EdTech Hub

Clear evidence, better decisions, more learning.

ASEAN-UK SAGE | Supporting the Advancement of Girls' Education

Tech-Enabled Alternative Education for Out-Of-School Children And Youth (OOSCY)

Evidence from Southeast Asia

Date March 2026

Authors Andrew Swindell
Kate Radford

DOI 10.53832/edtechhub.1191

UK International Development
Partnership | Progress | Prosperity

THE WORLD BANK

unicef for every child

@GlobalEdTechHub edtechhub.org

About this document

Recommended citation

Swindell, A., & Radford, K. (2026). *Tech-Enabled Alternative Education for Out-of-School Children and Youth (OOSCY): Evidence from Southeast Asia* [Technical Report]. EdTech Hub. https://doi.org/10.53832/edtechhub.1191. Available at https://docs.edtechhub.org/lib/63QAD5XV. Available under Creative Commons Attribution 4.0 International.

Reviewers

Haani Mazari

About EdTech Hub

EdTech Hub is a global research partnership. Our goal is to empower people by giving them the evidence they need to make decisions about technology in education. Our evidence library is a repository of our latest research, findings, and wider literature on EdTech. As a global partnership, we seek to make our evidence available and accessible to those who are looking for EdTech solutions worldwide.

EdTech Hub is supported by UKAid, World Bank, and UNICEF. The views in this document do not necessarily reflect the views of these organisations.

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

This material has been funded by the UK; however, the views expressed do not necessarily reflect the UK Government's official policies.

Contents

Figures and tables

Abbreviations and acronyms

AEP	Accelerated education programme
ALS	Alternative Learning System (Philippines)
ASEAN	Association of Southeast Asian Nations
BEEP	Basic Education Equivalency Programme (Cambodia)
EdTech	Educational technology
EEF	Education Endowment Foundation
EiE	Education in emergencies
FGD	Focus group discussion
ICT	Information and communication technology
KII	Key informant interview
MoE	Ministry of Education
MoEYS	Ministry of Education, Youth, and Sport (Cambodia)
NFE	Non-formal education
NGO	Non-governmental organisation
OOSCY	Out-of-school children and youth
PLP	Primary Learning Program
SEAMEO	Southeast Asia Ministers of Education Organization
SEND	Special educational needs and disabilities
SEL	Social and emotional learning
TaRL	Teaching at the Right Level
TVET	Technical and vocational education and training
UNGEI	United Nations Girls' Education Initiative

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.

Out-of-school children and youth (OOSCY): The study adopts the definition used 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 who are at risk of dropping out.

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 ('Lao PDR'), 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).

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).

Education types: Drawing from the ↑United Nations Girls' Education Initiative (UNGEI) et al. (2021), we adopt the following definitions:

- **Alternative education:** alternative education includes planned, structured education programming for out-of-school children, adolescents, and youth that leads to equivalent, certified competencies in academic or technical/vocational subjects Alternative education is usually flexible to accommodate and meet the needs of out-of-school learners. Examples include:
  - Accelerated education programmes (AEPs): Flexible, age-appropriate programmes, run in an accelerated timeframe, which aim to provide access to education for disadvantaged, over-age, out-of-school children and youth—particularly those who missed out on, or had their education interrupted due to poverty, marginalisation, conflict and crisis.
  - Alternative basic education.
  - Youth livelihoods training programmes.
- **Formal and non-formal education**
  - **Formal education** is education that is institutionalised, intentional and planned through public organisations and recognised private bodies and, in their totality, make up the formal education system of a country. Formal education programmes are thus recognised as such by the relevant national educational authorities or equivalent, e.g., any other institution in co-operation with the national or sub-national educational authorities. Formal education consists mostly of initial education. Vocational education, special needs education and some parts of adult education are often recognised as being part of the formal education system.
  - **Non-formal education (NFE)** is the overarching term that refers to planned, structured, and organised education programmes that are outside the formal education system. Some types of NFE lead to equivalent, certified competencies, while others do not. NFE programmes are characterised by their variety, flexibility, and ability to respond quickly to the new educational needs of learners in a given context, as well as by their holistic, learner-centred pedagogy. Informal learning (knowledge and skills naturally obtained through day-to-day interactions and activities) is not considered NFE.

- **Support services:** Drawing from the ↑United Nations Girls' Education Initiative (UNGEI) et al. (2021), we define support services as including programmes offered to students in addition to their formal or non-formal education studies. Examples include:
  - Tutoring and after-school support
  - Remedial education
  - Dropout prevention and learning readiness
  - Integrated curriculum elements, such as life skills, health education, disaster risk reduction, safety, psychosocial support and social-emotional learning, and peace education
  - Cash grants to facilitate enrolment and retention (e.g., for fees, uniforms, rewards for retention).
- **Transitional programmes:** Drawing from the ↑United Nations Girls' Education Initiative (UNGEI) et al. (2021), we define transitional programmes as short-term educational programmes that help learners transition into formal or alternative education pathways. On their own, they do not lead to certification or equivalent competencies and are often implemented by non-governmental organisations (NGOs). Examples include:
  - Learning readiness programmes
  - Catch-up programmes
  - Bridging programmes (e.g., language support)

Executive summary

Across Southeast Asia, millions of children and youth remain excluded from education due to poverty, migration, disability, gender-related risks, conflict, and climate-related disruption. While governments have expanded access to alternative education pathways, many out-of-school children and youth (OOSCY) continue to face persistent barriers related to access, quality, continuity, and coherence with national education systems. Tech-enabled education has been increasingly used to address these barriers, yet its effectiveness and feasibility within public governance systems remain uneven and insufficiently understood. This research responds to the need for practice-grounded evidence on how tech-enabled approaches are designed and implemented within public education systems in Southeast Asia, and what these experiences reveal about their potential and limitations in supporting education for OOSCY.

This study employs a qualitative research approach to generate practice-grounded evidence on how tech-enabled approaches are used to support OOSCY. The methodology was selected to prioritise the views of policymakers, programme leaders, teachers, and implementers actively engaged with tech-enabled alternative education, recognising that critical insights related to feasibility, effectiveness, and system alignment are embedded in day-to-day operational practice. Data was collected through key informant interviews and focus group discussions with 27 stakeholders across programmes in Cambodia, Indonesia, Thailand, and the Philippines. Findings should be interpreted as qualitative, perception-based insights into programme implementation and governance conditions rather than as quantitatively validated measures of programme impact.

Findings reveal that mobile devices are the primary access points for learning because they enable participation without fixed schedules and allow learners to balance education with work and family responsibilities. However, expanded participation is strongest when mobile-first delivery is paired with community-based outreach, shared devices, and low- or no-connectivity modalities. Technology alone does not remove structural barriers; programmes that adapt to learners' work patterns, caregiving roles, and mobility constraints are most effective in re-engaging OOSCY.

Quality education for OOSCY learners is more related to skills applicable to work or livelihood than academic attainment alone. Engaging, level-appropriate, and local-language content supports differentiated learning, but participants consistently emphasised that technology-supported learning only works when paired with sustained human facilitation. Educator capability, literacy support, and well-being

engagement are central to perceived learning gains. For OOSCY learners, quality means skills that are useful for life or work, not academic excellence alone.

Continuity and coherence are strengthened when competency-based progression aligns with national curriculum and certification frameworks. Recognised credentials linked to employment and technical and vocational education and training (TVET) opportunities were described as central to learner motivation and persistence. Education is valued when it preserves progression into further education, vocational training, or improved livelihood opportunities. Where cross-ministerial coordination enables certification recognition and transfer mechanisms, programmes are more likely to support sustained learner pathways rather than operate as parallel systems.

Feasibility and sustainability are shaped by governance conditions. While external funding enables programme initiation and innovation, long-term viability depends on national ownership, dedicated budget lines, staffing capacity, and embedded data systems within government structures. Fragmented mandates and limited coordination constrain scale, even where programme-level practices are viewed positively. Participants also described regional collaboration as valuable for benchmarking, shared learning, and strengthening future implementation.

These insights remain grounded in stakeholder perspectives rather than comparative quantitative evidence, longitudinal tracking, or economic analysis. Accordingly, there is a need to generate rigorous evidence on learning outcomes across delivery models, strengthen longitudinal evidence on completion and employment transitions, conduct costing and return-on-investment analysis, and examine effectiveness and protection considerations in contexts of conflict, climate emergency, and forced migration. Together, these priorities will strengthen the empirical foundation necessary for sustainable and equitable expansion of tech-enabled education for OOSCY across Southeast Asia.

1. Introduction

Across Southeast Asia, millions of children and youth remain excluded from education due to poverty, migration, disability, gender-related risks, conflict, and climate-related disruption. While governments have expanded access to alternative education pathways, many out-of-school children and youth (OOSCY) continue to face persistent barriers related to access, quality, continuity, and coherence in national education systems. Tech-enabled education is increasingly used to address these barriers, yet its effectiveness and feasibility within public governance systems remain uneven and insufficiently understood (↑Afzal et al., 2024; ↑Barnes et al., 2024).

This regional shift towards tech-enabled alternative education programmes builds on commitments by the Association of Southeast Asian Nations (ASEAN) to address educational exclusion for OOSCY. The ASEAN Declaration on Strengthening Education for OOSCY, adopted in 2016, formally recognises the significant number of children and youth excluded from education and affirms education as a fundamental human right. Through this declaration, ASEAN commits to prioritising inclusive, equitable, and accessible education policies, alongside coordinated regional action to ensure that OOSCY learners have meaningful access to quality education (↑ASEAN, 2016).

The Langkawi Joint Statement on ASEAN Out-of-School Children and Youth, adopted in 2025, extends this commitment by acknowledging that persistent education exclusion is shaped by poverty, inequality, climate vulnerability, and crisis, and that traditional delivery models alone are insufficient to address the scale and diversity of OOSCY needs (↑ASEAN Secretariat, 2025). The statement calls for the strategic use of flexible and technology-enabled education pathways, strengthened governance, ethical data use, and cross-sector collaboration to expand learning opportunities for marginalised learners. Situated within this policy context, this research responds to the need for practice-grounded evidence on how tech-enabled approaches are being designed and implemented within public education systems in Southeast Asia, and what these experiences reveal about their potential and limitations for supporting OOSCY with educational technology.

1.1. Education exclusion and the OOSCY challenge

Southeast Asia is home to an estimated 11.8 million out-of-school children and youth, representing approximately 4.7% of the global OOSCY

population and a substantial increase from pre-pandemic estimates (↑Afzal et al., 2024). While primary education completion rates remain relatively high across many ASEAN Member States, significant dropout occurs during the transition to lower and upper secondary education. In countries such as Cambodia, Lao PDR, and Myanmar, secondary completion rates fall to between 20% and 50%, leaving large cohorts of adolescents without recognised credentials or viable pathways into further education or employment (↑Afzal et al., 2024; ↑Dabrowski et al., 2024; ↑UNESCO & SEAMEO, 2023).

