

Gender barriers to basic digital skills for employment in the ASEAN region

A review of promising practices

Delivered by



In partnership with



Gender barriers to basic digital skills for employment in the ASEAN region: A review of promising practices.

Louise Wignall, Anita Roberts, Justin Brown, and Syeda Kashfee Ahmed.

The Australian Council for Educational Research
19 Prospect Hill Road
Camberwell VIC 3124
ABN 19 004 398 145
www.acer.org

ISBN 978-1-74286-741-0

© British Council 2024, licensed under a Creative Commons Attribution Non-Commercial 4.0 International Licence (<https://creativecommons.org/licenses/by-nc/4.0/>).

Recommended attribution

The British Council must be attributed as the copyright holder of this publication and Louise Wignall, Anita Roberts, Justin Brown, and Syeda Kashfee Ahmed as the authors.

Recommended citation

Wignall, L., Roberts, A., Brown, J., & Ahmed, S. K. (2024) *Gender barriers to basic digital skills for employment in the ASEAN region: A review of promising practices*. Australian Council for Educational Research. <https://doi.org/10.37517/978-1-74286-741-0>

Acknowledgements

ASEAN-UK SAGE is an ASEAN cooperation programme funded by UK International Development from the UK government.

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

CONTENTS

DEFINITIONS	4
1. OVERVIEW AND AIMS	5
2. METHODOLOGY	7
2.1 Conceptual framework.....	7
2.1.1 Key research questions	8
2.2 Search strategy.....	9
2.2.1 Inclusion and exclusion criteria.....	9
2.2.2 Sources.....	10
2.2.3 Screening.....	10
2.3 Limitations of this study.....	10
3. DIGITAL LITERACY: DEFINITIONS AND INDICATORS	12
3.1 Key terms	12
3.2 Digital literacy in practice.....	13
3.3 Indicators of digital literacy.....	15
3.3.1 Access and connectivity	16
3.3.2 Digital literacy skills	16
3.3.3 General observations on indicators	18
3.4 Frameworks and strategies.....	20
3.5 What we do know from the available data.....	20
3.6 Key learnings	22
4. CHALLENGES OF DEVELOPING GIRLS’ AND WOMEN’S DIGITAL SKILLS IN ASEAN COUNTRIES ...	24
4.1 Barriers to meaningful access to ICT infrastructure	24
4.2 Barriers to developing digital literacy	27
4.3 Barriers to applying digital literacy in meaningful employment.....	31
4.4 Key learnings	32
5. CHARACTERISTICS OF PROMISING INTERVENTIONS	34
5.1 Female role models and mentors	36
5.2 Project-based learning	37
5.3 Real-world, relevant problems.....	37
5.4 Safe, supportive learning environments.....	39
5.5 Key learnings	40
6. CONCLUSIONS AND RECOMMENDATIONS	41
6.1 Develop digital literacy not narrow ICT skills.....	41
6.2 Use a common reference point to describe digital literacy.....	42
6.3 Ensure indicators are measuring what matters	42
6.4 Design embedded and stand-alone programs that empower girls and women	43
7. REFERENCES	45
ANNEX 1: REVIEW METHODOLOGY	49
ANNEX 2: DEFINITIONS AND INDICATORS	50
ANNEX 3: INITIATIVES WITH EFFECTIVE ENGAGEMENT FEATURES	53

DEFINITIONS

Terms	Meanings
Digital citizenship	The ability to find, access, use, and create information effectively; engage with other users and content in an active, critical, sensitive, and ethical manner; and navigate the online and ICT environments safely and responsibly, while being aware of one's own rights.
Digital divide	The gap in access to, or usage of, ICTs between people, demographic groups or countries
Digital literacy	... the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life... (UNESCO, 2018)
Information and communications technology (ICT)	An umbrella term that refers to any product that stores, retrieves, manipulates, transmits or receives information in a digital form and to associated services and applications
STEM skills	These refer to science, technology, engineering and mathematics skills that are often applied in an interdisciplinary context, such as creating computer applications, advanced manufacturing, automobile engineering.

