freedom to participate in EdTech. In some countries, girls perform up to 90% of household chores, leaving little time for study ([↑Thinley et al., 2024](#)). Gender stereotypes also discourage girls from exploring science, technology, engineering, and mathematics (STEM) and related fields ([↑Mitchell et al., 2025](#)). Gender is often not a consideration for many educators when teaching digital literacy (i.e., teaching is largely gender blind), while lack of progression to more advanced digital competencies has also been found to be particularly acute among girls in the region ([↑UNICEF EAPRO, 2023](#)).

Access and infrastructure

Cost, connectivity, and device availability pose serious barriers. Families may have one smartphone shared among siblings, with boys prioritised for access. In Laos, women and girls have slightly lower mobile and internet access than men ([↑Afzal et al., 2024](#)). More broadly, women in low- and middle-income countries are 12% less likely to own a mobile phone and 19% less likely to use mobile internet than men ([↑Jeffrie, 2023](#)). Rural schools often lack ICT facilities, making it harder for girls in remote areas to access digital content. For OOSCY and learners at risk of dropping out, the challenge is compounded by their distance from formal schooling networks, lack of registered status, language barriers related to content instruction, and higher likelihood of economic vulnerability.

Caregivers, teachers, and digital literacy

Caregivers and teachers often act as gatekeepers who shape girls' digital access. Where adult digital literacy is low, girls often lack support to engage with EdTech. Some caregivers fear that internet use is unsafe for girls and restrict access, while teachers may unconsciously give boys more

opportunities to interact with technology ([↑Mitchell et al., 2025](#)). Evidence also shows that female teachers in Cambodia, for example, scored lower on technological pedagogical content knowledge (TPACK) than their male counterparts ([↑Phal et al., 2022](#)). Research also shows that in Southeast Asia, adults often assume girls are less interested in or capable with digital tools, reinforcing exclusion, while outside of school, girls may face scepticism about the value or safety of using technology, and inside classrooms, teachers may channel tech opportunities to boys due to unconscious bias ([↑The Sasakawa Peace Foundation & Dalberg Global Development Advisors, 2017](#)).

Safety and security

Safety concerns, both physical and online, are a major factor. “Adolescent girls in Indonesia, Malaysia, the Philippines and Thailand reported feeling less safe online than boys did” ([↑UNICEF EAPRO, 2023](#), p. 25). Online, girls face risks of harassment or cyberbullying, which can discourage use of digital platforms. OOSCY girls are particularly affected, as their learning often occurs in unsupervised or informal settings, where protections may be weaker ([↑UNICEF EAPRO, 2023](#)).

2.1.2. Promising policy developments and initiatives

Innovative programmes and developments in Southeast Asia are increasing girls’ access to digital learning through mobile tools, community hubs, and gender-responsive policies. These efforts highlight how locally grounded approaches can reduce digital exclusion and promote equity. [Table 2](#) presents promising initiatives that advance gender equity, with a focus on digital learning and EdTech.

Table 2. *Promising interventions, initiatives, and resources for gender equity*

Initiative	Country(s)	Description
Flexible and accessible technologies	Cambodia and Myanmar	Mobile phones, radio, and TV are more widely available than computers. In Cambodia, Women’s Radio FM 102 broadcasts educational content for girls, improving awareness and shifting attitudes. These tools are especially valuable for OOSCY, who often rely on mobile phones or shared radios for any access to educational content (↑Mitchell et al., 2025). The Girls through Mobile Technology project in

		Myanmar also “helped marginalised girls in rural schools develop English language skills and life skills as a means of empowerment and a pathway to increased secondary school retention” (↑UNESCO & SEAMEO, 2023 , p. 22).
Community learning hubs	Philippines and Thailand	Initiatives like the Philippines’ eSkwela and Thailand’s community learning centres offer safe, local, and flexible options to learn digital skills and pursue formal equivalency credentials. These centres often target OOSCY and offer non-formal education options in local languages and accessible formats (↑Barnes et al., 2024).
Philippines’ Alternative Learning System (ALS)	Philippines	Integrates digital and mobile tools to reach adolescent girls in remote and indigenous communities who are no longer enrolled in school (↑Dabrowski et al., 2024).
Future4Girls	Southeast Asia	A regional advocacy platform that champions girls’ rights to quality education free from bias, discrimination, and violence. It engages Southeast Asian stakeholders in policy dialogue and programme design for equitable digital access (↑Raisha et al., no date).
Gender supportive policies	Cambodia and Lao PDR	Some governments are addressing these gaps. Cambodia’s Gender Mainstreaming Strategic Plan (2021–2025) outlines steps to increase girls’ participation and challenge discriminatory attitudes (↑Thinley et al., 2024), while Lao PDR has also included girls’ education in recent policy reforms (↑Dabrowski et al., 2024).
GENIA (Gender in Education Network in Asia-Pacific)	Asia-Pacific	A UNESCO-facilitated network of gender focal points in ministries of education, aimed at mainstreaming gender equality in

		national policies and education systems (in-person and digital). This toolkit includes a practical guide to support gender-responsive planning, teaching, and monitoring in education systems (↑UNESCO, 2019).
OER training and repositories	Thailand	The OBEC Content Centre, developed by Thailand's Office of the Basic Education Commission (OBEC), provides Open Educational Resources (OERs) across eight core basic education subjects. By offering free, verified, and accessible digital learning materials through an integrated platform, OBEC helps expand educational opportunities for all learners, including girls, by reducing barriers to quality learning resources (↑Polprasert & Anutariya, 2024).
Bett Asia EdTech 10	Asia-Pacific	The Bett Asia EdTech 10 list recognises women in the Asia-Pacific region who are transforming education through technology, celebrating their contributions and providing a platform to inspire and empower others (↑Bett Asia, 2025).

2.1.3. Key insights and recommendations

1. Engage caregivers and teachers as allies

Girls' access to and meaningful use of EdTech is heavily influenced by the adults around them. Successful initiatives across Southeast Asia highlight the importance of supportive teachers and caregivers.



Policy: Policymakers can include gender-specific training in national teacher development frameworks and promote caregiver engagement in EdTech programmes. National digital learning plans may embed caregiver outreach and require districts to report annually on gender-disaggregated training outcomes.



Practice: Schools can host awareness sessions where caregivers serve as peer mentors, while teachers use tools to monitor equitable digital participation. Some districts might pilot mentoring programmes where experienced caregivers coach others to support girls' digital engagement.



Research: Researchers can study how shifting caregiver and teacher attitudes influence girls' EdTech use over time. Future studies may track how inclusive training and engagement campaigns affect girls' participation in learning and graduation rates.

2. Leverage accessible technologies to bridge the gender divide

Tools like mobile phones, SMS, radio, and WhatsApp groups can be more likely to reach girls. These low-tech, high-reach solutions are especially effective for OOSCY, learners at risk of dropping out, and girls in rural or poor households.



Policy: Promote mobile-first EdTech platforms through policy that prioritises public-private partnerships and integrates accessible tools, like radio/TV education, into national strategic education plans.



Practice: Schools can establish and promote SMS-based homework hotlines and WhatsApp study groups to better reach girls. Districts can partner with local radio broadcasts to reach girls without internet access.



Research: Evaluate which modalities are most effective for reaching marginalised girls, especially OOSCY and learners at risk of dropping out. Future studies might explore how different low-tech delivery models, such as combining mobile messaging with interactive voice response or offline app content, impact girls' learning outcomes.

3. Promote flexible and safe learning opportunities

Girls benefit most from learning options that are adaptable to their schedules and responsibilities. Ensuring both digital and physical safety is also critical.



Policy: Governments can ensure EdTech policies enable safe, flexible access to digital tools and learning spaces. Regulations might support mobile access, flexible scheduling, and privacy protections for girls.



Practice: Community-based organisations and schools can coordinate flexible learning programmes adapted to girls' needs. Flexible timetables may reflect caregiving responsibilities and allow access for girls facing scheduling restrictions.



Research: Researchers can examine how flexibility in learning schedules and safe digital environments impact girls' retention. Studies may explore how household dynamics or safety concerns affect participation rates.

4. Adopt gender-responsive monitoring and evaluation

Gender equity must be embedded in digital strategies through goals, accountability mechanisms, and monitoring systems.



Policy: Education ministries can mandate gender-disaggregated data collection in all digital programmes. National audits and monitoring and evaluation (M&E) frameworks can assess gaps in access, participation, and learning outcomes for girls.



Practice: Schools and support organisations can use real-time dashboards and localised tools to monitor digital engagement by gender. Inclusive indicators can go beyond enrolment to reflect usage, interaction, and learner experience.



Research: Analyse how gender disparities evolve over time in digital access and use. Insights can guide better targeting and refinement of gender-responsive EdTech interventions.

5. Focus on building girls' digital literacies and confidence

Access alone is insufficient; girls need skills and self-belief to fully benefit from EdTech.



Policy: Governments can put more emphasis on autonomous learning and self-access study skills that build learner confidence, motivation, and independence from the teacher while supporting pen and paper and ICT skills, and face-to-face, remote and blended learning contexts.



Practice: Schools and non-governmental organisations (NGOs) can run ICT camps, digital storytelling workshops, or mentorship clubs for girls. Featuring female role models through campaigns may also increase girls' confidence in tech use.



