



ASEAN Socio-Cultural Community Policy Brief No. 19 (2025)
ASCC Research and Development Platform on The Future of Education

Digital Literacy and Transformation in ASEAN: A Call for Education Policy Reforms

Dr Ethel Agnes Pascua-Valenzuela
(University of the Philippines, Philippines)



one vision
one identity
one community

Executive Summary:

ASEAN developed the Consolidated Strategy on the Fourth Industrial Revolution (4IR) to provide policy guidance for building an ASEAN digital community. ASEAN Member States (AMS) have been working to facilitate the digital transformation of their national educational systems based on local needs and contexts. Digital technologies have the potential to enable education that is smart and connected. From the Internet of Things (IoT) to blockchain data and generative artificial intelligence (AI), digitalization offers opportunities to shape future-ready students and deliver engaging, interactive, and personalized learning. However, digital transformations require talent and infrastructure. The internet penetration rate, a key driver of digital transformation, averages 76.03% across AMS.

Policy Recommendations:

AMS require new roadmaps to encourage digital transformation and

foster the education of workers with talents and digital literacy. AMS should close the skills gap between learners and the workforce by promoting policies to:

- Spearhead digital literacy initiatives for learners and teachers, integrating technology early in the educational phase, and using technology to bolster efforts to build literacy relevant to Industry 4.0.
- Enhance investment in accessible lifelong learning programmes via digital learning platforms and face-to-face training, making them available across the region.
- Embark on education and curriculum reform that harnesses the potential of learning from advanced countries in the region, and ensures that learners are digitally literate and have skills relevant to the future workforce.
- Develop sustainable opportunities for students across AMS, providing relevant internships for ASEAN learners in post-secondary education, and inviting closer collaboration with industry.

1 Introduction

Digital transformation in education refers to the effective use of modern technology to improve learning and teaching experiences and outcomes. While several AMS previously instituted digitalization policies, the COVID-19 pandemic accelerated the realisation of the ASEAN Community Vision 2025's call for a resilient community with an enhanced capacity to adapt and respond to social and economic vulnerabilities, disasters, climate change as well as emerging threats and challenges by digitally transforming education, as stated by the Declaration on the Digital Transformation of Education Systems in ASEAN (ASEAN, 2022).

Technological advances have been reshaping the educational landscape in AMS. Massive open online courses (MOOCs) and open education resources (OERs) have made learning content more accessible, while user-friendly learning platforms have made learning more flexible to suit learners in varying circumstances.

Technology-based open and distance learning, whose use increased dramatically during the pandemic, has become the norm in ASEAN and globally. These modes gained mainstream adoption and are expected to remain in demand. Other new technology-based creations have also started permeating the education sector. Developed countries have started experimenting with AI, virtual reality (VR), and other Industry 4.0 creations as educational technologies. It is time to reimagine the future of education as one that uses advanced technologies to facilitate effective teaching, enrich learning environments, and enhance learning experiences.

2 Objectives

This Policy Brief aims to assess the current state of digital literacy and transformation in ASEAN's education sector. It will measure the diffusion of digital transformation through an analysis of the levels of digital competency, digital tool and platform use, educational content digitisation, integration of digital initiatives with national policies and projects, and teacher skills in AMS. Policy recommendations were formulated on the use of educational technologies and how to establish smart learning environments to ensure access to quality education for all. This Policy Brief also recommends actions to close the digital divide through regional collaboration so that all AMS can attain the same level of digital transformation in education.

3 Scope and Methodology

This Policy Brief is based on research on the education crisis following the pandemic and reflection on post-pandemic lessons learned and best practices. Based on focus group discussions and key informant interviews, this brief identified educational programs and initiatives that could help future-proof AMS national education systems.

4 Diffusion of Digital Transformation in Education in ASEAN

While AMS have different levels of digital transformation in education, all AMS have recognised its importance and have been committed to its promotion. Without such initiatives, the digital divide will exacerbate existing educational inequality. Students with limited access to competent teaching, digital infrastructure, and digital resources will be at a disadvantage compared to their peers. To determine the level of educational digital transformation in the region, the sections below discuss internet penetration rates, teacher digital competency, and relevant AMS government initiatives.