1. OVERVIEW AND AIMS

The Association of Southeast Asian Nations (ASEAN) is a union of 10 nations situated across Southeast Asia, encompassing some of the world's most rapidly advancing economies¹. ASEAN's primary goals revolve around accelerating economic growth, fostering social progress, and promoting cultural development within the region. In recognition of the role that gender equity and inclusion plays in contributing to these goals, in 2022, ASEAN launched the ASEAN Gender Mainstreaming Strategic Framework². The Framework also aims to ensure that gender equality and inclusion efforts become integrated in ASEAN's efforts to ensure progress and development in the region.

Investing in girls' and women's education can transform the experiences of individuals, as well as shape communities into the future. Girls who are given opportunities to receive an education are more likely to lead productive lives, participate in decision making processes, and shape the trajectories of others. The work of the ASEAN-UK SAGE programme reflects an overarching aim to better understand the challenges facing different types of girls and women in the ASEAN region, identify promising practices that can support girls and women, and create tangible recommendations for those responsible for supporting girls and women's educational trajectories across the lifespan.

With 125,000 new users coming onto the Internet every day, the ASEAN digital economy is projected to grow significantly, adding an estimated \$1 trillion to regional GDP over the next decade (World Economic Forum, n.d.). There is a need to ensure the workforce is suitably equipped to support this economic transformation. Accordingly, Digital Skills and Talent has been identified in the ASEAN Digital Integration Index as a basis for benchmarking ASEAN digital integration efforts. However, it is currently the weakest area of performance among 6 benchmarking components. More can be done to prepare the ASEAN workforce for the future.

Research (Kogiso et al, 2017) has suggested that up to 80% of future jobs in Southeast Asia will require at least basic digital skills. Without focused policy and program effort, there is a risk that more marginalised populations, including girls and women, may miss out on developing skills that will be critical in the future labour market, thus contributing to further inequality and disenfranchisement.

As part of a three-part series examining ways to support girls, women, and marginalised populations, this report focuses on understanding the current challenges ASEAN countries face in supporting girls and women to develop the basic digital literacy skills required to enter and thrive in the labour market.

Chapter 1 provides an overview of the report and its aims.


Chapter 2 presents the research methodology, including research questions, search strategy, and analysis process.

Chapter 3 describes definitions and indicators relating to digital literacy.

Chapter 4 synthesises key challenges to supporting the development of digital literacy for girls and young women that enables their effective transition between learning environments and the labour market.

¹ Founded on 8 August 1967 ASEAN commenced with five member states: Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Today, ASEAN has expanded to also include Brunei, Cambodia, Lao PDR, Myanmar, and Viet Nam. Timor-Leste and Papua New Guinea hold observer status.

² [ASEAN Gender Mainstreaming Strategic Framework 2021–2025 - ASEAN Main Portal](#)