Educational exclusion in the region is driven by intersecting socioeconomic and structural factors. Poverty remains a primary determinant, as OOSCY, facing economic precarity, often prioritise income generation over schooling due to direct and indirect education costs, including transport, uniforms, and learning materials (↑Afzal et al., 2024; ↑Dabrowski et al., 2024). Learners with special educational needs and disabilities (SEND) are disproportionately excluded. Evidence suggests that in countries such as Cambodia and Timor-Leste, more than 60% of children with disabilities have never attended school, largely due to inaccessible infrastructure, limited specialist support, and weak inclusive education systems (↑Swindell & Radford, 2025).

Gender-related risks further shape patterns of exclusion. Girls face heightened risks of early marriage, early pregnancy, and trafficking, while boys are often pressured into early labour participation to support household income (↑Dabrowski et al., 2024; ↑Mitchell et al., 2025). These vulnerabilities intersect with geographic isolation, migration, and exposure to climate-related disasters such as floods and typhoons, which disrupt schooling and undermine learning continuity, particularly in rural and conflict-affected areas (↑Swindell & Radford, 2025; ↑Thinley et al., 2024). Together, these factors contribute to persistent cycles of exclusion that formal education systems struggle to address through conventional school-based models alone.

1.2. Alternative education and the role of EdTech

In response to these challenges, governments and regional stakeholders have increasingly prioritised alternative education pathways, including Accelerated Education Programmes (AEPs), non-formal education (NFE) pathways, and equivalency systems designed to re-engage OOSCY learners. These programmes aim to provide age-appropriate and certified learning opportunities within condensed or flexible timeframes, enabling learners to re-enter formal education, transition into technical

and vocational education and training, or improve their labour market outcomes (↑Afzal et al., 2024; ↑ASEAN Secretariat, 2022; ↑Barnes et al., 2024).

EdTech has become a core component of many alternative education programmes, particularly in contexts characterised by learner mobility, remoteness, or crisis. Evidence from across Southeast Asia highlights the importance of multimodal delivery models that combine low-tech, offline, and digital approaches. Broadcast television, radio, offline servers, and print-based materials remain essential for reaching learners in low-resource and last-mile settings where internet connectivity is limited or unreliable. At the same time, blended and mobile-enabled systems have expanded opportunities for flexible participation, learner monitoring, and re-engagement (↑Barnes et al., 2025; ↑UNESCO & SEAMEO, 2023).

Programmes such as Cambodia's Basic Education Equivalency Programme (BEEP) and the Philippines' Alternative Learning System (ALS) illustrate how combinations of online platforms, offline resources, and facilitator support operate within public systems to support OOSCY learners (↑ASEAN Secretariat, 2022; ↑Thinley et al., 2024; ↑UNESCO et al., 2022). Social media and messaging applications have also been widely adopted as informal learning tools, particularly during periods of disruption, reflecting both the adaptability of the system and ongoing gaps in formal platform provision (↑UNESCO & SEAMEO, 2023).

1.3. Evidence and capacity gaps

Despite the expansion of tech-enabled alternative education programmes, substantial evidence and capacity gaps persist. The existing literature on EdTech for OOSCY in Southeast Asia remains largely descriptive, with limited rigorous analysis of learning outcomes, psychosocial impacts, or longer-term learner trajectories (↑Barnes et al., 2024). Disaggregated data and evidence on specific subgroups, including girls, learners with disabilities, refugees, and migrants, is particularly scarce (↑Dabrowski et al., 2024; ↑Delprato & Shephard, 2024). Much recent research has focused on emergency responses to Covid-19-related school closures, rather than on the structural conditions shaping chronic exclusion from education.

Capacity constraints further limit the effectiveness and scalability of EdTech initiatives. Persistent infrastructure gaps related to device access, electricity, and connectivity disproportionately affect rural and disaster-prone areas. Teacher readiness and confidence in using digital tools remain uneven, while learners and caregivers often lack guidance on safe and effective technology use. High mobile phone penetration has not translated into advanced digital skills, and gender norms continue to restrict girls' access to and use of digital tools, particularly for content

creation and problem solving (↑Barnes et al., 2025; ↑Swindell & Radford, 2025; ↑UNESCO & SEAMEO, 2023).

These challenges are compounded by fragmented institutional responsibilities, coordination challenges across ministries, and insufficient long-term financing for inclusive alternative education programmes (↑Baccal & Ormilla, 2021). As a result, there remains a clear need for practice-grounded evidence on how tech-enabled alternative education programmes are implemented within public education systems, and how policy, capacity, and design choices shape their ability to support equitable and sustainable education pathways for OOSCY learners across Southeast Asia.

1.4. Research purpose and questions

Accordingly, the purpose of this research is to explore how governments in Southeast Asia utilise EdTech modalities, programmes, and delivery mechanisms (e.g., alternative education programmes, digital learning, mobile-based interventions) to support education for OOSCY. Moreover, the goal of this work is to generate evidence on the perceived effectiveness of EdTech within the governmental policy landscapes in which they operate and exist. The specific research questions guiding this study are as follows:

1. How are existing EdTech modalities, programme and delivery mechanisms perceived to provide inclusive access, quality, coherence and continuity of education for out-of-school children and youth (OOSCY)?
2. How are governmental policies across Southeast Asia perceived to promote administratively, financially, and politically feasible and sustainable technology-enabled education for OOSCY?
3. How is evidence used in the design and delivery of education programmes for OOSCY?

This research brief will be accompanied by two related outputs: an academic journal article and a research priorities brief. The academic journal article will contextualise the findings from this qualitative study within broader research on education for OOSCY in middle-income countries. The research priorities brief (↑Swindell & Radford, Forthcoming) will directly address evidence gaps identified by policymakers, programme leaders, teachers, and implementers during this study, and will pose actionable research questions. Together, these outputs offer both background and clear future research priorities based on the study's findings. Use this link to check on details on the journal article: https://docs.edtechhub.org/lib/63QAD5XV.

2. Methods

This study employs a qualitative research approach to generate practice-grounded evidence on how tech-enabled approaches are used to support OOSCY across Southeast Asia. The methodology was deliberately selected to prioritise the views of policymakers, programme leaders, and implementers actively engaged with tech-enabled alternative education for OOSCY learners, recognising that critical insights related to feasibility, effectiveness, and system alignment are often embedded in day-to-day operational practice. These actors routinely navigate institutional constraints, political considerations, resource limitations, and contextual realities that shape how programming is designed and delivered.

This research design draws on scholarship highlighting how qualitative methods provide unique insights by examining how actors interpret, negotiate, and implement policy within specific institutional contexts (↑Potterton et al., 2020). It also reflects the argument that qualitative inquiry can strengthen evidence-based practice by examining complex, real-world problems of practice alongside practitioners and generating context-rich evidence that clarifies how and why interventions function within actual education systems (↑Kozleski, 2017).

2.1. Data collection

Data was collected primarily through key informant interviews (KIIs) and focus group discussions (FGDs) with 27 policymakers, programme leaders, teachers, and implementers involved in tech-enabled education programmes supporting OOSCY across Southeast Asia. KIIs and FGDs were conducted to elicit in-depth practitioner perspectives on programme design, learner engagement, implementation, and governance conditions.

Engaging participants across different roles within the system (i.e., policy, programme management, and frontline delivery) enabled triangulation of perspectives and allowed themes to be examined from multiple institutional vantage points. In addition, a co-design workshop with participating stakeholders formed part of the data collection and validation process, enabling collective reflection on preliminary findings and strengthening the credibility and interpretive accuracy of the analysis.

Programmes were purposely sampled in collaboration with governmental and implementing partners to capture diversity, in-country context, target populations, delivery models, and types of technology used. Selection criteria included relevance to OOSCY populations, use of tech-enabled

learning as a core programme component, and evidence of active implementation within public or publicly linked systems. The study included the following programmes:

- Basic Education Equivalency Programme (BEEP), Cambodia
- Primary Learning Program (PLP), Cambodia
- UNICEF's Adolescent Empowerment Module, Indonesia
- SIM Card Programme, implemented with the Equitable Education Fund (EEF), Thailand
- Mobile School Programmes, EEF, Thailand
- Geo-location Programme, implemented by InEd, Thailand
- Alternative Learning System (ALS), Philippines.

2.2. Analytical framework

The study draws on a technical brief by ↑ERICC consortium et al. (2024) to examine how tech-enabled learning operates through specific mechanisms of change rather than relying solely on enrolment or participation indicators. This framing supports policy-relevant analysis by focusing on why and how programmes function within complex education systems. Although originally developed for conflict and protracted crisis settings, the framework is also appropriate for this study, where structural exclusion and governance constraints similarly shape education delivery for OOSCY learners. Analysis is organised around four interrelated dimensions:

1. **Access —** referring to learners' opportunities and capacities to participate meaningfully in education, including barriers related to poverty, gender inequality, disability, and geographic isolation.
2. **Quality —** focusing on the resources, relationships, and support structures that shape learning experiences, including facilitation, teacher support, and psychosocial assistance.
3. **Continuity —** addressing sustained participation and progression across flexible learning pathways, particularly in contexts affected by disruption, mobility, or crisis.
4. **Coherence —** examining alignment between programmes, national curricula, certification pathways, and institutional responsibilities across governance levels (↑ERICC consortium et al., 2024).

To account for **governance considerations** the study also draws on ↑Jordans & Kohrt (2020) to conceptualise feasibility as the alignment of programmes with available administrative, political, and financial capacity. Feasibility is further shaped by the broader political economy, including budget availability, workforce capacity, and institutional norms, which enable or constrain sustainability over time (↑ERICC consortium et al., 2024).

2.3. Data analysis and validation

Qualitative data was analysed using thematic analysis. A hybrid coding approach combined deductive codes aligned with the analytical framework and inductive coding to capture emergent themes. Cross-programme comparison was used to identify shared mechanisms, constraints, and enabling conditions shaping tech-enabled OOSCY programmes across contexts. Preliminary findings were reviewed and refined through a co-design workshop with research participants and the SEAMEO Secretariat to strengthen consistency of interpretation and policy relevance, while also surfacing participants' own research priorities and evidence needs to strengthen and scale their programmes. This process functioned not only as validation but also as an additional data collection moment, capturing collective reflection, areas of convergence and divergence, and forward-looking priorities identified by participants themselves.

2.4. Limitations

This study did not include direct access to programme administrative datasets, learner-level records, or longitudinal monitoring systems. Although participants discussed programme performance with respect to elements such as learning outcomes, graduation rates, enrolment trends, retention patterns, progression across competency levels, and post-completion transitions, the research team was not granted access to the underlying quantitative data required to independently validate these claims. While stakeholders referenced internal dashboards and monitoring tools used to track attendance, certification, and learner follow-up, these datasets were not available for secondary analysis. As a result, reported improvements in participation, completion, or transition outcomes reflect stakeholder accounts and internal reflections.

The findings should therefore be interpreted as qualitative, perception-based insights into programme implementation and governance conditions rather than as quantitatively validated measures of programme impact. Suggestions for future research are presented in the recommendations and conclusion in Section 5, employing quantitative and mixed-methods approaches.