Research: Research can evaluate how confidence-building initiatives, such as girls-only clubs or peer-led mentoring, affect digital engagement. Studies might also explore long-term impacts on learning outcomes and career pathways.

2.2. Students with special educational needs and disabilities (SEND)

In recent years, the Southeast Asian region has made growing efforts to harness digital learning and EdTech to support inclusive education, particularly for students with SEND. These efforts are critical given the educational marginalisation of children with cognitive, learning, sensory, and physical impairments ([↑Mitchell et al., 2024](#)). Despite the ratification of the UN Convention on the Rights of Persons with Disabilities across ASEAN member states, learners with disabilities still face unequal access to quality education. For example, children with disabilities in Cambodia are eight times less likely to be in school than their peers without disabilities ([↑UNESCO & SEAMEO, 2023](#)).

Educational technologies, ranging from low-tech tools like pencil grips to high-tech solutions such as screen readers and speech-to-text software, hold promise for addressing these disparities. They enable differentiated instruction, promote communication, and can support social and emotional learning and engagement ([↑Mitchell et al., 2024](#)). In Malaysia, Indonesia, and the Philippines, for example, pilot programmes using tablets and localised apps have demonstrated improvements in engagement and comprehension among students with cognitive disabilities and hearing impairments ([↑Lynch et al., 2024](#); [Zhao et al., 2024](#)).

Emerging evidence also shows that inclusive EdTech practices not only support students with disabilities but also benefit entire classrooms through universal design principles. UNESCO's regional reviews highlight how inclusive policies, especially in Vietnam and Thailand, are leveraging technology to close accessibility gaps ([↑UNESCO & SEAMEO, 2023](#)).

Meanwhile, the Covid-19 pandemic revealed systemic inequities which further intensified the need for disability-sensitive digital infrastructure across the region ([↑Cashmore & Crosta, 2022](#)). Many OOSCY and learners at risk of dropping out are children with disabilities, displaced youth, or those in remote areas. Broadcast technologies such as radio and television, as well as mobile-friendly digital platforms, have shown potential to provide basic education for OOSCY, particularly during school closures or emergencies, though research remains limited on SEND in particular ([↑Afzal et al., 2024](#); [↑Barnes et al., 2025](#)). While these innovations represent

significant progress, they are far from being universally accessible. A range of systemic and structural barriers continues to inhibit the full inclusion of learners with disabilities in both mainstream and alternative learning systems.

2.2.1. Barriers for learners with disabilities

Learners with special needs and disabilities encounter multiple forms of exclusion from digital education. Limited accessibility, inadequate teacher preparation, and low representation in data systems all contribute to persistent inequities, especially in low-resource or rural settings. The paragraphs below outline the major challenges faced by learners with SEND, with a focus on digital learning environments.

Access and accessibility gaps

Many rural or low-income communities in Southeast Asia lack the necessary internet access, electricity, or devices required for digital learning, further disadvantaging learners with disabilities ([Zhao et al., 2024](#)). Even when learners with SEND are able to access devices and the internet, inclusive and accessible user interfaces remain a central issue for meaningful use ([Afzal et al., 2024](#)).

Limited data and visibility

Official statistics either underreport or often don't report the number of learners with disabilities, especially those with cognitive or invisible impairments, due to stigma or inadequate diagnostic tools. There is also limited evidence on the effectiveness and cost implications for SEND-focused interventions ([Mitchell et al., 2024](#)).

Insufficient training and support for teachers and caregivers

Teacher and caregiver training and support are critical for fostering inclusive education in the Southeast Asian region. Many teachers and caregivers lack the digital literacy and inclusive education skills needed to effectively support learners with disabilities ([UNESCO & SEAMEO, 2023](#)). Initiatives like Akadasia aim to upskill teachers in the Philippines, Indonesia, India, and Vietnam in 21st-century competencies, although specific training for disability inclusion remains a gap. Strengthening teacher and caregiver capacity is essential to fully leverage technology's potential in creating accessible and equitable learning environments ([Cashmore & Crosta, 2022](#)).

Cultural and social barriers

Social stigma and low awareness about disability rights among families and communities can limit uptake of inclusive EdTech or discourage school attendance altogether ([↑United Nations Timor-Leste, 2018](#)).

Lack of localised content

Lack of localised and personalised initiatives limits the effectiveness of support for learners. Many EdTech interventions are not designed to meet the diverse, intersecting needs of individuals, especially those with multiple disabilities. Without tailored approaches, students often face difficulties engaging with technology. This points to the need for context-specific solutions and stronger teacher support for personalised learning ([Zhao et al., 2024](#)).

2.2.2. Promising policy developments and initiatives

A range of initiatives across Southeast Asia are using accessible technologies and inclusive practices to support learners with disabilities. These efforts emphasise universal design, flexible delivery, and the importance of teacher and caregiver support. [Table 3](#) outlines key initiatives that are improving digital access for learners with SEND.

Table 3. *Promising interventions, initiatives, and resources for learners with SEND*

Initiative	Country(s)	Description
Digital accessibility in higher education	Indonesia	An inclusive e-module in Indonesia improved academic outcomes and learning engagement for classes with deaf students, demonstrating the potential of accessible design in higher education settings. The initiative highlights how inclusive digital content can close learning gaps for students with sensory disabilities in mainstream institutions (↑Musayaroh et al., 2023).
OER policy and practice	Malaysia	Inclusive Open Educational Resources (iOERs) support learners with disabilities by ensuring educational materials are accessible and adaptable to diverse needs. They include resources in formats like Braille, audio, and adjustable text settings, while following

		accessibility design principles to aid navigation and comprehension. Malaysia is advancing this approach through a national-level iOER policy for higher education institutions, promoting the structured development and use of accessible learning environments. By fostering flexibility and stakeholder collaboration, iOERs help create more equitable and inclusive educational opportunities (↑Moon & Park, 2021 ; ↑Othman et al., 2023).
Eskola Ba Uma ('School Goes Home') initiative	Timor-Leste	During the Covid-19 pandemic, the Ministry of Education, with support from UNICEF and other partners, launched this national programme to ensure learning continuity for marginalised children. It provided learners with disabilities access to tactile and audio learning materials, including content via radio, hard-copy, and audio-only formats, designed specifically to be inclusive of visual impairments and accessible to households without internet or television. This approach directly addressed barriers for both in-school and out-of-school learners with disabilities in rural and underserved areas (↑Honda et al., 2024).
Quality Improvement of Primary Education for Deaf Children (QIPEDC)	Vietnam	The World Bank-supported QIPEDC programme in Vietnam provided sign-language-based education, teacher training, and learning materials to enhance early grade education for deaf children across four provinces. It responded to the exclusion of deaf children from formal schooling and supported their reintegration into inclusive classrooms (↑Nguyen, 2023).
Mobile learning for cognitive disabilities	Indonesia	Rumah Autis Depok in Indonesia provides specialised education, therapy, vocational training, and employment support for

through Rumah Autis Depok		individuals with autism to promote well-being and community inclusion. It also offers services and resources to families and leads awareness campaigns to foster greater societal acceptance. Although limited, the programme incorporated technology like WhatsApp and Zoom during the Covid-19 pandemic for daily monitoring (↑Mitchell et al., 2024).
Inclusive TVET policy	Cambodia	Cambodia's revised Technical and Vocational Education and Training (TVET) policy identifies persons with disabilities as a priority group and outlines strategies for inclusive access to vocational education through physical and digital means. This approach helps reduce long-term exclusion from the workforce and supports transition for older OOSCY with disabilities into employment pathways (↑Jolita, 2024).
BacaBicara lipreading app	Indonesia	BacaBicara is a mobile application that helps deaf learners and those with hearing impairments improve their lipreading and speech comprehension through real-time facial expression tracking and practice modules. The tool supports language and communication development, which are foundational barriers for school inclusion among learners with hearing impairments (↑Muljono et al., 2019).
Teletherapy for learners with disabilities	Tunisia	In Tunisia, Sghartoon is a digital teletherapy platform that helps children with learning disabilities, such as dyslexia, by using educational games. It enables therapists to manage children's therapeutic paths with digital game libraries, patient management, and calendar tools (↑Adeniran et al., 2023).

2.2.3. Key insights and recommendations

1. Embed disability-inclusive design from the start

EdTech platforms are not always designed with universal accessibility in mind, limiting their usability for learners with disabilities. Inclusive design, such as screen reader compatibility, captioning, keyboard navigation, and localised sign or Braille support, must be considered at every stage of EdTech development.



Policy: National EdTech policies can require platforms to meet accessibility standards like WCAG 2.1 ([W3C, 2025](#)) and prioritise design elements such as captioning, screen readers, and localised assistive tools for diverse impairments.



Practice: Developers and implementers can co-design platforms with learners with SEND and test usability with inclusive education experts. Pilot programmes may assess real-world accessibility across classroom and home settings.



Research: Compare country-specific, field-tested solutions regarding font size, background colour on screen, and printed materials with their use in Southeast Asian countries to ascertain cultural versus medical solutions for effective SEND pedagogy.

2. Strengthen data and diagnostic systems to make learners visible

Learners with disabilities, especially those with cognitive or psychosocial impairments, are often underreported or misclassified. Without reliable data, learners are excluded from planning, resource allocation, and EdTech interventions.



Policy: Ministries can enhance monitoring and evaluation data collection systems to disaggregate data by disability type. Diagnostic frameworks may be integrated into enrolment, assessments, and EdTech reporting tools.