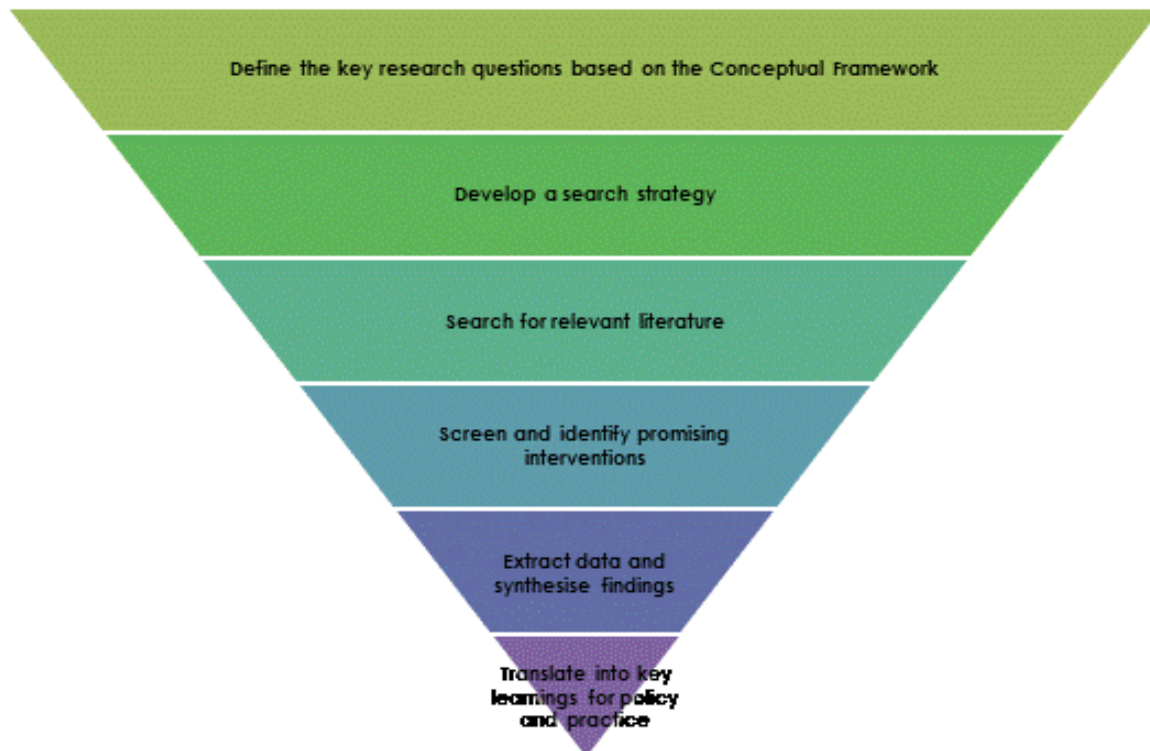
Chapter 5 describes characteristics of interventions that can support these groups, and highlights examples of promising practices in the ASEAN region and comparable contexts. Key learnings and limitations are also presented.

Chapter 6 provides conclusions and key recommendations for policy makers looking to implement programs or practices that better support girls and women to develop the digital literacy and employability skills required to enter and thrive in the labour market. The main report is accompanied by key references and detailed research methodology.

2. METHODOLOGY

This paper draws on the Rapid Evidence Review Approach as recommended by Barends et al. (2017), which for the purposes of this study has been simplified as per Figure 1 below.