3. Findings

Findings are structured according to the study's research questions, analytical framework, and themes that arose during data analysis. Given the breadth of participating programmes, findings are synthesised across programmes and stakeholder groups to identify cross-cutting patterns rather than as individual case narratives. Moreover, preliminary findings were reviewed and refined through a validation workshop with participants and regional stakeholders, strengthening interpretive accuracy and policy relevance. This approach generates system-level insights into how tech-enabled education operates within public education systems, and the institutional conditions that enable, limit, or constrain scale and sustainability over time. Table 1 provides an overview of the programmes included in the study for background and context.

Table 1. *Overview of programmes included in the study*

Programme	Country	Education type	Target learners	Programme description
Basic Education Equivalency Programme (BEEP)	**Cambodia**	Accelerated Education Programme (AEP)	OOSCY (secondary-school age)	BEEP is an AEP designed to support OOSCY complete equivalent certifications within a shortened timeframe. The programme provides tech-enabled structured learning aligned with national requirements and allows learners to re-enter formal education pathways or complete equivalency certification (↑UNESCO et al., 2022; ↑UNESCO, 2023; ↑UNESCO, 2024).
Primary Learning Program (PLP)	**Cambodia**	Support services	All in-school primary-aged learners, including learners at risk of dropout	PLP is a nationwide ministry-developed learning management system (LMS) supporting primary teaching, teacher professional development, student progress monitoring, national assessment alignment, and curriculum-based digital learning resources for students, teachers, and parents (↑MoEYS, 2025).
Adolescent Empowerment Module	**Indonesia**	Non-formal curriculum enrichment	OOSCY (secondary-school age), particularly youth returning to learning after dropping out.	The Adolescent Empowerment Module is a government-endorsed non-formal curriculum model that builds 21st-century and basic digital skills through project-based learning, supporting flexible re-engagement, confidence, and progression pathways for out-of-school adolescents.

Programme	Country	Education type	Target learners	Programme description
SIM Card Programme (EEF)	**Thailand**	Support services	OOSCY and low-socio-economic status students (Grades 6–9; ages 11–14)	Provides free high-speed SIM cards with unlimited data and curated digital learning via LINE[1] and web portal, enabling disadvantaged students to accelerate learning, catch up, and explore interest-based learning content.
Mobile School Programmes (EEF)	**Thailand**	Accelerated Education Programme (AEP)	OOSCY (ages 7–24; Grades 1–12)	Delivers flexible, mentor-supported, curriculum-aligned learning through digital and onsite models, integrating vocational pathways and case management to help out-of-school youth earn recognised certification despite mobility, work, or socioeconomic barriers.
Geolocation Programme (InEd)	**Thailand**	Support services	Migrant and OOSCY	Uses geolocation mapping, household surveys, and school data integration to identify, track, and support enrolment and retention of migrant and out-of-school children through community outreach and coordination.
Alternative Learning System (ALS)	**Philippines**	Accelerated Education Programme (AEP)	Out-of-School Children in Special Cases, Youth and Adults	Government-institutionalised parallel learning system providing flexible, K–12-aligned basic education pathways for OOSCY and adults. Utilises multimodal delivery and ICT-supported instruction for recognised equivalency for education, training, or employment (↑DepEd, no date; ↑DepEd, 2021; ↑DepEd, 2026).

[1] LINE is an instant messaging app. Originally focused on messaging and voice/video calls, it now includes payments, news, video, and digital comics. services.

3.1. Impact of EdTech on education for OOSCY

The following subsections examine how tech-enabled approaches were perceived to impact inclusive access, strengthen quality of learning, and support continuity and coherence within recognised education pathways. Across contexts, impact was perceived to be shaped by delivery modality, sustained human support, instructional design, and the extent to which programmes are embedded within national certification and progression systems.

3.1.1. Inclusive access

Mobile devices[2] were found to be the primary access points for learning across programmes. They eliminate requirements for physical attendance, uniforms, or fixed schedules, enabling learners to balance education with work and caregiving. Across programmes, mobile phones are perceived as the most practical and widely available entry point to education for learners whose exclusion is shaped by distance, employment, caregiving responsibilities, or the absence of nearby secondary education options. Participants discussed how mobile access enables learning to take place across locations and at flexible times, expanding opportunities for learners who are unable to attend conventional classes during the day. One teacher commented about their students that "If they only have a smart phone, they can study, they don't need to go to school or buy a uniform, they just need a smart phone to study" (December 16, KII, Teacher).

However, personal mobile device use alone was perceived as insufficient for many learners. Low- and no-connectivity learning modalities, including offline servers, shared devices, and learning centres, are essential for reaching learners without reliable internet access or personal devices. These modalities address persistent gaps in device ownership, connectivity, and basic digital literacy, enabling participation for learners who would otherwise remain excluded from digital provision.

> *"So why do we have in-person centres? There is a digital divide, and now we have 43 centers to support those who do not have smart phones or access to the internet. There are at least two facilitators and at least 10 devices per centre. We have reached locations where there is no internet, where we use an offline content server, where they can learn as fine as the actual online content."*
> (December 2, KII, Education Program Officer)

Participants highlighted the importance of 'meeting OOSCY learners where they are involved'. This includes digital literacy training and support

[2] One participant discussed radio and television programmes, but mobile devices were the central focus of active programmes for OOSCY education.

for programme registration, and adapting digital delivery models to workplaces, remote communities, prisons, rehabilitation centres, and other non-school settings, reducing dropout driven by distance, mobility, or institutional constraints. Rather than expecting learners to conform to school-based routines, programmes adapt delivery to learners' living and working realities. One programme staff member noted that "enrolment increased because some OOSCY learners in the community saw that their peers were using ICT in their sessions" (January 29, Workshop Notes, Education Officer).

In-person outreach and support by programme, community, and religious leaders, coupled with digital enrolment tools, are perceived as resulting in the largest increases in access. Participants discussed how trusted intermediaries play a critical role in identifying learners, supporting registration, and sustaining engagement, particularly for those who are initially hesitant to re-enter education systems.

> *"A key aspect of the work is engaging with parents, which includes visiting students' homes, especially when parents are not aware, to motivate both the student and the parent to prioritise their child's education."*
> (December 16, KII, Teacher)

Despite expanded reach, participants consistently described the overall scale of impact as constrained by persistent structural barriers. Poverty, device affordability, infrastructure limitations, and unstable livelihoods mean that many learners remain beyond the effective reach of programmes, limiting universal access. Even where access pathways are technically established, shared devices, intermittent connectivity, and competing survival priorities reduce sustained participation, tempering the broader system-level impact of these initiatives.

3.1.2. Quality education

Content that is level-appropriate and available in local languages is critical for quality. Programmes using competency-based pacing, rather than grade-level assumptions, were seen as generating stronger learner engagement. Interactive design beyond recorded videos and static text, and tailored pacing is perceived by participants to help comprehension among learners with diverse prior educational experiences. Programme staff consistently emphasised learning designs that reduce cognitive barriers and allow learners to progress based on demonstrated understanding rather than age or grade. This focus on usability and localisation is especially important for learners re-entering education after long interruptions. As one programme director noted, "all the programme

is in Khmer and has instructional voice; it is very user-friendly" (14 November, Interview, Director). When discussing TaRL, a Ministry of Education (MoE) staff member similarly described how tech-enabled differentiated learning approaches can enable educators to continuously personalise learning, rather than relying on fixed grade-level assumptions.

> *"[Our custom LMS] is like a TaRL that uses EdTech* [...] *we don't print, so it is much more personalised... we look at the learning level of the student, not the grade level, and the teacher can see this every day."* (January 1, KII, MoE Staff)

Creating unique digital content to ensure appropriateness and relevance of learning design was found to be time-consuming, sometimes taking years to refine through co-design with teachers and learners, but crucial for OOSCY learning. Several programmes extended processes of iterative development, testing, and adaptation to ensure content aligns with learners' lived realities and learning trajectories. One programme officer explained that they had spent years developing content that works for OOSCY learners, noting that while it was "not as heavy as general education," it was intentionally designed to fit learners' needs "without compromising," reflecting cumulative learning and refinement over time (December 2, KII, Education Programme Officer).

Intentional human and in-person instruction and assistance with EdTech tools from teachers, parents and caregivers, peers, mentors, and programme staff play a central role in addressing digital competency, foundational literacy and numeracy gaps, supporting platform use, and sustaining learner participation. Across contexts, technology is understood to enhance learning quality only when paired with sustained human support. Teachers and facilitators routinely adapted their roles to include literacy remediation, well-being support, and hands-on guidance in platform use, particularly for learners with no prior schooling.

> *"I maintain a supportive relationship with students, checking their well-being, not only their study. If they cannot read, we teach them how to read and write. In the morning, I teach literacy, in the afternoon, I facilitate our programme's students."*
>
> (December 16, KII, Teacher)

This emphasis on facilitation reinforced the view that quality depends more on educator capability than on technology alone. As one programme officer observed, learning outcomes are shaped by:

> "[...] *more than the technology itself, but also by teachers' ability to use digital tools effectively and to go beyond the platform to support learners through home visits, shared materials, and flexible engagement strategies."*
> (January 16, KII, Programme Officer).

Finally, learning relevant skills and topics directly applicable to life and that improve work opportunities emerged as a defining feature of quality, with programmes prioritising flexible pathways linked to employment, TVET, and recognised certification. One programme director noted that "For OOSCY learners, quality means skills that are useful for life or work, not academic excellence alone." (December 9, Written submission, Director). Quality was therefore framed less by academic performance and more by practical, transferable skills. One programme leader emphasised that learning quality for OOSCY should be assessed through demonstrated competencies and career advancement after graduation rather than test scores alone. Given the lived realities of many OOSCY learners, participants strongly emphasised the importance of connecting their education programmes with direct outcomes for TVET and other immediately useful career opportunities that could improve the material condition of the people they were serving.

3.1.3. Continuity of learning and coherence with national education systems

Progression across learning levels, grades, and graduation is strengthened when learners advance based on demonstrated competency rather than age or prior grade completion, and when learning pathways are aligned with national curriculum and certification frameworks. Participants discussed how this alignment ensures that learning outcomes are formally recognised within MoEs and beyond, including across ministries responsible for labour and commerce, while still allowing content and delivery models to be adapted to the specific learning needs of OOSCY learners. Together, competency-based progression and system recognition support sustained participation, completion, and onward transitions, particularly for learners navigating non-linear education trajectories.

For example, BEEP in Cambodia operates through cross-ministerial coordination with the Ministries of Education and Labour, enabling OOSCY learners who complete Grade 9 equivalency to meet the basic education requirements needed to progress into multiple pathways. These include further education under the MoE and TVET under the Ministry of Labour. By embedding equivalency certification within recognised national frameworks, BEEP supports continuity across education and skills systems rather than positioning alternative education as a parallel or terminal pathway.

Preventing dropout and sustaining engagement across learning pathways is enabled by EdTech systems that support ongoing

monitoring, early identification of disengagement, and timely re-engagement by teachers, facilitators, and community actors. Digital platforms increase visibility of attendance, participation, and performance across programme and system levels, enabling proactive follow-up before disengagement becomes permanent.