Practice: Schools and support organisations can train teachers and staff in using inclusive diagnostic tools and integrate special needs and disability markers into education data management platforms.



Research: Analyse the gap between government policies and low school uptake of SEND interventions in terms of economics, school and teacher capacity, and social attitudes.

3. Support teachers and caregivers as enablers of inclusive digital learning

Teachers and caregivers often lack the training, confidence, or tools to adapt digital content for learners with disabilities. Without targeted support, even the most accessible EdTech remains underused or misapplied.



Policy: Include inclusive digital pedagogy in all pre-service and in-service training frameworks. Ministries can also recognise and fund caregiver training as part of inclusive EdTech rollouts.



Practice: Educators and NGOs can create, or adapt from OERs, how-to guides, or video tutorials showing how to adapt EdTech tools for various impairments. Peer educator networks may help scale local solutions.



Research: Investigate the impact of different teacher and caregiver training programmes on the digital engagement and achievement of learners with disabilities. Case studies may track knowledge retention and improvements in learner outcomes.

4. Leverage low-tech and hybrid models to reach the most excluded

Learners with disabilities are often disproportionately represented among OOSCY, particularly in rural or underserved areas. High-tech solutions may not be viable for these learners, making low-tech and hybrid models crucial for inclusive outreach.



Policy: Encourage integration of inclusive content into national radio, TV, and mobile-based education initiatives. Ensure non-formal and equivalency programmes are disability-inclusive.



Practice: Implementers can adapt tools like WhatsApp or audiobooks for learners with cognitive or visual disabilities. Community hubs can offer blended support combining paper, audio, and human facilitation.



Research: Explore how hybrid delivery (e.g., combining home visits, radio, and/or basic mobile tools) can support learning continuity for learners with disabilities who are not in formal school systems.

2.3. School-related violence and bullying

School-related violence refers to physical, psychological, and sexual violence that occurs in or around schools, including bullying, cyberbullying, physical fights, and harmful exclusion. It is widespread globally and can be perpetrated by peers, teachers, or others in the school community. These experiences severely impact learners' physical health, mental well-being, academic success, and school attendance ([↑Kim, 2024](#)). Nearly one in three students aged 13 to 15 worldwide reports being bullied, with similar or higher rates found across Southeast Asia ([↑UNESCO, 2025](#)).

In Indonesia, the 2022 national assessment found that 36% of students were at risk of experiencing bullying, while 35% faced risks of sexual violence and 27% of physical punishment, highlighting widespread exposure to violence within the school system ([↑Hardianto, 2024](#)). These risks are further exacerbated in low-income areas, among girls, and for learners with disabilities. A recent study in Malaysia, for example, found that 13.7% of adolescents experienced cyberbullying, and that victimisation was a significant risk factor for suicidal ideation ([↑Mohd Fadhli et al., 2022](#)). Meanwhile, evidence shows that bullying in the Southeast Asian region more broadly was found as a reason for children to miss or drop out of school altogether ([↑Afzal et al., 2024](#)).

Beyond individual harm, school-related violence and bullying create unsafe, exclusionary learning environments. Marginalised learners, especially girls, ethnic minorities, LGBTQ+ students, and children with disabilities, are more likely to be targeted and less likely to report incidents, especially for sexual and gender-based violence incidents ([↑Beadle & YuJeong, 2024](#)). In many contexts, cultural norms reinforce silence around abuse and normalise punitive discipline. A recent analysis of child well-being in East Asia emphasised that school environments where children can meaningfully participate in decision-making show lower levels of bullying and violence ([↑Shamrova et al., 2025](#)).

Global efforts to end school-related violence and bullying have shown some progress, but major challenges remain, particularly in Southeast Asian countries where research is limited. Although EdTech and digital tools offer potential support, cyberbullying is increasing and digital solutions are often underutilised, especially outside urban areas. Strong political leadership, reliable data, and whole-school community approaches are identified as essential to effectively address school-related violence and bullying ([↑UNESCO, 2019](#)). In many Southeast Asian countries, there is a lack of tailored national strategies regarding digital safeguards,

safeguarding training especially for parents and teachers, netiquette and ‘bystander training’ for students, or effective reporting and referral mechanisms for online abuse ([↑Sittichai & Smith, 2015](#)).

2.3.1. Barriers to preventing school-related violence and bullying

Violence in schools, including bullying and cyberbullying, remains widespread across Southeast Asia. Many students, particularly from vulnerable groups, do not report these incidents due to stigma, unclear policies, and a lack of safe, confidential reporting tools. The paragraphs below identify specific barriers to preventing school-related violence and digital bullying.

Policy gaps in Southeast Asia

Cyber safety policy in the Southeast Asian region faces critical challenges due to fragmented legal frameworks and inconsistent enforcement across member states. Many countries lack clear definitions of key terms like child pornography or grooming, while some do not criminalise possession of exploitative materials at all. Only a minority have established cyberbullying laws or enforce obligations on internet service providers to report abuse. These gaps leave children vulnerable to exploitation and enable offenders to exploit jurisdictional loopholes across borders ([↑Rahamathulla, 2021](#)).

Limited data and monitoring systems

A key barrier to addressing school-related violence is the absence of real-time, disaggregated data on bullying and other forms of violence, alongside the challenge of ensuring confidentiality and protection for those who report. While systematic data collection through education management and information systems is essential to understand prevalence and patterns, such efforts must balance the need for disaggregated, fit-for-purpose data with the ‘Do No Harm’ principle. Effective reporting mechanisms must therefore be safe, confidential, and trusted, allowing students, especially girls, LGBTQ+ learners, and learners with disabilities, to share experiences without fear of exposure or retaliation. Systems like Jordan’s Ma’an online survey, which enables regular reporting and rapid response while safeguarding student privacy, illustrate how confidentiality can coexist with robust, actionable data collection ([↑UNESCO, 2024](#)).

Marginalisation of vulnerable groups

Children most affected by school-related violence, such as girls, learners with disabilities, LGBTQ+ youth, and ethnic minorities, are also those least likely to report incidents or receive support. Studies indicate that these learners face intersectional discrimination that increases their risk of victimisation and isolation ([↑Timur, 2022](#)). For example, in Malaysia, 13.7% of adolescents reported experiencing cyberbullying, which was closely associated with suicidal ideation, particularly among girls and LGBTQ+ youth ([↑Mohd Fadhli et al., 2022](#)).

Digital spaces as new arenas for bullying

With the growing use of digital learning and social media by young people, particularly after the Covid-19 pandemic, cyberbullying has emerged as a major concern. Learners now face risks not only within classrooms but also through messaging platforms, digital learning systems, and social media. In Indonesia, nearly 36% of students were identified as being at risk of bullying through the 2022 national assessment, with online harassment contributing to those risks ([↑Hardianto, 2024](#)). However, EdTech platforms and national digital education strategies have not consistently embedded child protection or digital safety measures to mitigate these harms ([↑UNICEF, 2023](#)).

Lack of digital literacy and protection policies

Teachers, caregivers, and learners often lack the digital literacy skills needed to identify, report, or manage cyberbullying effectively. In some cases, caregivers are unaware of the nature of online risks or lack the tools to supervise digital learning ([↑UNICEF EAPRO, 2024](#)). National policies on digital protection are also inconsistent, with few countries implementing clear, enforceable standards on safe digital learning environments ([↑UNESCO & SEAMEO, 2023](#)).

2.3.2. Promising policy developments and initiatives

Several countries in the Southeast Asian region are implementing digital and school-based solutions to reduce violence and bullying. From mobile apps to whole-school approaches, these interventions aim to create safer learning environments and promote student well-being. [Table 4](#) below highlights promising programmes that address school-related violence and cyberbullying.

Table 4. Promising interventions, initiatives, and resources for countering school-related violence and bullying

Initiative	Country(s)	Description
ASEAN Declarations on bullying (2021) and violence (2016)	ASEAN Member States	Member states adopted the ASEAN Declaration on the Elimination of Violence Against Children (2016) (↑ASEAN Secretariat, 2019) and later the ASEAN Declaration on the Elimination of Bullying of Children (2021), reinforcing a regional commitment to inclusive, gender-responsive child protection systems. The 2021 bullying declaration highlights the need to prevent both online and offline bullying through digital technologies, awareness-raising, and empowering children as agents of change. Both declarations call on countries to strengthen legal, social, and education systems to ensure safe reporting mechanisms and comprehensive support for affected learners (↑ASEAN Secretariat, 2021b).
ASEAN ICT Forum	ASEAN Member States	The ASEAN ICT Forum on Online Child Protection, led by Indonesia and Thailand, advances regional efforts to safeguard children online. Bringing together over 200 stakeholders, it supports the ASEAN Commission on the Promotion and the Protection of the Rights of Women and Children (ACWC) Work Plan and ASEAN's Protection of Children from All Forms of Online Exploitation and Abuse (COEA) commitments by addressing AI risks, digital rights, and strategies to strengthen child protection across the region (↑ASEAN Commission on the Promotion and Protection of the Rights of Women and Children, 2024).
Cyberbullying prevention in Vietnamese	Vietnam	Vietnam has taken steps to integrate cyber safety into school programmes. Recent cross-sectional research identifies emerging