1. Internet Access in ASEAN

Internet connectivity is the major driver of digital transformation and the foundation on which digital technologies and services are built. Without internet connectivity it would be impossible for the education sector to adopt the latest digital technologies and transform its operations.

Internet access in ASEAN varies widely. Brunei Darussalam and Singapore have high levels of Internet penetration, while other AMS have low rates as reflected in Table 1.

Table 1. Internet Penetration by AMS

Country	Internet Penetration Rate	Country	Internet Penetration Rate
Brunei Darussalam	98.1%	Myanmar	45.9%
Cambodia	67.5%	Philippines	73.1%
Indonesia	73.7%	Singapore	96.9%
Lao PDR	51.1%	Thailand	85.3%
Malaysia	89.6%	Viet Nam	79.1%

Source: : DataReportal, 2023

Note: Data for Indonesia is from 2021; data for Lao PDR, Malaysia, data for Myanmar is from 2022; and data for Brunei Darussalam, Cambodia, the Philippines, Singapore, Thailand, and Vietnam from 2023.

Cost is the largest barrier to increasing internet access. Making digital learning universally available globally will cost an estimated US\$474.5 billion, 90.2% of which would fund school connectivity, while the remainder would be allocated to procuring connected devices (8%), enhancing digital learning (1.5%), and improving student engagement (0.3%) (UNICEF, 2020).

2. Teacher Digital Competency

There is a widespread lack of information and communication technology (ICT) skills among teachers in ASEAN, hindering the integration of technology with classroom learning. This lack has been identified as one of the challenges for the youth to gain digital literacy (UNICEF, 2021a). Similar sentiments were expressed at a webinar titled Navigating Key Issues on Technology and Education in Southeast Asia, held on 6 February 2023. Participants described the inability of teachers to deliver specialised ICT education, highlighting the importance of pre-service training, teacher capacity building, and similar training on technology and pedagogy for teachers and school heads. (SEAMEO INNOTECH, 2023).

Deficient digital skills limit educators' ability to engage students with innovative learning experiences and exacerbate the digital divide among learners, disproportionately affecting those from underserved communities. Addressing this challenge is imperative to ensure that educational systems remain relevant and equitable in an increasingly digital world.

Educators must have the competencies required to reap the benefits of the internet and digital technologies. Developing essential digital skills in students necessitates fostering teacher autonomy and adaptability and requires that teachers be innovative and open-minded instead of sticking to traditional practices. Empowering educators to design and implement technology-enhanced learning experiences within established frameworks is expected to encourage open-mindedness and encourage the adoption of new methods. This approach could foster a dynamic learning environment conducive to 21st-century skill development (Source: Reid, PM. Personal Interview, 2023).

5 Digital Transformation-Focused Government Initiatives

Several AMS have made significant progress in digitally transforming their education systems through national policies, projects, and infrastructure upgrades. Singapore has established itself as a global leader in education by embracing digital technologies. Brunei Darussalam, through the Unified National Networks (UNN), has also made significant progress, connecting 92% of households to the internet while continuously upgrading its national network infrastructure (Asian Telecom, 2023).

Similarly, Indonesia has been bridging the digital divide between schools through initiatives such as the Digitization of Indonesian Education and M-Edukasi; while in Myanmar, the e-Governance Master Plan calls for digitising all areas of government. For example, Myanmar's Central Statistical Organisation, along with Telenor and UNICEF, rolled out an electronic birth registration system in Mon State in 2019 to better ensure children's rights to education, health, and social care. The Myanmar Digital Economy Roadmap has outlined government plans to develop digital skills, encourage innovation, and increase internet access.

Lao PDR is aiming to grow its digital economy from 3% to 10% of GDP by 2040. This will require widespread access to high-speed internet, reliable digital payments, and a strong policy and regulatory framework. The government has already made some progress in digitalising some areas, such as launching the LaoKYC app for digital vaccination certificates and the Khang Panya Lao platform for online education.