> *"We can track whether the students are at risk of dropping out* [...] *we look at attendance and performance, and their teacher can see this every day* [...] *now we will be able to detect in real time and at the national level."* (January 1, KII, MoE Staff)

Continuity is also reinforced through flexible distance and blended delivery models that allow learners to remain connected to recognised education pathways despite work obligations, migration, distance, or crisis conditions. Rather than treating disruption as an exception, programmes design delivery models that adapt to learners' mobility and life circumstances while maintaining links to formal certification and progression routes. This means that in practice, reintegration into mainstream public schooling is not described as the primary objective of the accelerated programmes included in this study. For many OOSCY learners, return to conventional schooling is structurally unfeasible due to age, work obligations, family responsibilities, or mobility constraints. In such cases, AEPs functioned not as transitional bridges back to formal schooling, but as the only viable pathway to recognised certification and progression within existing system constraints. As one programme director noted, "If they cannot come to school, our task is to bring school closer to them in an accessible manner" (December 9, Written submission, Director).

However, institutional coordination and system coherence are often constrained by fragmented governance arrangements and unclear mandates, with a majority of participants highlighting the difficulty of coordinating both within MoEs and, in particular, across multiple ministries. As a result, promising programme-level practices are not always fully integrated at the system level, limiting consistency and scalability despite demonstrated effectiveness within individual programmes.

3.2. Impact of governance on political, administrative, and financial feasibility

This subsection examines how governance conditions shape the political, administrative, and financial feasibility of tech-enabled education programmes for OOSCY. Drawing on stakeholder perspectives, it explores

how coordination arrangements, institutional mandates, staffing capacity, financing structures, and data systems influence whether programmes can move beyond pilot phases towards sustained, system-level integration. Rather than treating feasibility as a technical issue alone, findings highlight how political buy-in, administrative capacity, and long-term financing commitments collectively determine the durability and scalability of these initiatives.

3.2.1. Stakeholder coordination and administrative capacity

Cross-ministerial and cross-agency coordination, ownership, convening power, and sustained engagement were consistently identified as critical factors shaping the feasibility, effectiveness, and political buy-in of tech-enabled education programmes for OOSCY. Across contexts, implementation was strongly influenced by the ability to secure sustained engagement across ministries and endorsement from high-level ministry stakeholders. Most participants perceived governmental buy-in and active engagement as central to programme success, particularly in navigating institutional mandates, certification pathways, and resource allocation. As one programme officer observed, "we have all the perfect policies in the country, but if you ask why we were a success, it depends on the ministries working together" (December 2, KII, Education Programme Officer).

Coordination mechanisms exist but are under-institutionalised. Meetings are too infrequent, too low-level, and too dependent on NGO convening power to drive strategic alignment. As one ministry official explained:

> "[...] *currently we meet once per semester online* [...] *but, we want to meet the leader or leadership of the ministry* [...] *and meeting quarterly or even monthly would help more for coordination.*" (January 14, KII, MoE Staff)

Local-level coordination and operational capacity are also essential for translating national policy into sustained access, participation, and learner follow-up. While national frameworks provide legitimacy and recognition, day-to-day implementation depends heavily on local staffing, technical capacity, and communication channels. Participants highlighted that local knowledge sharing, such as implementing staff sharing reflections with decision-makers, supports learner engagement and retention while also advocating for OOSCY programmes at the national level. However, capacity constraints at the departmental and local levels frequently limit these efforts. One ministry staff member described acute staffing pressures related to platform and data system management:

> *"[...] currently, the challenge for my department is we have only two people that work on the platform; it is a big challenge for staffing the data centre [...] they are working 24/7, even on public holidays."*
> (January 14, KII, MoE Staff)

Taken together, these findings indicate that while effective coordination practices exist at the programme level, their impact is shaped by broader governance conditions. Sustained stakeholder coordination not only requires policy alignment but also clear institutional mandates, adequate staffing, and regular, structured engagement across governance levels to support long-term feasibility and system integration.

3.2.2. Financial feasibility and long-term sustainability

Financial sustainability and cost feasibility are shaped by ministries' ability to support ongoing programme management, facilitation, coordination, and learner follow-up within existing institutional capacity. Programmes that were intentionally designed with sustainability and scalability in mind from the outset are perceived to foster stronger government ownership and clearer expectations regarding long-term responsibility for delivery and maintenance. Where such planning was absent, sustainability is more difficult to secure, even when programme outcomes are viewed positively.

Reliance on external funding is widely seen as enabling programme initiation, innovation, and early-scale implementation. However, participants consistently highlighted uncertainty regarding long-term affordability once donor or partner support ends, particularly where budget lines and institutional ownership have not been clearly assigned within government systems. As one ministry official noted, the transition from externally funded pilots to government-led delivery poses significant challenges:

> *"The big challenge for working together is that after the [external] funding ends, there will be big challenges [...] we need one department to lead and have the budget."*
> (January 14, KII, MoE Staff)

Scaling within constrained public systems remains challenging when ownership, staffing, and financial responsibility are not clearly defined, even when digital delivery reduces some marginal costs. Several participants emphasised that ministries are already operating under significant workload pressures, making it difficult to absorb additional responsibilities without dedicated resources or incentives. One programme officer observed that "ministries have a lot of work to do,

without financial support or incentives, it is difficult [and] challenging" (December 2, KII, Education Programme Officer).

Infrastructure and learner affordability constraints further affected financial feasibility, particularly in rural and remote contexts. Challenges related to device availability, durability, connectivity, and access to electricity limited the extent to which digital solutions could be scaled equitably. As one programme officer explained:

> *"[...] for the infrastructure, it is a challenge nationwide [...] they might have computers and tablets, but they still don't have their own devices. Laptops need to be durable to go to the mountains or the rivers where there is no electrical grid, and if learners want to learn online, they don't have money, they cannot afford a cell phone or other devices."* (January 16, KII, Programme Officer)

Taken together, these findings suggest that financial feasibility is not determined solely by technology costs, but by the extent to which programmes are embedded within clear institutional mandates, realistic public financing plans, and durable infrastructure systems capable of sustaining delivery over time.

3.2.3. Data for programme design and delivery

Data use for monitoring and administrative purposes was found to improve visibility of enrolment, attendance, progression, and certification, strengthening routine operational management. Across programmes, digital platforms and internal dashboards enable ministries and implementers to track learner participation, identify disengagement risks, and coordinate follow-up at local levels. This increased transparency is perceived to enhance administrative feasibility by making learner trajectories more visible across governance levels.

Internal data systems are frequently used to monitor performance against targets and guide structured review processes. Disaggregated data by location and gender supported discussions about equitable reach and centre-level performance. One programme officer described how internal data informed ongoing management:

> "*Internal system data shows not just enrolment and graduation, but those who received career counselling and those who got employment, broken down by learning centre and gender* [...] *we have monthly meetings. We target those who are average or below expected targets."*
> (January 22, KII, Education Programme Officer)

In several contexts, digital systems also support early identification of learners at risk of dropout, enabling targeted outreach by facilitators and coordinators. However, while operational data use is relatively strong, its application for strategic policy learning, programme adaptation, or scaling decisions remains uneven. Participants described limited analytical capacity and few institutionalised mechanisms for translating monitoring data into system-level reform or long-term financing decisions.

These findings suggest that although digital data systems contribute to administrative coordination and short-term responsiveness, stronger institutional processes are needed to ensure evidence meaningfully informs political, financial, and strategic decision-making over time.

4. How to support differentiated OOSCY learner profiles and pathways

In this section, three learner pathways are presented as exemplars of common OOSCY profiles identified through participant reflections, illustrating how tech-enabled alternative education programmes support progression within real governance and implementation constraints. The pathways include:

- Adolescents seeking improved career and employment opportunities.
- Caregivers re-entering education through flexible learning.
- Migrant learners who require mobility-responsive and language-supported education.

Across these profiles, participants described progression unfolding through four stages, namely:

Stage 1: Re-engagement and access

Stage 2: Quality and competency development

Stage 3: Continuity and coherence through recognised certification

Stage 4: Transition to further education, TVET, or employment.

For each pathway, the enablers and barriers are drawn directly from stakeholder accounts of programme design, institutional coordination, financing, and implementation realities. Each pathway is accompanied by practice-grounded insights into targeted actions for how MoEs and programme implementers can strengthen sustainable learner progression.

4.1. Pathway 1: Career and employment opportunities

> *"We have many students who get a good job, and they thank us for the opportunity. After attending the programme, they can get a good job and support their family."*
> (December 16, KII, Teacher)

This pathway presents the progression of an adolescent or young adult who exited lower secondary education due to economic pressure and the need to contribute to household income. Now working in low-wage,

unstable, or informal employment, they seek recognised certification and practical, transferable skills to improve job stability, access higher-paying or formal sector opportunities, transition into TVET, and achieve greater long-term income security and upward mobility. They have access to a mobile device but limited data or reliable connectivity due to cost.

Stage 1: Access through re-engagement and entry to learning

The learner must be able to re-enter education without sacrificing income or employment.

Enablers

- Community-based outreach that identifies working youth and explains how available education pathways can lead to career advancement.
- Mobile phones are used as primary access points, allowing learners to log in before or after work, or during breaks in the day.
- Community learning centres with internet access or mobile data stipends for personal device use.
- Flexible delivery models that do not require daily attendance.
- Formal ministry recognition of accelerated and equivalency programmes, signalling legitimacy and reducing stigma.

Barriers

- Limited data access and intermittent connectivity due to cost.
- Poverty constrains sustained engagement, including prioritising paid work over study time.
- Geographic isolation and limited transport to learning centres.
- Insufficient local staffing to conduct consistent outreach and follow-up.

Stage 2: Quality through competency development and learning relevance

Once enrolled, learners must experience instruction that is level-appropriate, practical, and aligned with their career goals.

Enablers

- Competency-based progression that allows learners to advance based on demonstrated learning rather than age.
- Differentiated learning approaches with engaging, interactive, and user-friendly educational content.
- User-friendly, local-language digital content with multimodal instructional support.
- Strong human support, including literacy training and regular wellbeing check-ins.
- Integration of practical skills and life competencies relevant to employment and daily life.

Barriers

- Limited teacher readiness and confidence in integrating digital tools
- Overreliance on digital platforms without sufficient support
- Staffing pressures within ministries managing platforms and data systems
- Uneven digital literacy among learners entering programmes
- Time-intensive content development processes that slow scaling

Stage 3: Learning continuity and coherence through recognised certification

At this stage, the learner must be able to persist through the programme, complete requirements, and obtain recognised certification.

Enablers

- Alignment of the programme with the national curriculum and recognised certification standards.
- Clear competency benchmarks that define progression and completion.
- Digital systems that track attendance and identify learners at risk of dropout in real time.
- Blended and distance models that allow learners to remain engaged despite work or mobility.
- Structured communication with learners about next steps, including the possibility of further study or vocational training.