state schools		prevention strategies, including curriculum reform, awareness campaigns, and online behaviour education, often delivered via digital platforms or blended formats (↑Mai et al., 2023).
Teacher training on school violence and online safety	Asia-Pacific	UN Women and UNESCO have called for improved teacher capacity to address violence in schools. In the Asia-Pacific region, ongoing professional development includes training in online safety, cyberbullying prevention, and child-centred pedagogy, particularly important as digital platforms become more central to education delivery (↑UN Women, 2023).
Whole-school bullying prevention	Indonesia	In Indonesia, integrating moral and civic education into the curriculum has served as a foundation for bullying prevention in high schools. A whole-school approach, including teacher training, student participation, and supportive digital content, has been shown to reduce school-related violence and improve the learning environment (↑Noboru et al., 2021).
eSmart Schools Program	Indonesia and the Philippines	eSmart is a behaviour-change framework that includes a digital curriculum on cyber safety, respectful relationships, and bullying prevention. Schools can implement the programme using online tools, training modules, and progress tracking systems. The initiative is an excellent example of an OER that is free and is licensed for use specifically in the Philippines and Indonesia (↑Government of Australia, 2025).
Cyber Teens mobile app for youth protection	Bangladesh	Implemented in Bangladesh, the <i>Cyber Teens</i> mobile app offers a transferable model for Southeast Asian contexts. Created by youth activist Sadat Rahman, the app allows teens

		to report cyberbullying and receive support confidentially. It demonstrates how mobile-first EdTech can be designed for youth-friendly reporting and psychosocial help (van Tiel, 2020).
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2.3.3. Key insights and recommendations

1. Integrate digital safety and anti-bullying into national EdTech and education policies

Digital learning expands access to education but also introduces new arenas for violence, particularly cyberbullying. Policy frameworks must embed child protection, digital ethics, and anti-bullying protocols into national education technology strategies.



Policy: Update EdTech, ICT, and school safety policies to include digital safeguarding, cyberbullying prevention, and reporting mechanisms. Align national strategies with the ASEAN Declaration on the Elimination of Bullying of Children ([ASEAN Secretariat, 2021b](#)) and the ASEAN Regional Plan of Action on the Elimination of Violence Against Children ([ASEAN Secretariat, 2019](#)).



Practice: Schools and platform providers can create student behaviour codes, escalation protocols, and training for digital moderators. Administrators may use reporting data to adjust prevention strategies.



Research: Evaluate the implementation of digital safety protocols in real-world settings and analyse their effectiveness in reducing incidents of cyberbullying and student disengagement.

2. Strengthen teachers' capacity to recognise and address violence in digital and physical spaces

Teachers are often the first line of defence against school-related violence, but may lack the training or tools to address bullying, especially online.



Policy: Teacher certification requirements can include modules on violence prevention, cyberbullying identification and mediation, trauma-informed pedagogy, and safe digital facilitation, reinforced through pre- and in-service training.



Practice: Provide in-service training on identifying, reporting, and responding to cyberbullying and offline abuse. Equip educators with age-appropriate digital literacy and anti-bullying resources.



Research: Explore how teacher attitudes, digital fluency, and preparedness correlate with school-related violence detection and prevention outcomes. Explore caregiver attitudes to, and awareness of, the perpetrators and victims/survivors of online gender based violence and bullying.

3. Leverage EdTech to create safe, confidential reporting and support channels for students

Technology can lower barriers to reporting violence, especially for students who fear retaliation or stigma.



Policy: Ministries can support local and school-level actors in implementing and monitoring the use of confidential digital reporting tools and peer-support platforms that provide insight into how safe and accessible safeguarding and reporting mechanisms support students at risk of bullying or harassment.



Practice: Schools can implement or adapt mobile- or web-based tools like *Cyber Teens* or SMS-based reporting systems in schools. Promote peer support networks via digital platforms.



Research: Study usage patterns, trust factors, and visibility of tech-based reporting mechanisms among different student groups, particularly girls, LGBTQ+ youth, and children with disabilities.

4. Promote whole-school and community-based approaches to violence prevention using digital tools

Tackling school-related violence requires ecosystem-wide change. Whole-school approaches that engage students, staff, families, and local communities can be supported and scaled through technology.



Policy: Facilitate nationwide adoption of whole-school violence prevention programmes by facilitating cross-governmental support that includes a digital learning component and community outreach.



Practice: Community radio, mobile messaging apps, and virtual school-level town halls can be used to engage families in promoting school safety and respectful online conduct.



Research: Investigate how community engagement via digital tools (or lack thereof) contributes to safer school environments and improved learner well-being.

5. Promote whole-school and community-based approaches to violence prevention using digital tools

Comprehensive sexuality education (CSE) provides an important platform for teaching students not only about health and relationships but also about digital ethics, consent, and online safety. In a context where children increasingly interact in digital spaces, CSE must evolve to equip them with the knowledge, attitudes, and practical skills to navigate online risks and build respectful relationships both offline and online.



Policy: Update CSE and digital literacy frameworks to include consent, healthy relationships, and online safety. Address cultural sensitivities, ensure confidential reporting, and align with ASEAN and UNESCO child protection standards.



Practice: Train teachers and principals to identify and respond to online abuse. Deliver learner-centred, age-appropriate lessons on consent, privacy, and digital ethics. Engage parents through digital-safety workshops.



Research: Evaluate how integrating online safety into CSE affects learner knowledge, reporting behaviour, and resilience. Identify effective, culturally sensitive strategies for teaching digital well-being and preventing online exploitation.

2.4. Education in emergency settings and for climate resilience

Globally, an estimated 234 million school-aged children are affected by crisis contexts, with 85 million out of school ([Education Cannot Wait, 2025](#)). Across Southeast Asia, education systems are increasingly disrupted by a wide range of emergencies, including armed conflict, forced displacement, pandemics, and climate-related disasters such as flooding, extreme heat, and wildfires. Many of the crisis-affected children face chronic educational exclusion due to displacement, marginalisation, and the cumulative effects of instability. In countries like Myanmar and the Philippines, over 12 million children from early childhood education to end of primary are affected by crises like natural hazards and political upheaval which have compounded these challenges, making education in emergencies (EiE) an urgent priority ([Education Cannot Wait, 2025](#)). Across Southeast Asia, nearly 12

million children are out of school due to crises and other persistent challenges, while migrant and displaced people often lack meaningful access to quality education (especially in their own language) in national school systems within host countries ([↑Afzal et al., 2024](#)).

To meet these growing challenges, the [↑ASEAN Secretariat \(2021; 2022\)](#) calls for stakeholders in the region to shift from short-term, reactive responses to building resilient education systems that address increasingly protracted crises caused by climate change and conflict. The ASEAN Secretariat recommends that systems are designed to absorb shocks, maintain education continuity, emphasise catch-up education, and support long-term recovery. The concept of resilience is especially critical in current and future climate-affected contexts, where schools and communities face recurring and intensifying environmental threats. As the UK's Foreign, Commonwealth & Development Office (FCDO) notes

“Education systems must urgently adapt to extreme weather events and environmental changes. If they do not, education goals will fall further out of reach, and future generations will be less able to survive in our changing world. Without harnessing the power of education, we are unlikely to solve the climate crisis.” ([↑FCDO, 2022](#)).

UNICEF similarly identifies the need to create resilient education systems and provides a framework to define what resilience in education looks like in the climate era. A climate-resilient education system proactively integrates climate mitigation and adaptation across planning, financing, curriculum, teacher development, partnerships, student participation, and data systems ([↑Kagawa, 2022](#)). This systems-level perspective emphasises both preparedness and transformation, ensuring that children continue learning through disruptions while equipping them with the skills needed to navigate future challenges.

Digital learning and EdTech can play a pivotal role in building this kind of resilience. These tools have helped sustain education during the Covid-19 pandemic, expanded access in displacement settings, and enabled flexible, multimodal approaches to reach marginalised learners, before, during, and after emergencies. Yet, as the evidence shows, digital learning must be inclusive, context-aware, and part of broader efforts to strengthen education systems; otherwise, it risks amplifying existing inequalities ([↑Barnes & Katrin, 2025](#); [↑Barnes et al., 2025](#)).

2.4.1. Barriers to building resilient education systems

Learners affected by crises often face exclusion from education due to weak policy integration, limited infrastructure, and a lack of legal or

administrative recognition for migrant and displaced students. Inadequate teacher training and limited language support further hinder their participation. The following paragraphs highlight the core barriers to ensuring education continuity in emergency contexts, with a focus on digital learning and EdTech.

Integrating migrant and displaced children into national education systems

In Indonesia, refugee learners faced systemic exclusion from remote learning during the pandemic due to gaps in national policy. Although a 2022 policy revision allowed schools to accept financial support for refugee education and removed detention centre permission requirements, refugee children remained ineligible for government-provided internet assistance because they were not included in the national Basic Education Data System ([↑Prabaningtyas et al., 2023](#)). This lack of digital support infrastructure underscored Indonesia's absence of a comprehensive legal framework to uphold refugee education rights and made digital learning inaccessible for many displaced students ([↑Barnes & Katrin, 2025](#)).

Weak policy and planning integration

Many Southeast Asian countries lack integrated, risk-informed education sector plans, limiting their ability to prepare for and respond to future disruptions. Few have updated emergency frameworks or incorporated Covid-19 lessons into planning. Financial constraints persist, with underinvestment in pre-primary education, teacher development, and digital infrastructure ([↑ASEAN Secretariat, 2022](#)). Funding is often inequitable, and needs-based allocation models are rarely used. Vulnerable groups, such as children with disabilities and those in remote areas, remain underserved due to fragmented policies and weak cross-sector coordination. These limitations undermine system resilience and the goal of inclusive, sustained learning ([↑ASEAN Secretariat, 2022](#)).