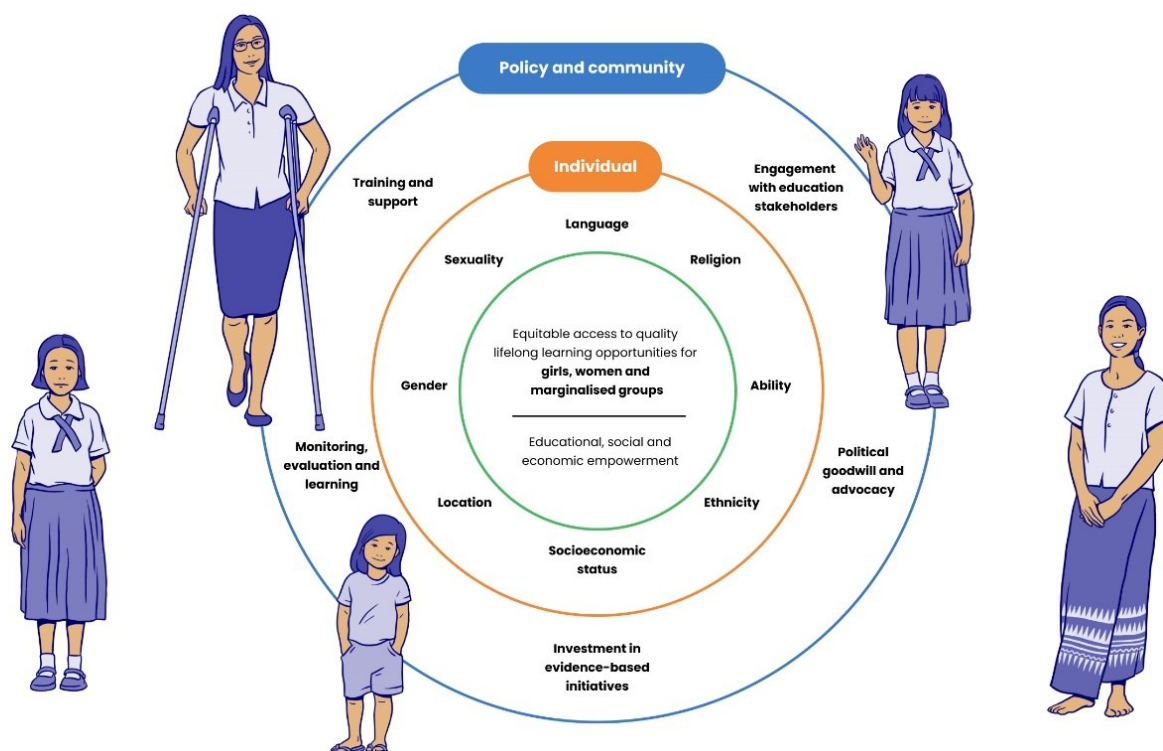
Figure 1: Research Approach



2.1 Conceptual framework

This research is informed by a conceptual framework, which is focused on understanding ways to better support the lifelong learning opportunities of different groups of girls and women, as well as other marginalized groups in the ASEAN region. The framework is informed by academic literature on effective ways to support girls' and women's educational participation and outcomes. This framework recognises that supporting equitable access to education for girls, women, and marginalised groups, involves ongoing supporting, monitoring, and investment across an individual's lifespan. By recognising that education participation is lifelong, there are greater chances for girls and women to be empowered in society, education, and economic contexts. Figure 2 below depicts the different interacting levels of the education system (policy, community, and individual elements) that support equitable access to lifelong learning opportunities.

Figure 2: Conceptual framework



2.1.1 Key research questions

The study examines three guiding questions:

- **RQ1.** *What are the key challenges that ASEAN countries face in relation to supporting girls' and women's education opportunities across the lifespan?*
- **RQ2.** *What promising initiatives are currently being implemented and what evidence of their effectiveness exists?*
- **RQ3.** *What are the key learnings and recommendations for policymakers seeking to enhance girls' and women's educational opportunities across the lifespan?*

The review approach and conceptual framework presented above guided the following three key activities:

1. A full scan of academic and grey literature to identify the current situation of digital skills for employment in ASEAN nations.
2. A rapid review of literature to identify the current ways in which girls and women (16+) are supported to develop the digital literacy and employability skills required to enter and thrive in the labour market.
3. Rapid scan of academic databases and knowledge repositories to establish an evidence base for the identification of 'promising' initiatives. This activity provides evidence for common characteristics of effective initiatives and ensures a common understanding of successful elements that could be considered for SAGE and/or policy advocacy with ASEAN member states.
4. A systematic review of grey (non-academic) literature, policy and other planning documents focused on relevant initiatives to develop the digital literacy skills required to enter and thrive in the labour market in the ASEAN region.

2.2 Search strategy

The aim of the systemic search was to primarily find information on the following key topics:

- Trends related to women's education and labour force participation and economic empowerment in Asia-Pacific and South-East Asia – with a focus on ASEAN countries.
- Country-specific factors shaping girls' and women's development of the digital literacy and employability skills required to enter and thrive in the labour market.
- High-potential interventions for supporting girls and women to develop the digital literacy and employability skills required to enter and thrive in the labour market.
- Key learnings and policy recommendations relevant to the ASEAN context which have potential for further research and investment.