Barriers

- Inconsistent coordination that affects certification processes.
- Limited structured follow-up for learners at risk of dropout.
- Data used primarily for reporting rather than targeted learner support.
- Resource constraints limiting programme capacity and reach.
- Unclear progression messaging that reduces learner motivation.

Stage 4: Employment and career advancement

The final stage is marked by securing an improved job or advanced vocational training, not simply programme completion.

Enablers

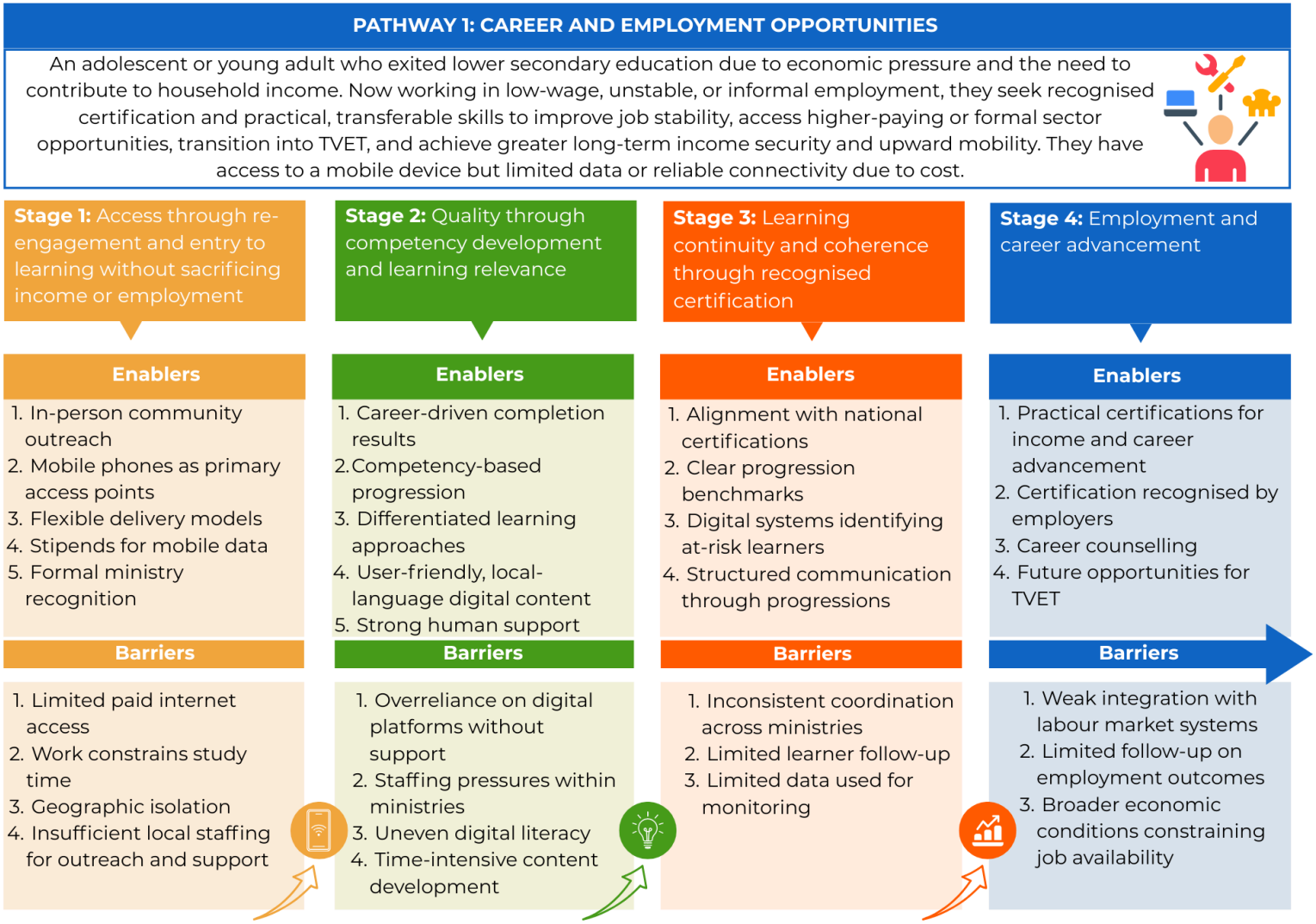
- Practical competencies explicitly framed as useful for work and income generation.
- Certification designed by Ministries of Education and Labour that are recognised by the education and commercial sectors.
- Programme design must explicitly embed career counselling and employer engagement from the outset, not as add-ons at graduation
- Cross-sector engagement supporting pathways into vocational training and employment.

Barriers

- Weak integration between education completion and labour market systems.
- Limited structured follow-up on employment outcomes.
- Financial uncertainty affecting long-term programme sustainability.
- Broader economic conditions that constrain job availability.

Figure 1 below illustrates the progression of Pathway 1 and all four stages, with details of specific enablers and barriers for each stage.

Figure 1. *Pathway 1: Career and employment opportunities*



How ministries and implementers can support working OOSCY learners

First, MoEs should formalise joint certification pathways with relevant employment and industry focused ministries (i.e., labour or commerce) to create cross-ministerial school-to-work transitions. Completion of these alternative education pathways must lead to jointly-recognised certification, TVET, and employment opportunities. SEAMEO VOCTECH's SEA-VET platform provides a ready regional reference point (↑SEA-VET Learning, 2026).Second, national EdTech strategies can include a per-learner data subsidy line for enrolled OOSCY students who access educational programmes through their mobile-device, administered through existing conditional cash transfer infrastructure where available. Finally, programme implementers must explicitly embed career counselling and employer engagement from the outset, not as add-ons at graduation.

4.2. Pathway 2: Flexible education for caregivers

> *"Many of the girls leave school when they reach puberty, especially if there is early marriage or pregnancy. Once they become wives or mothers, education is no longer seen as their priority, and it becomes very difficult for them to return."*
> (December 10, KII, Programme Officer)

The pathway for flexible education for caregivers centres on learners whose educational trajectories were interrupted by caregiving responsibilities and whose re-engagement depends on flexibility, recognition, and continuity across stages. The typical learner profile is an adolescent or young adult who left lower secondary education due to caregiving responsibilities, including marriage, motherhood, or the need to provide care within the household. Their daily schedule is shaped by domestic labour, childcare, and limited mobility. They seek flexible, recognised educational pathways that allow them to continue learning without compromising caregiving duties, to preserve future access to further schooling, part-time employment, or long-term career opportunities. They do not have consistent access to a mobile device and have limited digital literacy.

Stage 1: Access through re-engagement and entry to learning

The learner must be able to re-enter education without sacrificing caregiving responsibilities.

Enablers

- Community-based outreach that identifies caregivers and explains how available education pathways preserve access to further schooling and employment.
- Flexible enrolment windows and in-person support to navigate online enrolment.
- Community learning centres within safe walking distance and with access to shared devices.
- Blended and offline delivery models that do not depend on personal device ownership.
- Formal ministry recognition of accelerated and equivalency programmes, signalling legitimacy and reducing stigma.

Barriers

- Limited or no consistent access to a personal mobile device.
- Time restrictions resulting from childcare and domestic labour demands.
- Mobility constraints and restrictions related to marriage or household norms.
- Stigma associated with early marriage, motherhood, or interrupted schooling.

Stage 2: Quality through flexible competency development and learning relevance

Once enrolled, learners must experience instruction that accommodates irregular attendance, limited digital literacies, and caregiving responsibilities while remaining aligned with recognised standards.

Enablers

- Modular learning units that allow learners to pause and resume study without academic penalties.
- In-person facilitation and small-group support to strengthen foundational literacy and numeracy.
- Low-tech and print-based materials that complement digital content.
- Flexible pacing and alternative assignment deadlines that accommodate caregiving demands.

- Integration of life skills, digital literacy, and financial literacy relevant to household responsibilities and future schooling.

Barriers

- Limited confidence and limited digital literacy among learners re-entering education.
- Instructional models that assume continuous attendance.
- Overreliance on independent online learning without facilitation.
- Limited teacher preparation for supporting married or parenting learners.
- Care interruptions that reduce the time available for study and assignment completion.

Stage 3: Learning continuity and coherence through recognised certification

At this stage, the learner must be able to persist with education or training despite fluctuating caregiving responsibilities, complete requirements, and obtain recognised certification that preserves further schooling options.

Enablers

- Clear competency benchmarks that define progression and completion.
- Flexible assessment schedules and alternative assessment mechanisms.
- Alignment of the programme with the national curriculum and recognised certification standards.
- Ongoing follow-up for learners who temporarily disengage due to caregiving demands.
- Structured communication about pathways into further schooling or vocational training.

Barriers

- Rigid examination schedules that conflict with childcare responsibilities.
- Limited structured follow-up for learners who pause participation.
- Inconsistent coordination that affects certification processes.
- Data used primarily for reporting rather than targeted learner support.
- Unclear progression messaging that reduces learner motivation.

Stage 4: Completion and flexible employment

The final stage focuses on completing education and preserving access to further schooling, part-time employment, or long-term career opportunities.