Fragile infrastructure and displacement dynamics

In remote or disaster-affected areas, digital learning efforts are constrained by unreliable power, poor internet connectivity, and limited device availability. These issues are intensified by forced displacement, where families may relocate without access to safe or stable learning environments ([↑Barnes et al., 2025](#)). Even when platforms are designed for low-tech environments, logistical barriers persist, like classrooms that are not designed for extreme heat in places that have increasing average temperatures ([↑Kagawa, 2022](#)).

Digital and pedagogical readiness gaps for emergency online teaching

Teachers, school leaders, and caregivers in emergency settings often lack the training, infrastructure, and pedagogical strategies needed to effectively integrate digital tools in disrupted contexts. Research shows that many educators globally, and in LMICs in particular, were unprepared for the digital pivot during the Covid-19 pandemic and remain ill-equipped to use technology in crisis-resilient ways. Without sustained investment in capacity building, digital remote learning cannot become a core pillar of educational resilience ([↑Crompton et al., 2021](#)).

Standalone EdTech interventions

During the Covid-19 pandemic, the Bangkok Asylum Seeker and Refugee Assistance Network attempted to support refugee learners in Thailand by sharing links to free online education platforms like BBC Bitesize and Khan Academy. However, in the absence of subject-specific teaching support, students struggled to understand the content and lacked motivation to continue their learning ([↑Akhtar & Keeney, 2024](#)). This highlights the limitations of EdTech when deployed without pedagogical scaffolding or personalised support, especially for vulnerable learners navigating unfamiliar curricula and digital systems.

Limited localisation, language support, and cultural relevance in migration and displacement contexts

Emergency responses often deploy digital content that is generic or externally developed. This limits linguistic and cultural relevance, particularly for migrant and displaced learners, and leads to poor engagement and learning outcomes ([↑Adeniran et al., 2023](#); [↑Unwin et al., 2021](#)). Moreover, Localising content for refugee learners has been found to be challenging due to limited resources, weak infrastructure, and reliance on external EdTech that often lacks cultural and linguistic relevance ([↑Barnes et al., 2024](#); [↑Peguero, 2024](#)). Ethnographic research in Thailand, for example, found that despite official inclusion policies, migrant learners faced poor academic performance due to gaps in Thai language proficiency and a lack of institutional language support, reinforcing the need for linguistically responsive digital learning strategies during emergencies ([↑Rueangdej & Nomnian, 2021](#)).

2.4.2. Promising policy developments and initiatives

In response to these challenges, governments and other stakeholders are adopting flexible, low-tech, and locally adapted solutions to plan for and maintain learning during crises. Several initiatives now embed digital tools

into broader emergency and climate resilience strategies. [Table 5](#) showcases promising approaches that support education access and resilience in emergency contexts.

Table 5. *Promising interventions, initiatives, and resources for education in emergency settings and climate resilience*

Initiative	Country(s)	Description
Remote learning via low-tech and multimodal channels	Cambodia and Sri Lanka	Cambodia's Basic Education Equivalency Programme (BEEP) offers flexible, modular, and partially online learning that enables rural and OOSCY to earn recognised certifications and re-enter the education system or workforce (↑Thinley et al., 2024). In Sri Lanka, the Nenasa programme delivers curriculum-based educational content through television to reach students in rural and underserved areas. It helps reduce the urban–rural education gap by providing accessible, low-tech learning support for marginalised children without internet access (↑Development Asia, 2024). Research has also shown that more students can be reached when multiple modalities are employed, such as “SMS-based learning, telephone trees, radio broadcasts, and paper-based learning” (↑Barnes et al., 2025 , p. 27).
Integrating digital learning in climate-resilient infrastructure	The Philippines	The ↑Institute for Development Impact (2025) promotes building climate-adaptable schools along with the integration of digital learning infrastructure with climate-adaptive design. It encourages schools to plan for energy-efficient ICT use, flexible learning spaces, and localised content delivery that can withstand future climate shocks and help monitor for disasters like floods and tsunamis. The initiative emphasises school-level planning, capacity building, and the use of low-power

		technologies to ensure learning continuity in disaster-prone areas. The institute also notes that “in the Philippines, schools in coastal areas are being designed with elevated structures and flood barriers to protect against rising sea levels and typhoons” (Institute for Development Impact, 2025 , para 4).
ASEAN Safe Schools Initiative (ASSI) and the Disaster Risk Management Information System (DRRMIS)	Cambodia, Vietnam, the Philippines, and Indonesia	Plan International's (2024) Safe Schools Global Programme reached nearly one million students across 33 countries by integrating climate-smart, child-centred disaster risk reduction into school systems. The programme empowered students to participate in risk mapping, evacuation planning, and school safety assessments. In Southeast Asia, it partnered with ministries in Cambodia, Vietnam, the Philippines, and others to implement the Comprehensive School Safety Framework. In Indonesia, it also supported the development of a Disaster Risk Management Information System (DRRMIS) to monitor school vulnerability and disaster impact (Plan International, 2024).
Learning recovery programmes	Thailand, Indonesia, and the Philippines	The ASEAN Secretariat (2022) outlines multiple examples of learning recovery programmes as examples of resilient education systems. In the Philippines, the Sa Aklat Sisikat reading programme supported accelerated learning recovery through a 31-day structured intervention with teacher training and student reading materials to address literacy gaps. Indonesia's Rural and Remote Education Initiative improved access and outcomes in underserved areas by combining structured pedagogy, community engagement, and teacher support. Thailand's Education

		Recovery Partnership, led by the Equitable Education Fund and UNICEF, targeted learning loss related to the Covid-19 pandemic and strengthened system responsiveness in disadvantaged provinces. The Zamboanga del Norte Youth Development Alliance in the Philippines enhanced education resilience by linking out-of-school youth to education, employment, and training through a multi-stakeholder referral system. These initiatives show how targeted, inclusive strategies can drive learning recovery and build stronger, more adaptive education systems following missed schooling (↑ASEAN Secretariat, 2022).
Mobile technology in national emergency preparedness	Pakistan	Pakistan has prioritised mobile technology as part of its national emergency preparedness strategy in education. Mobile phones were widely used to support learning during the 2022 floods, with WhatsApp and basic SMS enabling content delivery even in low-connectivity areas. These tools were preferred to TV or printed content, which were often inaccessible during emergencies. This shift was supported by government policy frameworks and teacher training programmes aimed at using mobile technology in all phases of emergency response (↑Mazari et al., 2022).
Social media for distance education	Colombia	During the Covid-19 pandemic, Colombia's Institute of Family Welfare supported 1.7 million disadvantaged children using WhatsApp and Facebook to deliver caregiver-led learning activities, showcasing how existing platforms can be adapted for learning continuity during emergencies (↑UNESCO, 2023b).

2.4.3. Key insights and recommendations

1. Embed digital learning in national education, emergency, and climate resilience plans

While digital tools supported learning continuity during the Covid-19 pandemic, many EdTech strategies remain reactive and disconnected from formal emergency preparedness or climate adaptation plans.



Policy: Ministries can institutionalise digital learning in emergency preparedness and recovery frameworks, ensuring that continuity and preparation strategies include digital infrastructure, offline tools, and staff training.



Practice: Train district education officers and school leaders to use digital platforms and mobile technology for emergency communication, curriculum delivery, and continuity planning.



Research: Compare how Southeast Asian countries are incorporating EdTech into national disaster risk management, EiE, and climate resilience frameworks, and assess their readiness for implementation during future crises. Evaluate effectiveness after new emergencies.

2. Prioritise low-tech, offline, and mobile delivery for OOSCY, learners at risk of dropping out, and hard-to-reach learners

Digital equity gaps are most pronounced during emergencies, especially in rural, climate-affected, or displacement settings where internet and electricity access are limited.



Policy: Require all national EdTech strategies to include provision for offline, radio, and mobile delivery channels to ensure inclusion in emergencies.



Practice: Scale multimodal learning initiatives such as WhatsApp-based instruction, solar-charged tablets, and hybrid content packs before crises arise, to reach disconnected learners during floods, typhoons, or conflict.



Research: Studies can compare modality effectiveness across emergency-affected learners and explore cost-benefit ratios for low-tech learning delivery models.

3. Build capacity for teachers, school leaders, and caregivers to use EdTech in crisis settings

Teachers, caregivers, and learners often lack the skills, tools, or support to use digital platforms effectively during emergencies, reducing the impact of EdTech investments.



Policy: Crisis-resilient teaching modules can be embedded in national teacher training. Governments may incentivise innovation in low-resource EdTech delivery for crisis contexts.



Practice: Teachers and caregivers can receive toolkits and scenario-based training on how to adapt content, engage students remotely, and provide psychosocial support during emergencies. Digital modalities for these include WhatsApp and Facebook teachers' groups and online communities of practice for resource sharing, continuous professional development, webinars and tutorials about how to use EdTech tools for teaching, learning, and assessing online learning.



Research: Evaluate how training improves educator and caregiver confidence and its link to learning continuity during environmental or conflict-related disruption.