2.2.1 Inclusion and exclusion criteria

The following inclusion criteria were used in the identification of eligible studies:

- **Participants:** Samples needed to consist of female adolescents and young adults (particularly young women) (16+) in formal and non-formal education settings and workplace settings (upper secondary, and post-secondary: Technical vocational education and training (TVET), Tertiary and higher education and industry).
- **Interventions:** To be eligible for inclusion, an intervention needed to be a completed or ongoing program/ initiative used in formal or non-formal education settings, community and/ or workplace settings. Programs could be delivered by trainers, teachers, program facilitators, workplace supervisors or community members involved in supporting the target participants. Interventions were focused on digital literacy and ICT including STEM (Science, Technology, Engineering and Mathematics) and financial literacy, 21C/employability skills development, and work readiness. Secondary outcomes included literacy, numeracy, communication skills as well as mental health and wellbeing.
- **Context:** Focus on ASEAN contexts - Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam (+ Timor-Leste). Development and humanitarian contexts, low- and middle-income contexts, and low-SES environments in high-income countries were also included.
- **Outcomes:** The outcomes for included studies were broadly grouped into three categories:
 - Engagement through technology (e.g., self-esteem, confidence, digital citizenship, economic empowerment); and
 - Employability skills development (e.g., digital literacy skills, 21stC skills, STEM, ICT)
 - Participation in the labour market (e.g. reduced time to get a job, improved work performance, increase in the number of female entrepreneurs and small business owners, and other job outcomes including career progression, pay parity and financial and social security)

Outcomes were measured, where possible, using valid and reliable approaches, e.g., screening instruments, questionnaires, focus groups and interviews.

- **Publication:** All documents needed to be published between January 2013 to February 2024 in English language. The documents could be published in peer-reviewed journals or impact evaluation and commissioned reports, or approved Masters or Doctoral theses which were

easily accessible through the rapid document scan. Some interventions were also sourced from relevant reviews (global or focused on the ASEAN region, or low- and middle-income countries (LMIC) and/or comparative contexts), if these collated evidence on girls in STEM and/or ICT skills development and women’s employability in the 21st century.

2.2.2 Sources

The following sources were systematically searched to identify the academic and grey literature (see Table 1 below).

Table 1. List of sources for the rapid review

International Organizations	Academic literature	Grey literature
<ul style="list-style-type: none"> • ADB • ASEAN • DFAT • FCDO • ILO • KAPE • Sasakawa Peace Foundation • Save the Children • SEAMEO • UNDP • UNGEI • UNESCO • UNICEF • USAID • World Bank 	<ul style="list-style-type: none"> • Google scholar • ERIC 	<ul style="list-style-type: none"> • Google searches • Reference lists of reports • Program websites and publications


2.2.3 Screening

The search results were screened by two reviewers. In the first stage only the title and abstracts were scanned, and a few were rejected as they did not include any intervention detail and were mostly policy related documents. In the next stage only the documents which matched the inclusion criteria were retrieved and the full text was reviewed. If the document provided sufficient information about an intervention, key details about the programs were recorded into an excel spreadsheet. The reviewers attempted to supplement this program information by hand-searching program websites and where possible any additional relevant data were extracted into the spreadsheet. A simplified PRISMA is provided in Annex 1 to explain the screening and selection decisions.

2.3 Limitations of this study

Given the large volume of research on the topic of girls’ education in the ASEAN region, and the rapid development of interventions to support digital literacy, not all ‘promising’ interventions can be captured in this report. It is likely that there are additional practices and interventions available in the ASEAN region that are yet to demonstrate evidence of effectiveness or have not published outcomes data. This does not mean that the programs are not effective, but they have not been researched at this time.

Additionally, the review team only searched for documents published between January 2013 to 2024, therefore programs completed prior to this period are not included, unless findings from those were published during this limited search timeframe. Although characteristics presented in this



report are common in interventions that have reported positive outcomes for girls and women, the list of interventions we present as ‘promising’ is not exhaustive, but illustrative only. Also, the search which acted as a basis for identifying interventions, was conducted in English only. It is likely that there are programs and research available in languages other than English in the ASEAN region.

It should be noted also:

- In this report, the terms girls or women includes those who are cisgender, transgender, non-binary, and intersex persons who identify as female. The authors acknowledge this as a limitation of the report.
- In this report, STEM skills are discussed because they represent an important complement of digital skills. Many trends evident in the development of STEM skills are reflected in the development of digital skills and more statistical data is available on STEM skills than on digital skills.