Despite these efforts, several challenges remain, including:

- A lack of comprehensive and coordinated policies on digital learning, potentially hinders effective implementation and resource allocation (UNICEF, 2021b)
- A lack of updated ICT policies and legal frameworks. In some countries, existing laws are outdated and vague, making enforcement difficult and stymying efforts to protect investors (Oxford Business Group, 2020)
- A lack of digital skills among the population
- Limited online government services, with some AMS only recently starting to deploy e-government services.
- Inadequate AMS legal and regulatory frameworks for digital technologies (World Bank, 2022)

Successful implementation of digital transformation initiatives hinges on addressing these obstacles.

6 Potential for a Digitally Transformed Education Sector

Digital transformation can lead to a more prosperous and equitable future for all in ASEAN. Immediate action geared toward digital transformation initiatives will help mitigate the problems experienced during the pandemic. Such actions have the potential to minimise the impact of learning losses on the current generation of students. If action is not taken, future graduates worldwide stand to lose US\$17 trillion in lifetime earnings as a result of the pandemic-related school closures (UNICEF, 2022).

A. Inclusive, Equitable, and Accessible Quality Education

Utilising digital technologies and platforms increases access to education for all, regardless of a learner's location or socio-economic background.

This was demonstrated by Indonesia's Kartu Prakerja Program, which offered a digital-first approach to providing end-to-end skills training using cloud computing. The program reached more than 17 million beneficiaries across Indonesia (Prakerja Publication, 2023). Program administrators partnered with digital platforms to provide beneficiaries with web-based access to lessons to remove the need to download apps onto their devices, thereby eliminating an important learning impediment. Singapore's Student Learning Space (SLS), an online learning portal available to all national primary and junior schools and junior colleges, did the same.

B. Resilient Education Sector

The education sector's pandemic-driven decision to reach learners through online classes exposed a large digital divide in AMS. Lacking connected devices and internet connectivity, learners and teachers from poor households, schools, and rural areas could not engage in online or distance learning.

During the pandemic, many countries demonstrated their unreadiness or inability to deliver equitable high-quality distance learning through the internet. Governments scrambled to finance the acquisition of devices so learners could participate in online classes. In contrast, high-performing national education systems during the pandemic were able to transition efficiently to distance learning due in part to pre-pandemic investments in digital infrastructure and teacher training. For example, Singapore had an emergency plan consisting of a home-based learning system developed as a response to previous health crises. These investments and initiatives allowed countries to quickly and effectively transition to distance learning and provide students with high-quality instruction even amidst the global crisis.

C. Personalised and Interactive Learning

Digital technologies can provide students access to a wider range of learning resources, including online courses, interactive learning experiences, and simulations. In South Korea, for instance, digital textbooks are currently in development that incorporate intelligent tutoring, augmented reality (AR), and other features. VR is also used in vocational and technical schools in China and the US. More advanced technologies, such as neurotechnology, can be explored to enable teachers to instantly tailor the course material to meet the needs of individual students (Privitera and Du, 2022).

Digitalising education allows students to learn at their own pace and style. Digital technologies will enable educators to access different pedagogies, making education more inclusive. Educators can also use digital tools to track student progress and identify areas where learners need additional support. Digital technologies have the potential to make learning more effective, engaging, inclusive, and relatable. Vulnerable learners, specifically those with disabilities, can also benefit from customized learning programmes developed by educators using digital technologies.

D. Future-Ready Students

In an increasingly digitalised world, AMS must ensure that students can adapt to the rapid technological and societal changes that are continuously changing employment requirements. Accordingly, investment in digital transformation is an investment in human capital. Education in digitalisation would help ensure that learners have the digital skills they need to succeed in the future. An example is South Korea and Ecuador's use of VR to train students to disassemble and reassemble equipment. Instead of practising on actual pieces that are expensive, schools in those countries employ VR-enabled training (Cho, 2020). Implementing digital pedagogy can also prepare students for future challenges and opportunities. They can be taught early on to think critically about digital information and use digital technologies ethically and responsibly.