4. Prioritise education in national disaster risk reduction and climate adaptation plans

Education is often overlooked in national emergency and climate response frameworks, despite schools' central role in protecting children and supporting communities during crises.



Policy: Ensure education is formally included in all national disaster risk reduction plans, emergency response, and climate adaptation plans alongside other relief efforts like health and food security, with dedicated budget lines for preparedness and recovery.



Practice: Equip schools to serve as local hubs for emergency communication, evacuation coordination, and psychosocial support. Engage teachers, students, and school management committees in community outreach before, during, and after crises.



Research: Document how school-centred approaches have contributed to community resilience in disaster-affected areas, and evaluate the effectiveness of education system inclusion in national disaster risk management and climate planning.

2.5. Social and emotional learning (SEL) and mental health and psychosocial support (MHPSS)

Social and emotional learning (SEL) and mental health and psychosocial support (MHPSS) have emerged as essential pillars of equitable, inclusive, and quality education systems. SEL emerged in 1994 when the Collaborative for Academic, Social, and Emotional Learning (CASEL) was formed and identified self-awareness, self-management, social awareness, relationship skills, and responsible decision-making as the pillars through which learners acquire and apply the knowledge, attitudes, and skills necessary to understand and manage emotions, build supportive relationships, and make responsible decisions ([↑Borowski, 2019](#)). SEL fosters core competencies such as emotional regulation, empathy, and resilience, which are foundational for learning, personal development, and social cohesion. MHPSS encompasses a broader spectrum of interventions, from basic psychosocial support to specialised mental health care and treatment, that safeguard learners' well-being and ensure they can thrive emotionally and academically, particularly in contexts of adversity or crisis ([↑UNICEF, 2021](#)).

Across Southeast Asia, the relevance and adoption of SEL and MHPSS in education systems have increased, especially in the wake of the Covid-19 pandemic, which disrupted education systems and exacerbated underlying inequalities. Learners reported increased levels of stress, anxiety, social isolation, and reduced motivation, underscoring the urgent need to address social and emotional well-being as a core education priority ([↑ASEAN Secretariat, 2024](#); [↑UNICEF & UNESCO, 2021](#)). These effects were even more severe among vulnerable groups such as OOSCY, learners at risk of dropping out, girls, and learners with disabilities. SEL and MHPSS are particularly important for these populations, who often face intersectional barriers to participation, achievement, and reintegration into learning environments ([Mitchell et al., 2024](#); [↑Nietschke et al., 2024](#)).

Digital technology and online learning have become key enablers for delivering SEL and MHPSS in the Southeast Asian region and globally. During and after the pandemic in particular, online support, SEL guidance, and low-tech platforms emerged as practical solutions for extending psychosocial support to remote, underserved, and crisis-affected learners

([↑Barnes et al., 2024](#); [↑Ching et al., 2025](#)). Research suggests that technology-supported SEL interventions can lead to significant improvements in learners' emotional health, academic performance, and social inclusion, particularly for learners with cognitive disabilities and girls in low-resource settings ([↑Raftree, 2023](#); [↑UNICEF, 2022](#); [↑Yap et al., 2022](#)). Despite positive developments in the implementation of SEL, limited evidence on specific interventions and other barriers to online and digital solutions remains.

2.5.1. Barriers to SEL and MHPSS in education

Despite growing awareness, mental health and social-emotional learning are still under-prioritised in many education systems. Stigma, limited teacher training, and fragmented implementation prevent consistent support for student well-being across digital and classroom settings. The paragraphs below outline the barriers that limit effective SEL and MHPSS integration in the Southeast Asian region, with a focus on digital learning and EdTech.

Stigma and low awareness

Mental health issues among children and youth in the Southeast Asian region often remain shrouded in stigma or are simply overlooked in policy and school practice. In many communities, low levels of awareness of mental health result in stigma, reduced help-seeking behaviours, and lower engagement with health services in online or in-person settings ([↑ASEAN Secretariat, 2024](#)). Schools globally also traditionally prioritise academic content, leaving soft skills and emotional well-being as a secondary concern ([↑UNICEF, 2022](#)). This lack of awareness and open dialogue means that even when digital (or offline) psychosocial resources are available, learners and educators may hesitate to use them due to stigma and reduced help-seeking behaviours ([↑UNICEF, 2022](#)). Furthermore, because psychosocial well-being was not historically part of education metrics, governments have only recently begun to prioritise SEL/MHPSS in plans, often as a response to Covid-19 rather than a preemptive strategy ([↑ASEAN Secretariat, 2024](#); [↑UNICEF, 2022](#)).

SEL curriculum integration

Integrating SEL into curricula across parts of Southeast Asia has faced challenges. In Vietnam, for example, SEL is positioned as an extracurricular activity rather than fully embedded into academic subjects, and teachers report difficulties aligning SEL with the current curriculum structure ([↑Amihan, 2021](#)).

Shortage of trained personnel and resources

The Covid-19 pandemic exposed significant staff shortages and training gaps in delivering SEL and MHPSS across schools in Southeast Asian countries. Many teachers and caregivers were not equipped to support student well-being, and mental health services for both students and staff were frequently disrupted. Expanding teacher and caregiver training in emotional support, resilience-building, and safeguarding is now seen as essential for strengthening education systems in the region ([↑ASEAN Secretariat, 2024](#); [↑UNICEF & UNESCO, 2021](#)). Evidence from the Philippines similarly suggests that teachers specifically find online SEL useful, but need more support and training for the digital modality ([↑Ching et al., 2025](#)).

Limited intervention evidence within low- and middle-income countries (LMICs)

There is limited evidence supporting the effectiveness of school-based mental health and psychosocial interventions for children in humanitarian contexts within LMICs ([↑Lasater et al., 2022](#)). The development of scalable, nonspecialist psychological interventions for children aged 5–12 in LMICs, for example, is hindered by insufficient research and evaluation ([↑Brown et al., 2024](#)). Meanwhile, SEL research has been concentrated in North America, with 70% of intervention studies conducted in the United States and 95% of early education SEL studies originating from North America. This concentration limits the availability of models that are specifically designed for different Southeast Asian educational contexts, where academic traditions and cultural expectations may differ. As a result, efforts to integrate SEL more systematically into curricula are still evolving ([↑Ozdemir et al., 2025](#)).

2.5.2. Promising policy developments and initiatives

New models for delivering SEL and psychosocial support are emerging across the region. These include digital platforms, caregiver training, and curriculum-aligned tools that help students build resilience and emotional well-being in both formal and informal settings. [Table 6](#) introduces key initiatives that advance SEL and MHPSS in education in Southeast Asia, with a focus on digital learning and EdTech.

Table 6. *Promising interventions, initiatives, and resources for SEL and MHPSS in Southeast Asia*

Initiative	Country(s)	Description
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My Village TV	Lao PDR	Launched in 2012, <i>My Village TV</i> aimed to enhance early learning for marginalised children in Laos, emphasising social and emotional development alongside cognitive and language skills. Designed for children under six from diverse ethnic backgrounds, the programme supported school readiness by fostering inclusive, holistic growth. Accessible via TV, DVDs, and online platforms, it helped improve caregiver practices and child engagement. During school closures, it continued to provide critical emotional support and learning continuity for vulnerable families (↑Barnes et al., 2024).
ASEAN regional guidance on the social service workforce in education	ASEAN Member States	At the policy level, ASEAN has made a landmark commitment to student well-being through a new regional guidance document. Agreed in 2024 with UNICEF's support, this guidance calls on member states to strengthen the role of social workers, counsellors, and school-based support teams in the education sector. It provides a roadmap for governments to build a “caring and safe” school environment by addressing underlying psychosocial factors that affect attendance and learning (↑ASEAN Secretariat, 2024).
Filipino SEL competency framework	The Philippines	Developed by the Department of Education (DepEd) and ChildFund Philippines, this framework contextualises SEL around Filipino values such as <i>pakikipagkapwa-tao</i> (empathy and connection). It has been integrated into basic education and alternative learning curricula, accompanied by teacher training and digital content (↑Asia Education Review, 2024).
“Feeling Good” sessions	Indonesia	UNESCO Jakarta and DepEd's Alternative Learning System delivered interactive psychosocial sessions on Facebook Live to support out-of-school youth. These sessions addressed anxiety, coping skills, and emotional

		resilience, and reached tens of thousands of learners during the height of Covid-19 pandemic-related disruptions (↑UNESCO, 2023a)
UNESCO Bangkok SEL training modules	Thailand	UNESCO Bangkok designed an OER of SEL training materials for early childhood educators across Southeast Asia, including guidance for integrating SEL into daily classroom practice and adapting to different learner needs, such as those with disabilities. It includes online and print curriculum materials. (↑Diwan, 2022).
Online SEL in Vietnam	Vietnam	A pilot programme in Vietnam successfully developed a SEL curriculum for high school students, blending online and offline activities to align with the demands of Education 4.0, which emphasises digital skills, adaptability, and emotional intelligence. The initiative led to significant gains across key SEL competencies, with students showing measurable improvements in self-awareness, relationship skills, and responsible decision-making. By integrating digital tools, social media training, and family engagement, the project offers a strong model for advancing SEL in Asia's rapidly evolving educational landscape (↑Nguyen et al., 2024).
Building resilience through digital SEL integration in Asia	The Philippines	The integration of SEL teaching practices and e-services at the University of Perpetual Help System-DALTA (UPHSD) in the Philippines successfully supported student resilience during the shift to online learning. Teachers effectively implemented SEL strategies through strong social and instructional interactions, while the institution adapted its educational services to the new normal. These efforts demonstrate how embedding SEL into online platforms can maintain educational quality and foster student well-being during times of crisis (↑Amihan, 2021).