Enablers

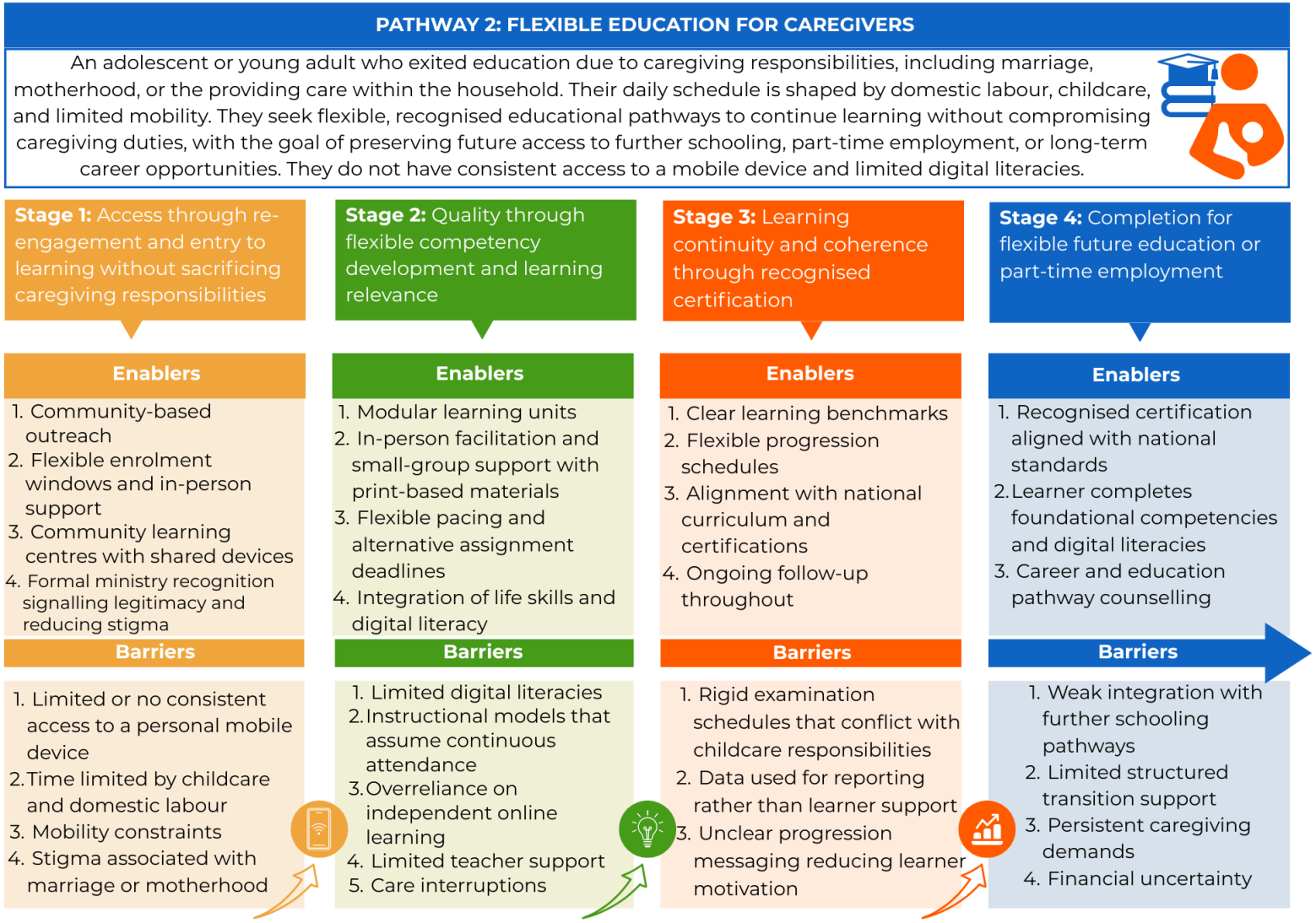
- Recognised certification aligned with national standards.
- Foundational competencies and digital literacies that support further study.
- Career counselling that accounts for caregiving responsibilities and mobility constraints.
- Cross-sector coordination that supports gradual entry into vocational training or part-time employment.

Barriers

- Weak integration between education completion and further schooling pathways.
- Limited structured transition support after certification.
- Persistent caregiving demands that limit immediate participation in training or employment.
- Financial uncertainty that affects long-term programme sustainability.

Figure 2 below illustrates the stages, enablers, and barriers for Pathway 2 .

Figure 2. *Pathway 2: Flexible education for caregivers*



How ministries and implementers can support caregiver OOSCY learners

MoEs must coordinate outreach and support mechanisms with relevant health and human services ministries, civil society, and NGOs to reduce stigma associated with marriage, motherhood, or interrupted schooling and to support sustained participation and completion. Coordinated efforts are crucial to meaningfully reach caregiver OOSCY.

Certification frameworks must also accommodate flexible examination schedules and pause-and-resume progression. Rigid assessment timelines disproportionately exclude caregiver learners. For example, assessment calendars could include at least two additional sitting windows per year beyond the national schedule, with facilitators trained to initiate re-enrolment within 30 days of a learner going inactive. Platform systems should auto-flag learners absent for more than two consecutive weeks

4.3. Pathway 3: Mobile education for migrant learners

> *"When the team goes to the communities, we do awareness raising about school pathways* [...] *migrant families are not stable, move according to work and the seasons, so we want to help them figure out their location to school."*
> (December 11, FGD, Staff)

This pathway reflects the progression of an adolescent who has migrated internationally with their family due to seasonal labour, conflict, forced displacement, or economic instability. Their schooling has been interrupted multiple times, and they may lack complete documentation or recognised transcripts from their home country. They seek a pathway that allows them to continue learning despite movement, preserves access to recognised certification, and avoids restarting schooling each time they relocate. Access to devices is inconsistent, and language barriers limit full participation in the host country's education system.

Stage 1: Access through re-engagement and language support

The learner must be able to enter or re-enter education despite migration status, mobility, documentation gaps, and language barriers.

Enablers

- Community-based outreach that identifies migrant learners in settlements, workplaces, and temporary housing.

- Language bridging support at entry, including bilingual facilitators and multilingual digital content.
- Flexible enrolment policies that do not depend on complete documentation.
- Recognition or provisional acceptance of prior learning from the home country.
- Mobile-first and blended delivery models that allow participation during seasonal movement.

Barriers

- Lack of recognised documentation or transcripts from the home country.
- Language barriers that prevent comprehension of enrolment procedures and learning materials.
- Frequent relocation that disrupts enrolment and consistent attendance.
- Administrative requirements that exclude undocumented or mobile learners
- Limited staffing for outreach and case management in migrant communities.

Stage 2: Quality through language-responsive and inclusive instruction

Once enrolled, the learner must experience instruction that addresses language gaps while remaining aligned with recognised standards.

Enablers

- Structured language support integrated into academic instruction.
- Bilingual or multilingual instructional materials and digital content.
- Competency-based progression that allows advancement based on demonstrated understanding.
- Human facilitation to support comprehension, digital literacy, and well-being.
- Flexible pacing models accommodating interrupted attendance.
- Integration of foundational literacy and numeracy alongside host-country language acquisition.

Barriers

- Instruction delivered exclusively in the host-country language without scaffolding.
- Overreliance on independent digital learning without facilitator support.
- Limited teacher preparation for multilingual learners.
- Curriculum rigidity that does not accommodate mid-cycle entry.
- Social exclusion or discrimination that affects participation and confidence.

Stage 3: Learning continuity and coherence with the public education system

The learner must be able to continue with education and training despite frequent changes of location and remain connected to recognised national systems.

Enablers

- Alignment of flexible programmes with national curriculum frameworks.
- Recognition of prior learning through competency-based assessment.
- Digital systems that track attendance and progression across regions.
- Clear transfer mechanisms between learning centres, districts, or modalities.
- Structured communication with learners and families about recognised progression pathways.

Barriers

- Fragmented governance that affects transfer processes.
- Lack of recognition of prior learning from the home country.
- Data systems used primarily for reporting rather than cross-regional continuity.
- Programme models operating parallel to public systems without formal recognition.
- Unclear messaging about long-term progression routes.

Stage 4: Recognised certification or integration into national pathways

The final stage focuses on ensuring migrant learners obtain the same recognised certification as national learners or integrate directly into the public education system.

Enablers

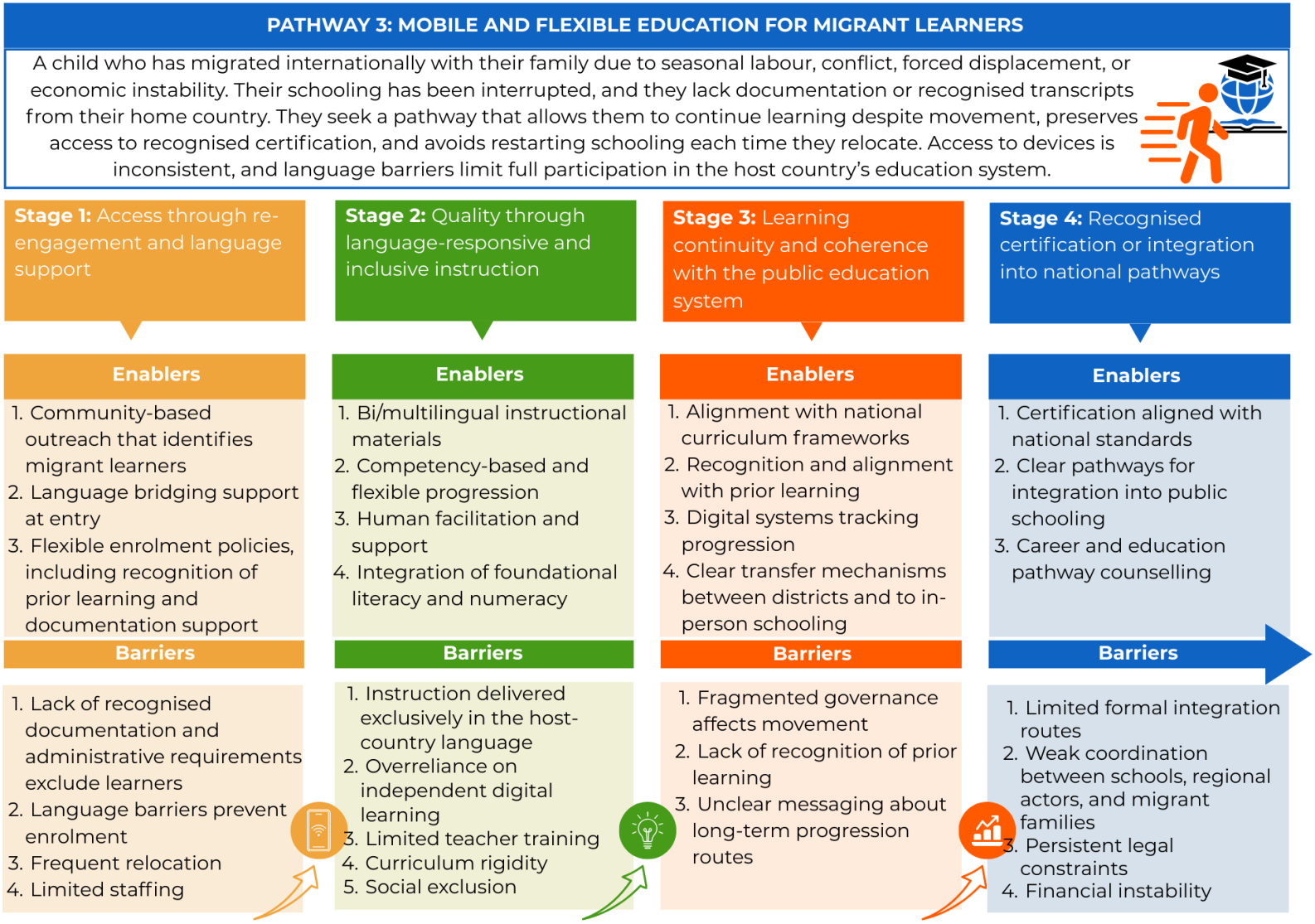
- Certification that is aligned with national standards and recognised across ministries.
- Clear pathways for integration into mainstream public schooling.
- Equivalency frameworks preventing repetition of completed learning
- Career counselling and structured guidance into further schooling or TVET
- Cross-sector coordination that supports the regularisation of documentation and provides stability.

Barriers

- Separate or lower-status certification pathways for migrant learners.
- Limited formal integration routes into mainstream public schooling.
- Weak coordination between education and labour systems.
- Persistent legal or documentation constraints.
- Financial instability that affects sustained programme delivery.

Figure 3 below illustrates Pathway 3 with details of each stage.