To achieve digital literacy and transformation in education, the following recommendations are offered:

1. Support expansion of digital infrastructure

- a) **Prioritise investment in digital infrastructure:** Governments should heavily invest in expanding and upgrading digital infrastructure to ensure that all geographical areas, including remote regions, have reliable access to high-speed internet and other digital technologies. A robust national digital infrastructure will enable students to continue learning, regardless of their location or socio-economic status and despite local, national, or global disruptions. Investment requires that governments secure funding in innovative ways, including by issuing bonds or other debt instruments, crowdfunding, corporate sponsorships, and philanthropic organizations and individuals.
- b) **Seek partnerships to obtain funding:** Since cost is the primary barrier to increasing internet access and digitalisation, low-income countries should seek international aid to fund digital infrastructure initiatives, such as bilateral donors, foundations, or multilateral agencies. PPPs in the form of joint investment partnerships or build-operate-transfer (BOT) models could also help accelerate digitalisation.

2. Enhance digital literacy rates in AMS

- a) **Develop national digital literacy standards:** Governments and educational institutions should develop and implement digital literacy standards for students and teachers. Standards should define the digital skills needed for success in the 21st century. Based on these standards, institutions can offer digital literacy workshops and courses for students and teachers, whether in person, online, or through a hybrid approach. Digital literacy curricula can also be formulated to provide teachers with activities, assessments, and lesson plans to aid the teaching of digital literacy skills.
- b) **Develop digital literacy for educators:** The ICT skills of educators must be developed to take full advantage of technology in teaching. Technology-focused pre-service training and teacher capacity building will contribute to shaping and improving the digital competency of educators. Teacher autonomy and adaptability must be promoted by Education Ministries through professional development programs that encourage educators to implement innovations in their teaching methods. A culture of transparency must be cultivated in education, so teachers can work with students to find solutions to overcome challenges (Source: Reid, M. [2023, May 25]. Personal Interview).
- c) **Develop a national digital learning platform accessible to all.** Governments must take the initial steps to create smart learning environments by helping to ensure that learners and teachers have access to digital devices and resources. Similar to Singapore's Student Learning Space (SLS) and Kartu Prakerja's web-based learning platform, online learning environments must be compatible with commonly used and affordable devices and offer learners a wide range of educational resources, such as digital textbooks, interactive learning activities, and online courses. Governments should also provide teachers with tools to assess student learning, including online essays, quizzes, and tests. Online learning platforms must help students and teachers with disabilities by offering accessibility features, such as closed captions, screen reader support, and transcripts.

3. Enhance policy frameworks to support the use of advanced technologies in education

- a) **Craft clear and technology-targeted education policies:** Technology and tools can greatly improve the quality of education and interconnected learning. AMS can set policy frameworks to promote digital learning and new approaches to teaching and learning. While AMS have started to deliver VR-enabled pedagogies, technology should be treated as a tool to enhance learning, not to replace human interaction and critical thinking.
- b) **Create student-centred policies and frameworks.** AMS should create education policies and frameworks to encourage student feedback. Students can co-create policies and activities for flexible learning models, while students increased interaction and co-creation of learning in classes will increase success. Deep and meaningful learning can results from students who are engaged in the teaching-learning process.

4. Develop and create opportunities for industry attachments across AMS

- a) **Incentivise companies to accept student interns.** Governments can incentivise companies that support colleges, polytechnics, and universities for their student internship programmes. Through regulatory fee reductions, subsidies, streamlined permit processes, and tax breaks, companies can effectively train young learners for jobs that industries need. IT companies from across ASEAN can hire interns to provide better training experiences in the region.
- b) **Maximise the roles of AMS regional bodies for job immersion and internship opportunities.** The ASEAN University Network offers regular Internship Programs in certain fields to member institutions. Other regional organisations, such as the Southeast Asian Ministers of Education Organization (SEAMEO) and the Passage to ASEAN (P2A) internship on TVET and Teacher Exchange Programmes should be expanded.
- c) **Develop clear internship policies to protect students during immersion in workplace programs.** Robust safeguards must be in place. Programmes should highlight opportunities for all, regardless of gender, race, socio-economic background, or other factors.

Digital transformation has the potential to revolutionize education and make it more accessible, engaging, and personalised for all students. Governments must work with educational institutions, international organisations, and the private sector to invest in digital infrastructure and digital literacy standards, promote the use of digital technologies in teaching and learning, and develop safeguards against technology overuse and abuse.