↑UNICEF (2022) identified the following digital and online tools for supporting MHPSS and SEL globally. These are displayed in Table 7 with details adapted from the UNICEF (2022) report.

Table 7. *School-based or learning-related SEL and MHPSS interventions*
(Adapted from ↑UNICEF, 2022, p. 29)¹

Intervention Name	Setting	Delivery Modality	Key Features
Be Strong Online	School	Online/Digital	Peer-led digital modules on cyberbullying, SEL, and mental health
Better Learning Program	School; Home	Phone; Radio; Online/Digital	SEL and trauma recovery include educator support and psychosocial strategies
Girl Rising	School	TV / Video/ Film	SEL and gender equity through multimedia storytelling and discussion
Inside Out — We All Belong	School	TV/ Video; Paper-based	Animated film with classroom guides to promote empathy and inclusion
La Aldea	School; Home	Paper-based; Online/Digital; Radio	SEL and citizenship through fables, integrated into the school curriculum
MeeToo	School; Home	Online/Digital	Anonymous, moderated peer-support app for the emotional well-being of young people
MindUP 2.0	School	TV/ Video; Online/Digital	Mindfulness and SEL curriculum with virtual training for educators
Pure Edge	School; Home	Online/Digital	SEL, mindfulness, and educator professional development resources

¹ Detailed information on programmes listed in Table 7 can be found in ↑UNICEF (2022).

School Day Wellbeing	School	Online/Digital	Student well-being monitoring system with real-time feedback for schools
SEL Kernels	Early Learning; School	Mixed Mode: Paper-based; TV/ Video	Simple, evidence-based SEL activities embedded in daily classroom routines
SESAME Workshop	Early Learning; Home	TV/ Video; Online/Digital	Multi-platform SEL content promoting resilience, coping, and inclusion
7 Cups: Anxiety & Stress Chat	School; Home	Phone; Online/Digital	Anonymous online chat for mental health support from peers and professionals

2.5.3. Key insights and recommendations

1. Integrate SEL and MHPSS into digital and blended learning environments

SEL and MHPSS can be embedded into online, digital, and face-to-face learning systems, not treated as optional add-ons. Building emotional well-being into virtual classrooms, mobile platforms, and blended programmes strengthens resilience and supports vulnerable learners engaging in learning through EdTech.



Policy: Education ministries can require national EdTech plans to include provisions for SEL and MHPSS tools, ensuring learners' emotional well-being is addressed alongside academic performance.



Practice: Schools can deploy digital journaling, mindfulness, or empathy-building activities via platforms. Educators can also use check-in tools to monitor emotional well-being.



Research: Studies can examine the effect of digital SEL and MHPSS tools on students' stress levels, classroom engagement, and emotional regulation in different learning settings.

2. Build the capacity of teachers and caregivers for SEL and MHPSS

Teachers and caregivers need targeted support to deliver SEL and MHPSS through digital and remote learning. Without adequate preparation, online environments risk missing critical emotional support for learners.



Policy: National training standards can require pre-service and in-service SEL modules and offer professional development for MHPSS, especially in high-need or emergency-prone regions.



Practice: Teachers should be trained to recognise signs of social and emotional distress in their students, and be trained in appropriate measures to support children in need. For example, provide teachers and caregivers with training, practical toolkits, role-play activities, and culturally adapted resources to guide discussions on emotional health, integrating SEL into remote, online, and blended learning contexts.



Research: Research can assess how trained adults support learners' psychosocial well-being. Longitudinal data may show links between adult capacity and learner retention or confidence.

3. Leverage low-tech and mobile platforms to expand SEL and MHPSS access

Digital and mobile modalities are critical to reaching out-of-school learners, rural communities, and crisis-affected populations with SEL and psychosocial support. Using simple, accessible technologies can extend impact where internet access is limited.



Policy: Governments can promote the development and national adoption of mobile-first, offline-capable SEL and MHPSS tools to reach OOSCY communities. These can be embedded in emergency response and education continuity frameworks to ensure equitable access.



Practice: Educators and implementers can design hybrid SEL programmes using SMS messages, community radio, mobile apps, and printed activities. These formats help reach learners in remote areas or during school closures.



Research: Compare engagement, accessibility, and emotional outcomes across different delivery modes. Studies might assess how low-tech and mobile platforms serve hard-to-reach learners in Southeast Asian contexts.

4. Address stigma and normalise mental health support in digital spaces

Stigma around mental health can limit learners' willingness to engage with online or digital MHPSS resources. Building safe, inclusive digital environments is essential for promoting emotional well-being.



Policy: National EdTech strategies can include anti-stigma messaging and mental health awareness campaigns. These should promote open dialogue, normalise help-seeking, and align with the digital habits and platforms of and for young people.



Practice: Digital learning platforms can embed interactive tools, peer-sharing features, and anonymous reflection spaces that promote emotional expression and reduce stigma. School-led campaigns may highlight stories of resilience and support.



Research: Research can explore how digital interventions influence attitudes toward mental health and help-seeking. Evaluate shifts in stigma, engagement, attitudes, and emotional openness among different learner groups.

3. Conclusion

The conclusions in this section build directly on the key insights and recommendations presented in the previous sections, synthesising the findings across all five cross-cutting themes. The sections below consolidate recommendations into four overarching areas. [Section 3.1.](#) covers multiple and adaptable delivery modalities, [Section 3.2](#) teacher and caregiver support, [Section 3.3.](#) digital literacy and protection, and [Section 3.4](#) , monitoring, evaluation, and evidence coordination. Each area reflects patterns observed across the themes, such as persistent access inequities, the critical role of human support systems, and the need for more inclusive and context-sensitive EdTech planning. Rather than addressing each theme in isolation, this conclusion highlights common structural gaps and opportunities for system-wide improvement.

Looking ahead, the findings underscore the importance of integrating EdTech strategies into broader education system reforms, especially in contexts of crisis, exclusion, and inequality. Implementation at scale will require stronger cross-sectoral coordination, updating Southeast Asian regional policy and guiding declarations, flexible funding models, and ongoing investment in research that is locally grounded and inclusive of marginalised voices, including OOSCY, learners at risk of dropping out, migrants, and displaced persons. Ultimately, advancing equity in digital learning will depend not only on technological innovation but also on building resilient ecosystems that centre learners' diverse needs, lived experiences, and evolving contexts. This conclusion offers a roadmap to guide those efforts, within Southeast Asia specifically, and across other regions navigating similar challenges.

3.1. Multiple, flexible, and adaptable modalities

To support inclusive and resilient education across Southeast Asia, it is essential to move beyond high-tech-first approaches and prioritise multiple, flexible, and adaptable modalities. Learners across the region, particularly those in rural communities, from ethnic-minority groups, or in crisis-affected areas, often lack consistent access to the internet or digital devices. Over-reliance on online platforms risks excluding these learners unless complemented by traditional media and low-tech delivery channels such as mobile phones, television, radio, SMS, and printable content.

Flexibility in delivery is equally critical for meeting the diverse needs of learners, including those with disabilities or varying learning styles.

Multimodal approaches support differentiated instruction and teaching to multiple intelligences. They also allow asynchronous engagement, helping learners balance education with domestic work, caregiving responsibilities, or economic pressures. For girls and OOSCY in particular, flexibility and accessibility are essential to sustained participation in education. While several regional frameworks, such as the *ASEAN Declaration on Strengthening Education for out-of-school Children and Youth (OOSCY)* ([↑ASEAN Secretariat, 2016](#)) and *Community Guidelines for ASEAN Countries for EiE* ([↑ASEAN Secretariat, 2022](#)), advocate for some of these approaches, addressing these issues specifically and following through on implementation across Southeast Asia will be crucial in the years to come.

Accounting for language diversity is also fundamental. Many children across Southeast Asia grow up speaking local or minority languages that differ from the national language of instruction. Without translated or culturally adapted materials, they are likely to disengage. This is where well-designed OERs, delivered through appropriate media, can help bridge linguistic, cultural, and infrastructural divides.

Designing EdTech with flexible modalities from the outset is a prerequisite for inclusion, not an add-on. [Table 8](#) below summarises evidence on how this principle supports the cross-cutting themes.

Table 8. *Application of multiple, flexible, and adaptable modalities to cross-cutting themes in the use of EdTech in Southeast Asia*

Theme	Application for Flexible and Adaptable Modalities
Gender equity	Mobile-first tools, radio, and SMS reach girls who are unable to go to school in person or with limited device access or connectivity. Flexible formats allow engagement outside rigid school hours and help accommodate caregiving duties.
Students with special educational needs and disabilities (SEND)	Multimodal formats (e.g., audio, visual, tactile) enhance accessibility. TV, radio, and hybrid content support learners with sensory, cognitive, or physical impairments.
School-related violence and bullying	Print and offline materials offer safer, more private options for SEL and violence prevention. Mobile tools enable confidential reporting and support.