Figure 3. *Pathway 3: Mobile and flexible education for migrant learners*



How ministries and implementers can support migrant OOSCY learners

Structured support from the public education system should be mandated by the MoE to ensure access, coherence, and formal acceptance of prior learning migrants obtained outside of the host country. This includes MoE-led competency-based recognition mechanisms, clear transfer procedures across districts and regions, and formal guidance to schools on integrating migrant learners without academic penalty. Second, ministries responsible for international migration (i.e., interior or state), must lead efforts to provide all migrants with access to proper documentation needed for access to public services like schooling.

Third, MoEs should ring-fence a dedicated budget line for alternative education in provinces with documented migrant populations exceeding preset thresholds (i.e., 20% or greater), with funding criteria developed in consultation with relevant national and international migrant policy coordination bodies. This should be reflected in medium-term expenditure frameworks, not annual budget submissions, to ensure multi-year stability.

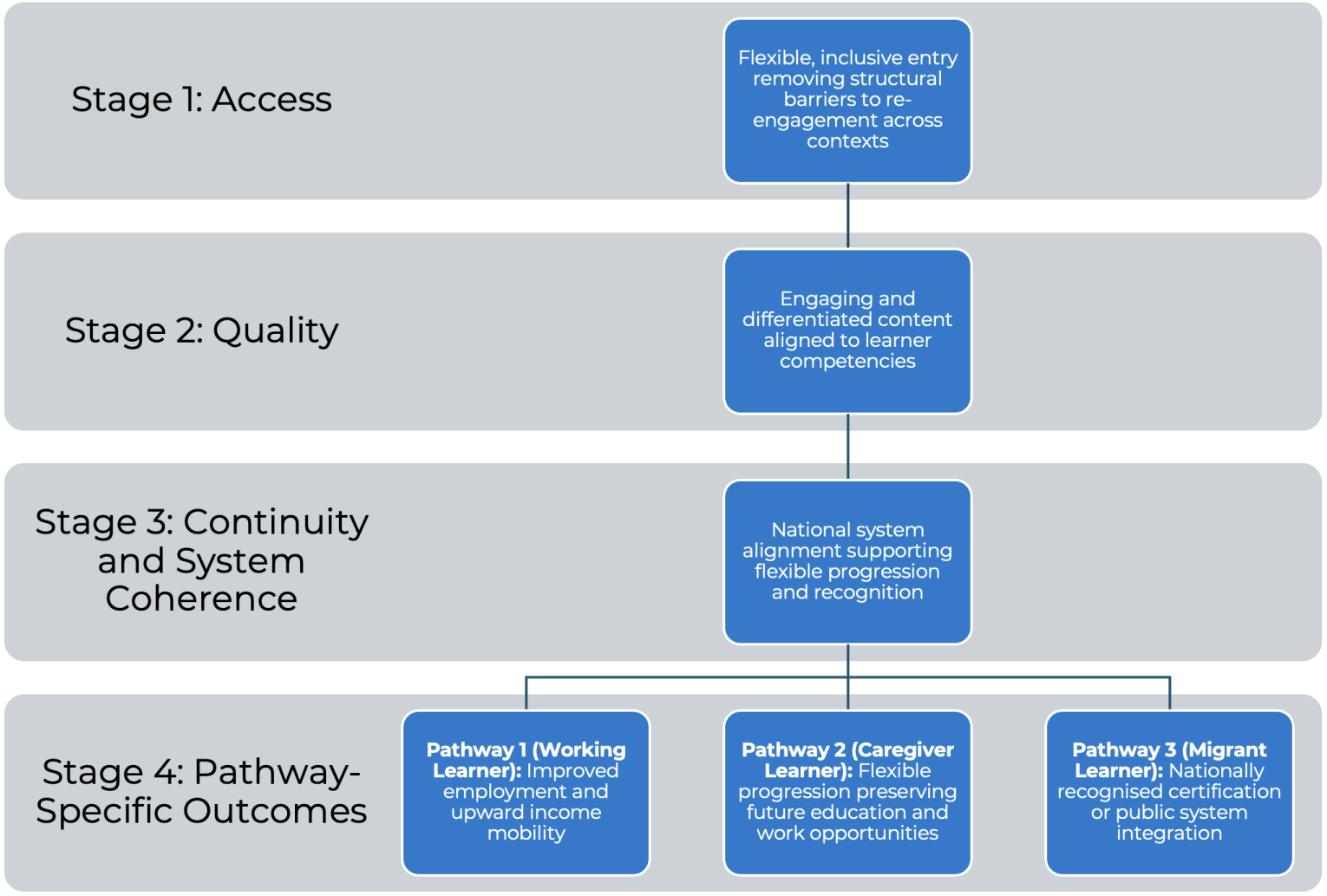
Regarding programme outreach and design, sustained in-person outreach within migrant communities must occur, including locations like settlements and workplaces, to identify learners, support enrolment, build trust with families, and maintain engagement during periods of mobility.

Finally, multilingual content must be embedded throughout programme design, including bilingual instructional materials and structured language support integrated within academic subjects to strengthen comprehension and progression.

4.4. Pathway mapping

While the three learner pathways illustrate distinct profiles of working youth, caregivers, and migrant learners, the exemplars demonstrate that their progression depends on a shared set of system-level foundations. Across contexts, participants consistently described how sustained access, engaging and differentiated instruction, and alignment with recognised certification frameworks create the enabling conditions for tailored responses. Figure 4 below illustrates how differentiated pathways in Stage 4 are viable only when Stages 1–3 are coherently embedded within public education systems.

Figure 4. *Pathway mapping across stages*



When re-engagement mechanisms are institutionalised, when content is intentionally designed to accommodate diverse learner starting points, and when certification pathways are formally recognised across ministries, programmes avoid functioning as fragmented or parallel initiatives. Instead, they become part of a coordinated ecosystem that supports mobility across regions, life circumstances, and learner identities. This coherence reduces duplication of effort, prevents learners from having to restart schooling unnecessarily, and ensures that prior learning is recognised across districts and ministries.

Collaboration across Ministries of Education, Labour, and Social Protection further strengthens these foundations. Where coordination mechanisms are clear and structured, certification processes are streamlined, data systems are interoperable, and transfer procedures are formalised, learners can move across pathways without administrative penalty. Participants repeatedly noted that such alignment reduces redundancies in programme design, avoids parallel data systems, and lowers long-term costs by embedding delivery within existing public structures rather than sustaining isolated pilots.

By investing in coherent entry points, differentiated but standards-aligned instruction, and recognised certification routes, ministries create a common infrastructure that supports diverse learner needs without multiplying programme models. This approach strengthens political and financial feasibility, improves continuity, and enables more responsive tailoring at the learner level while maintaining system-wide efficiency.

5. Recommendations and conclusion

"Each graduate represents struggle, success, achievement for themselves and our team that we are very proud of. It is not easy. If coming back to school was easy for out-of-school youth, we wouldn't need our programme."
(December 2, KII, Education Program Officer)

This study generated practice-grounded evidence through a qualitative approach that foregrounds the unique expertise of policymakers, programme leaders, teachers, and implementers across Southeast Asia. Through KIIs, FGDs, and a co-design validation workshop, the research captures how those directly responsible for designing and delivering tech-enabled alternative education for OOSCY understand access, quality, continuity, and feasibility within public systems. The conclusions, therefore, reflect how programmes operate within existing institutional mandates, resource constraints, and governance conditions.

As is consistent with recent regional findings (↑Afzal et al., 2024), participants consistently described mobile devices as the primary access points for learning, enabling participation without physical attendance, uniforms, or fixed schedules, and allowing learners to balance education with work and family responsibilities. At the same time, low- and no-connectivity modalities, shared devices, and community learning centres are highlighted as essential for learners without reliable internet access or personal devices. Quality is framed around engaging, accessible, user-friendly, and level-appropriate content, supported by differentiated learning and local-language materials. Technology supports learning when it is paired with intentional human facilitation, literacy instruction, and well-being engagement. For OOSCY learners, quality means skills that are useful for life or work, not academic excellence alone.

Continuity and coherence are strengthened when competency-based progression is aligned with national curriculum and certification frameworks. Formal recognition enables learners to progress into further education, TVET, or employment rather than being confined to parallel pathways. Digital systems that track attendance and progression support follow-up, but sustainability depends on clear institutional mandates, cross-ministerial coordination, staffing capacity, and long-term financing.

The findings ultimately point to five cross-cutting recommendations for governments and programme implementers, as listed below.

1. **Mobile-first delivery, paired with community-based outreach, is the most effective means for improving OOSCY access to quality**

learning. Across contexts, mobile devices were described as the most practical entry point for participation. However, technology alone did not drive learning. Impact is strongest when mobile access is combined with differentiated, level-appropriate, accessible, and user-friendly content and sustained human facilitation.

2. **Clear certification and graduation pathways linked to career and TVET opportunities are the primary motivations for OOSCY re-engagement and persistence with education.** Recognised credentials aligned with national standards and connected to employment or further training were consistently described as central to learner motivation. Education is valued when it leads to tangible livelihood opportunities rather than solely academic attainment.

3. **Cross-ministerial coordination is crucial for supporting programme implementation and creating efficiencies.** Collaboration across ministries, particularly education and labour, is essential for certification recognition, transfer mechanisms, and sustained learner pathways. MoEs could establish a standing inter-ministerial OOSCY working group, co-chaired with the Ministry of Labour or equivalent, that meets regularly, maintains a shared data dashboard on enrolment and certification, and has authority to approve transfer mechanisms across education and TVET systems without requiring case-by-case ministry approvals.

4. **Sustainability after external funding remains a central feasibility concern.** Programme budgets submitted to donor partners should include an explicit transition plan, naming the ministry responsible for long-term ownership and the budget cycle in which it will appear.

5. Programmes were primarily discussed with a national lens, often using other countries as benchmarks for student learning. **Regional support and collaboration, though, is perceived as valuable and welcome for future research and implementation.**

These five cross-cutting findings clarify what currently appears to work in practice: mobile-first access paired with engaging pedagogy expands participation; recognised certification linked to employment sustains motivation; cross-ministerial coordination enables coherence; and sustainability depends on long-term financing and institutional ownership. However, these insights are primarily grounded in stakeholder perspectives rather than in comparative quantitative evidence, longitudinal tracking, or economic analysis. Moving from promising

implementation to durable system reform, therefore, requires a more robust empirical foundation that directly tests the assumptions underlying these findings.

Four research priorities follow from this need. **First, there is a need to generate quantitative evidence on learning outcomes for different tech-enabled approaches.** Despite significant expansion of implementation, there is limited rigorous, comparative quantitative evidence on foundational literacy and numeracy gains across mobile, blended, and other digital delivery models for OOSCY. Quantitative assessments and longitudinal comparative studies, implemented through participatory co-research with ministries and programme partners, should generate comparative outcome evidence while embedding measurement within programme implementation. For example, multi-country randomised or quasi-experimental studies comparing mobile-only, blended, and facilitator-led delivery models on foundational literacy and numeracy outcomes for OOSCY learners aged 14–24 could be conducted in collaboration with at least two national MoEs, with data collection protocols embedded within existing programme monitoring systems to reduce government burden. In doing so, research can strengthen national monitoring and evaluation systems, test how formal education tools can be effectively adapted for OOSCY contexts, and be conducted in a way that adds to and complements ministry priorities to inform evidence-based decisions on scale-up and modality utilisation.