AMS can help realise a digitalised education sector. Countries with high-performing education systems have already demonstrated how to mitigate the worst effects of pandemic-induced school closures. Through collaborative efforts, educational institutions and stakeholders can create smart learning environments to help all citizens succeed an increasingly digital workplace, regardless of learning disruptions, their location, or socio-economic status.

References

- Association of Southeast Asian Nations (ASEAN) Secretariat. (2020). *Declaration on the Digital Transformation of Education Systems in ASEAN*. Retrieved from <https://asean.org/wp-content/uploads/2022/11/35-Declaration-on-the-Digital-Transformation-of-Education-Systems-in-ASEAN.pdf> (14 September)
- Cho, Y. (7 February 2020). *How Is Korea Preparing for the Jobs of the Future and What Can We Learn from Them?* Retrieved from <https://blogs.worldbank.org/eastasiapacific/how-korea-preparing-jobs-future-and-what-can-we-learn-them> (15 September)
- DataReportal. (2023). *Digital 2023*. Retrieved from <https://datareportal.com/reports/digital-2023-global-overview-report> (14 September)
- Reid, M. 2023. May 25. *Personal Interview*.
- Oxford Business Group. 2020. *Myanmar's new digital strategy improves ICT development and network readiness*. Retrieved from <https://oxfordbusinessgroup.com/reports/myanmar/2020-report/economy/connection-roadmap-new-digital-strategy-for-government-trade-and-investment-to-improve-sector-development-and-network-readiness> (15 January)
- SEAMEO INNOTECH. (2023). *Webinar on navigating key issues on technology and education in Southeast Asia [Video]*. YouTube. <https://www.youtube.com/watch?v=nldBNVen9vo&t=10261s>
- UNICEF. (2021a). *Digital Literacy in Education Systems across the ASEAN*. Retrieved from <https://www.unicef.org/eap/media/7766/file/Digital%20Literacy%20in%20Education%20Systems%20Across%20ASEAN%20Cover.pdf> (15 September)
- UNICEF. (2022). *The State of Global Learning Poverty: 2022 Update*. Retrieved from <https://www.unicef.org/media/122921/file/StateofLearningPoverty2022.pdf> (18 September)
- United Nations Children's Fund (UNICEF). (2020). *Reimagine Education*. Retrieved from <https://www.unicef.org/media/87286/file/Reimagine%20Education%20Brochure-2020.pdf> (14 September).
- World Bank. 2022. *Positioning the Lao PDR for a digital future*. Retrieved from <https://thedocs.worldbank.org/en/doc/c01714a0bc2ca257bdfef83f75a64adc-0070062022/original/Positioning-The-Lao-PDR-for-a-Digital-Future-11-10-22.pdf> (15 January)

Editorial Committee of the ASCC Research and Development Platforms Programme

Advisor:	Dr. Kao Kim Hourn , Secretary-General of ASEAN
Chairperson:	San Lwin , Deputy Secretary-General of ASEAN for ASEAN Socio-Cultural Community
Members:	Rodora T. Babaran , Director of Human Development Directorate Ky-Anh Nguyen , Director of Sustainable Development Directorate Kamal Mamat , Head of Education, Youth and Sports Division Jennifer dela Rosa , Head of Health Division Mega Irena , Head of Labour and Civil Service Division Miguel Musngi , Head of Poverty Eradication and Gender Division Jonathan Tan Ghee Tiong , Head of Culture and Information Division Riyanti Djalante , Head of Disaster Management and Humanitarian Assistance Vong Sok , Head of the Environment Division
Associate Editor:	Erica Paula Sioson , Senior Officer, ASCC Analysis Division
Production Editors:	ASCC Analysis Division

This policy brief is a publication of the ASEAN Socio-Cultural Community Department of the ASEAN Secretariat. The views expressed in this publication are those of the authors, and do not necessarily reflect the views of ASEAN, ASEAN Member States, the ASEAN Secretariat, or ASEAN Dialogue Partners. For more information about the ASCC Research and Development Platforms Programme contact the ASCC Analysis Division at ASCCAD@asean.org.