Education in emergency settings and for climate resilience	Radio, mobile, and print enable continuity during disasters or displacement. TV and offline kits support modular, location-independent learning.
Social and emotional learning (SEL) and mental health and psychosocial support (MHPSS)	Low-tech storytelling, community radio, and mobile apps support emotional well-being. Printable SEL guides equip caregivers and educators to deliver consistent support.

3.2. Teacher and caregiver support

Across all five cross-cutting themes explored in this paper, teachers and caregivers emerge as central actors in the success of EdTech and digital learning interventions. They serve as facilitators, motivators, protectors, and emotional anchors, particularly for learners facing exclusion due to gender, disability, displacement, or psychosocial distress. However, as education systems evolve to incorporate technology, more is frequently asked of teachers and caregivers, often without the necessary structural support.

While ongoing professional development and digital training are important, they must be accompanied by broader forms of institutional and policy-level support. This includes reducing administrative burdens, providing well-designed tools and materials, offering emotional and peer support, and ensuring that digital education strategies are realistic and responsive to local contexts. Governments and school systems must view teachers and caregivers not as implementation bottlenecks but as essential partners who require both investment and protection.

Supporting them effectively means enabling, not overloading them. This can be achieved by embedding inclusive pedagogical resources into national curricula, offering flexible modalities, and creating feedback loops that recognise their contributions. Moreover, recent *Regional Guidance for ASEAN Member States on Strengthening the Role of Social Workers and the Wider Social Service Workforce in the Education Sector* ([ASEAN Secretariat, 2024](#)) offers regional policy and implementation recommendations for helping reduce the burden on teachers and caregivers by utilising social workers to address issues like student well-being and psychosocial support specifically.

Table 9 below summarises how teacher and caregiver support contribute to each cross-cutting theme.

Table 9. *Application of teacher and caregiver support to cross-cutting themes in the use of EdTech in Southeast Asia*

Theme	Application for Teacher and Caregiver Support
Gender equity	Teachers and caregivers influence girls' digital access, use, and confidence. Their engagement helps challenge gender norms, promote safety, and support equitable participation in EdTech.
Students with special educational needs and disabilities (SEND)	Inclusive teaching strategies and caregiver involvement are vital to adapt EdTech tools, provide emotional support, and ensure accessible learning across settings.
School-related violence and bullying	Teachers need training to recognise and respond to violence, including cyberbullying. Caregivers play a key role in ensuring their children's online safety through personal data protection locks, parental controls for harmful websites and social media groups, positive online behaviour, and safe spaces for children to report abuse and be heard.
Education in emergency settings and for climate resilience	Teachers and caregivers support learning continuity through crisis-adapted tools, psychosocial support, and the use of flexible, low-tech solutions in disrupted environments.
Social and emotional learning (SEL) and mental health and psychosocial support (MHPSS)	Emotional well-being is reinforced when teachers and caregivers actively model SEL, deliver support through digital platforms, and create safe spaces for expression and connection.

3.3. Digital literacy and protection

Digital literacy is central to all cross-cutting themes identified in this paper, functioning as a foundational competency for inclusive, equitable, and safe

learning across Southeast Asia. Rather than adopting one-size-fits-all models, Southeast Asian education systems could consider differentiating digital literacies for learners, teachers, and caregivers. Each group may require tailored support to build both tool-based knowledge and the softer skills needed to navigate digital cultures, networks, and risks. Country data from [†Gitanjali et al. \(2024\)](#) reveal wide disparities, such as only 17% of respondents in the Philippines demonstrated competence in privacy protection, while over 70% of the elderly in Brunei showed low levels of information competence. In Cambodia, despite widespread mobile phone use, fewer than 30% of the population possess basic digital and media literacy skills, leaving communities vulnerable to online harms. These challenges are compounded by the persistent need to protect children and adults from the risks of mis/disinformation, scams, unauthorised data use, and emotional manipulation, especially among underprivileged and vulnerable groups ([†Gitanjali et al., 2024](#)). Digital literacies, competencies, and skills also serve as the foundation for protection from these risks and any engagement with digital learning environments, education technologies, and modern information systems. Without these capabilities, learners and educators are unable to fully participate in or benefit from emerging educational innovations. For example, the skills required to search, find, and adapt OERs are crucial for teachers and school curriculum staff in creating instructional content that is relevant and contextually appropriate.

Ministries of Education are encouraged to investigate which digital and media literacies are most relevant to their national contexts and to embed these into curricula, teacher preparation, and community engagement strategies. This could include integrating foundational, generic, and higher-order competencies that support critical engagement, ethical participation, and digital resilience ([UNESCO Institute for Statistics, 2018](#); [UNESCO et al., 2024](#)). Ministries could specifically seek guidance on these issues from the *Declaration on the Elimination of Bullying of Children in ASEAN* ([†ASEAN Secretariat, 2021b](#)) and events like the ICT Forum ([†ASEAN Commission on the Promotion and Protection of the Rights of Women and Children, 2024](#)), which both provide regional frameworks addressing these issues.

Moreover, learners may benefit from developing and including not only technical proficiency but also cognitive, communicative, critical, and civic capacities to participate meaningfully in digital environments. Digital literacy is not a single skill but a collection of context-specific, socially constructed practices that evolve alongside technological, cultural, and educational shifts ([Belshaw, 2014](#)). [Table 10](#) outlines the potential

application of digital literacy and protection for each of the cross-cutting themes.

Table 10. *Application of digital literacy and protection to cross-cutting themes in EdTech in Southeast Asia*

Theme	Application for Digital Literacy
Gender equity	Equipping girls and women with the skills to navigate digital spaces safely and critically can help close gender gaps in access, voice, and participation, while also challenging online discrimination and exclusion.
Students with special educational needs and disabilities (SEND)	The effective use of assistive technologies, accessible content formats, and adaptive platforms relies on digital competencies of teachers and caregivers that support inclusive engagement for diverse learners.
School-related violence and bullying	Skills related to online safety, digital rights, and respectful communication enable learners to identify, prevent, and respond to cyberbullying and harmful online behaviours. Curriculum content on the importance of consent, and preventing bullying and sexual abuse through phishing, grooming, sexting, and unwanted sharing of images, enables school leaders and teachers to address online, school-related, and gender-based violence in frank and meaningful ways.
Education in emergency settings and for climate resilience	Continued access to learning during crises depends on learners' and educators' ability to engage with mobile, offline, and remote tools, all of which require a baseline of digital fluency.
Social and emotional learning (SEL) and mental health and psychosocial Support (MHPSS)	Digital literacy equips both learners and educators with the skills to navigate online spaces safely, helping them recognise, prevent, and respond to harmful behaviours such as cyberbullying. It also empowers responsible technology use, fostering respectful communication and safeguarding privacy and well-being in digital environments.

3.4. Monitoring, evaluation, and evidence coordination

Monitoring, evaluation, and learning (MEL) systems are essential for generating evidence that supports more inclusive, effective, and scalable digital learning strategies. In the absence of strong MEL, it becomes difficult to assess whether interventions are improving outcomes for learners, particularly those most at risk of exclusion, such as OOSCY, learners at risk of dropping out, learners with disabilities, and students in remote areas. When MEL is embedded from the beginning, it enables education systems to identify what is working, course-correct in real time, and make better use of available resources.

Front-loading MEL into national strategies and school-level planning helps ensure that digital learning investments are aligned with meaningful goals. Rather than focusing only on reach or access, strong MEL systems, like the recently developed Primary Learning Program (PLP) in Cambodia ([↑Ministry of Education, Youth and Sport \(MoEYS\), 2025](#)), collect school-level data while highlighting impacts on learner engagement, digital safety, and teaching and learning quality. These insights make it easier to adapt interventions to diverse contexts and needs.

Coordinated evidence sharing across Southeast Asia adds further value. Efforts like the SEAMEO *Strategic Workshops on Monitoring, Evaluation, Learning (MEL)* and the *SEAMEO Result Framework and MEL Strategy* ([↑SEAMEO Regional Centre for QITEP in Mathematics, 2024](#)) offer support for regional policy and practice that promote cross-country comparison and dissemination of findings can foster mutual learning, reduce duplication, and accelerate collective progress. A stronger regional evidence base also supports more strategic decision-making on intervention effectiveness and cost, increasing the likelihood that EdTech solutions deliver long-term, equitable benefits. [Table 11](#) outlines how monitoring, evaluation, and evidence coordination can benefit initiatives that address the cross-cutting themes.

Table 11. *Application of monitoring, evaluation, and evidence coordination to cross-cutting themes in EdTech in Southeast Asia*

Theme	Application for Flexible and Adaptable Modalities
Gender equity	Flexible modalities such as mobile-first tools and community-based hubs can be assessed for how well they reduce gender-related barriers and support sustained engagement by girls and young women.
Students with special educational needs and disabilities (SEND)	Evaluation should consider whether a range of formats, including audio, captioned video, and simplified interfaces, enable learners with different access needs to participate fully.
School-related violence and bullying	Monitoring the use of confidential reporting tools and peer-support platforms can provide insight into how safe and accessible these options are for students at risk of bullying or harassment.
Education in emergency settings and for climate resilience	Tracking the reach and effectiveness of low-tech and hybrid options like SMS, radio, and offline applications helps ensure that learning continues during disruptions or displacement.
Social and emotional learning (SEL) and mental health and psychosocial support (MHPSS)	Assessing how SEL and MHPSS content is delivered through various formats can show whether flexible modalities are meeting learners' emotional and psychological needs in diverse settings.

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