Second, research must strengthen evidence on completion pathways and sustained learner motivation. Improving career opportunities is consistently identified as a motivating factor for OOSCY learners, yet there is limited longitudinal evidence on whether alternative education and certification pathways translate into improved transitions into further education, TVET, and employment. Longitudinal tracer studies co-designed with ministries, TVET institutions, employers, and learners are needed to examine how certifications affect employment and income outcomes over time, how aspirations shape enrolment and persistence, and what cultural or structural barriers limit transitions into work.

Third, stronger evidence is required on financial feasibility, cost-effectiveness, and return on investment (ROI) to support national financing and ownership. Many programmes continue to rely on external donor support, with limited clarity on per-learner costs, long-term fiscal implications, or comparative ROI across digital and non-digital pathways. Costing studies and fiscal modelling conducted collaboratively with

Ministries of Education and Finance can inform medium- and long-term budgeting decisions and cross-ministerial planning.

Finally, there is a need to generate evidence on the effectiveness and protection of EdTech during emergency responses. Limited evidence exists on the most vulnerable OOSCY learners living in contexts of conflict, climate emergency, and forced migration. Context-specific mixed-methods studies using participatory approaches with community actors, protection specialists, and learners should assess comparative effectiveness across modalities while identifying safeguarding considerations that must inform programme design and regional investment. Together, these priorities will strengthen the empirical foundation necessary for sustainable, context-responsive, and equitable expansion of tech-enabled education for OOSCY across Southeast Asia.

References

These references are available digitally in our evidence library at https://docs.edtechhub.org/lib/MJBBX3WS

Afzal, N., Barnes, K., Hayat, A., Mazari, H., Jayasinghe, N., & Sentillas, E. (2024). *Out-of-School Children and Youth in Southeast Asia: A Rapid Scoping Study*. https://elibrary.seameo.org/viewdetail/content/2596. (details)

ASEAN Secretariat. (2016). *ASEAN Declaration on Strengthening Education for Out-of-School Children and Youth (OOSCY)*. ASEAN Main Portal. https://asean.org/asean-declaration-on-strengthening-education-for-out-of-school-children-and-youthooscy/. (details)

ASEAN Secretariat. (2022). *Reopen, Recover and Resilience in Education: Guidelines for ASEAN Countries*. https://www.unicef.org/eap/media/10766/file/%20Reopen,%20Recover%20and%20Resilience%20in%20Education:%20Guidelines%20for%20ASEAN%20Countries.pdf#:~:text=Effective%20programmes%20for%20catch,with%20teachers%20trained. (details)

ASEAN Secretariat. (2025). *Langkawi Joint Statement on ASEAN Out-Of-School Children And Youth (OOSCY)*. ASEAN Secretariat. (details)

Baccal, V. S., & Ormilla, R. C. G. (2021). The implementation of Alternative Learning System in public schools in Isabela, Philippines. *EDUCATUM Journal of Social Sciences*, 7(1), 19–29. https://doi.org/10.37134/ejoss.vol7.1.3.2021. Available from https://ejournal.upsi.edu.my/index.php/EJOSS/article/view/4082. (details)

Barnes, K., Mazari, H., Mitchell, J., Hayat, A., Zhao, A., Ullah, N., Emerusenge, A. P., D'Rozario, J., Hinks, J., & Thinley, S. (2024). *EdTech for Out-of-School Children and Youth: A Rapid Evidence Review for the Southeast Asian Region* [Rapid Evidence Review]. EdTech Hub. https://doi.org/10.53832/edtechhub.1007. Available from https://docs.edtechhub.org/lib/IIAMD77T. Available under Creative Commons Attribution 4.0 International. (details)

Barnes, K., Ramesh Vasudevan, S., & Flam, R. (2025). *EdTech for Education in Emergencies: A Rapid Evidence Review*. EdTech Hub. https://doi.org/10.53832/edtechhub.1084. Available from https://docs.edtechhub.org/lib/BIUPGP3C. Available under Creative Commons Attribution 4.0 International. (details)

Dabrowski, A., Ahmed, S. K., Goundar, P., Wong, D., & Spink, J. (2024). *Supporting Out-of-School Girls and Children and Youth from Marginalised Groups in the ASEAN Region: A review of promising practices*. Australian Council for Educational Research. https://doi.org/10.37517/978-1-74286-737-3. Available from https://research.acer.edu.au/int_research/22/. (details)

Delprato, M., & Shephard, D. D. (Eds.). (2024). *Achieving equitable education: Missing education data and the SDG 4 data regime*. Edward Elgar Publishing. https://doi.org/10.4337/9781035313839. Available from https://www.elgaronline.com/view/book/9781035313839/9781035313839.xml. (details)

DepEd. (n.d.). *About Alternative Learning System*. Department of Education. Retrieved February 12, 2026, from https://www.deped.gov.ph/k-to-12/inclusive-education/about-alternative-learning-system/. (details)

DepEd. (2021). *Alternative Learning System 2.0: Information and Communications Technology Strategic Plan 2022–2026*. DepEd. https://www.deped.gov.ph/wp-content/uploads/2022/06/ALS-Strategic-Plan-V6-Final-Web.pdf. (details)

DepEd. (2026). *Implementing Guidelines of the Enhanced Alternative Learning System*. DepEd. https://www.deped.gov.ph/wp-content/uploads/DO_s2026_001r-1.pdf. (details)

ERICC consortium, Kim, H. Y., Tubbs Dolan, C., Aber, L., Diazgranados Ferráns, S., & Pherali, T. (2024). *A Conceptual Framework for Education Research in Conflict and Protracted Crisis (ERICC): Systematic, holistic approaches to Education Research, Policy and Practice*. figshare. https://doi.org/10.6084/M9.FIGSHARE.27135372. Available from https://figshare.com/articles/online_resource/ERICC_Technical_Brief_A_Conceptual_Framework_for_Education_Research_in_Conflict_and_Protracted_Crisis_ERICC_Systematic_holistic_approaches_to_Education_

Research_Policy_and_Practice/27135372. Available under Creative Commons Attribution 4.0 International. (details)

Hennessy, S., Jordan, K., Wagner, D. A., & EdTech Hub Team. (2021). *Problem Analysis and Focus of EdTech Hub's Work: Technology in education in low- and middle-income countries* (Working Paper No. 7). EdTech Hub. https://doi.org/10.5281/zenodo.4332693. Available from https://docs.edtechhub.org/lib/PBXBB7LF. (details)

Jordans, M. J. D., & Kohrt, B. A. (2020). Scaling up mental health care and psychosocial support in low-resource settings: A roadmap to impact. *Epidemiology and Psychiatric Sciences*, *29*, e189. https://doi.org/10.1017/S2045796020001018. Available from https://www.cambridge.org/core/product/identifier/S2045796020001018/type/journal_article. (details)

Kozleski, E. B. (2017). The uses of qualitative research: Powerful methods to inform evidence-based practice in education. *Research and Practice for Persons with Severe Disabilities*, *42*(1), 19–32. https://doi.org/10.1177/1540796916683710. Available from https://journals.sagepub.com/doi/10.1177/1540796916683710. (details)

Ministry of Education, Youth and Sport, Cambodia. (2025). *Press Release on the Official Implementation of the Primary Learning Program (PLP EdTech) – NGO Education Partnership*. https://nepcambodia.org/documents/press-release-on-the-official-implementation-of-the-primary-learning-program-plp-edtech/. (details)

Mitchell, J., D'Rozario, J., Thinley, S., Mazari, H., & Hinks, J. (2025). *EdTech for Girls' Education: A Rapid Evidence Review for the Southeast Asian Region* [Report]. EdTech Hub. https://doi.org/10.53832/edtechhub.1022. Available from https://docs.edtechhub.org/lib/QEHJZIUB. Available under Creative Commons Attribution 4.0 International. (details)

Potterton, A. U., & Malin, J. R. (2020). Qualitative research designs for policy-relevant research. In A. Urick, D. DeMatthews, & T. G. Ford (Eds.), *Maximizing the policy relevance of research for school improvement*. Emerald Publishing Limited. https://doi.org/10.1108/978-1-64802-249-420251009. (details)

SEA-VET Learning. (2026). *SEA-VET Learning*. https://sea-vet.thinkific.com/. (details)

Southeast Asian Ministers of Education Organization. (2022, January 19). *History of SEAMEO Members*. https://www.seameo.org/img/SEAMEO_General/About_SEAMEO/History_HTML/seameomc/mcindex.htm. (details)

Swindell, A., & Radford, K. (2025). *Addressing Cross-Cutting Themes in the Use of Education Technology and Digital Learning in Southeast Asia: Recommendations for policy, practice, and research*. EdTech Hub. https://doi.org/10.53832/edtechhub.1111. Available from https://docs.edtechhub.org/lib/MJBBX3WS. Available under Creative Commons Attribution 4.0 International. (details)

Swindell, A., & Radford, K. (Forthcoming). *Future Research Directions for Tech-Enabled Alternative Education for OOSCY in Southeast Asia* [Technical Report]. EdTech Hub. https://doi.org/10.53832/edtechhub.1197. Available from https://docs.edtechhub.org/lib/QUVNI859. Available under Creative Commons Attribution 4.0 International. (details)

Thinley, S., Hayat, A., Thang, S., & Mazari, H. (2024). *EdTech in Cambodia: A Rapid Scan*. EdTech Hub. https://doi.org/10.53832/edtechhub.1020. Available from https://docs.edtechhub.org/lib/Z7XKA7E8. Available under Creative Commons Attribution 4.0 International. (details)

UNESCO. (2023). *From BEEP to TVET: Creating pathways to skills and decent work for* Cambodian youth. https://www.unesco.org/en/articles/beep-tvet-creating-pathways-skills-and-decent-work-cambodian-youth. (details)

UNESCO. (2024). *Loading and … ConnectED! Flexible education equivalency programme*. https://www.unesco.org/en/articles/loading-and-connected-flexible-education-equivalency-programme-bridges-cambodian-youth-brighter. (details)

UNESCO, Ministry of Education, Youth and Sport, Cambodia & Ministry of Labour and Vocational Training, Cambodia. (2022). *BEEP: Basic Education Equivalency Programme: Anytime, anywhere!* https://unesdoc.unesco.org/ark:/48223/pf0000385194. (details)

UNESCO, & Southeast Asian Ministers of Education Organization. (2023). *Global Education Monitoring Report 2023, Southeast Asia: Technology in education: A tool on whose Terms?https://unesdoc.unesco.org/ark:/48223/pf0000387824*. (details)

United Nations Girls' Education Initiative (UNGEI), Education Cannot Wait (ECW), & Inter-Agency Network for Education in Emergencies (INEE). (2021). *EiE GenKit*. Education Cannot Wait. https://www.educationcannotwait.org/resource-library/eie-genkit-core-resource-package-gender-in-education-in-emergencies. (details)