3. DIGITAL LITERACY: DEFINITIONS AND INDICATORS

Digital skills and digital literacy can be developed across the whole of life, in formal and informal learning settings. They can range from a set of general skills that can be used across social and occupational contexts through to highly specialised skills used in specific ICT occupations. They function together with other abilities such as traditional literacy and numeracy skills, critical and innovative thinking, complex problem solving, an ability to collaborate, and socio-emotional skills (Skill for All Foundation, 2019).

It is essential for policy and program responses to be informed by definitions and indicators that accurately describe and measure what matters. This chapter outlines how definitions have been applied to develop key indicators of measuring access, participation and utilisation of digital skills. Where relevant and comparable datasets are available, they are disaggregated by sex, age and other relevant variables. The chapter concludes with observations on the definitions and indicators and where they could be improved.

3.1 Key terms

UNICEF (2023) observed that a wide range of definitions for ‘digital literacy’ exist, and the term is often used interchangeably with others such as ‘digital competence’ and ‘digital skills’.

The definition of ‘digital literacy’ provided by the UNESCO Institute for Statistics in its global framework of reference on digital literacy skills for indicator 4.4.2 is:

‘Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy, and media literacy.’ (UIS, 2018).

In a review of the research literature on digital skills frameworks globally, Gekara et al. (2019) distinguished between ‘competency’, ‘literacy’ and ‘skills’.

- **Digital literacy** typically focuses on the **knowledge** required to use technology in a meaningful way for work and social activity. It is more than the ability to use software or operate a digital device and includes cultural and critical dimensions of literacy and complex cognitive, social, and emotional skills to function effectively in digital environments (Eshet, 2004).
- **Digital competency** typically focuses on **technical skills**, such as how to retrieve information, and computer mediated tasks (e.g. online communication) in a range of settings (e.g. work, study, socialising). It also refers to the ability to critically evaluate digital technologies, and motivation to participate in digital culture (Ilomäki et al, 2011).
- **Digital skills** typically focus on the **practical and measurable** application of digital technologies and the ethical and responsible use of technology (Iordache et al, 2017).

The ILO report on ‘Decent Jobs for Youth’ classified digital skills from ‘basic’ to ‘advanced’, also including definitions of ‘soft skills’ and ‘digital entrepreneurship’:

- **Basic digital skills:** these are generic ICT skills required for nearly all jobs. They relate to the effective use of technology, which is necessary in most professions. They include web research, online communication, use of professional online platforms and digital financial services.

- **Mid-level digital skills:** these include digital graphic design and marketing, desktop publishing and social media management, both for job and entrepreneurship opportunities.
- **Advanced digital skills:** skills necessary to create, manage, test and analyse ICTs. They relate to technology development, including coding, software and app development, network management, machine learning, big data analysis, IoT, cybersecurity and blockchain technology.
- **Soft skills:** complementary to technical skills, these are skills necessary for all professionals to ensure collaborative and effective work in the digital economy. They include leadership, communication, teamwork and client focus, among others.
- **Digital entrepreneurship:** digital skills required by entrepreneurs, including online market research, strategic planning and business analysis, using financing and crowdfunding platforms, online marketing, online networking and establishing mentoring relationships.

The Broadband Commission (2017) have previously conceptualised digital skills as a ‘gradual continuum’ from basic functional skills to high-level skills, with a range of intermediate skills existing in between.

See Annex 2 for definitions of digital literacy from a range of sources.

3.2 Digital literacy in practice

In real-world contexts, digital literacy is used to navigate, critically assess, and effectively utilise digital technologies. Digital literacy often starts with basic digital skills such as using smartphones, tablets, or simple digital devices. For a range of social, educational, and employment or business purposes, girls and women need to be familiar with operating these devices, navigating menus, and using touchscreens or keyboards.

In **employment contexts**, digital literacy can encompass the ability to effectively use and adapt to digital tools, analyse and interpret data, collaborate through online platforms, and critically evaluate information, enabling individuals to navigate the modern workplace efficiently and productively.

According to ILO’s estimation, two billion people globally make their living in the **informal economy**. Approximately 244 million of these people are in the ASEAN region. Of this group, many are women, those with lower education levels, and those living in the rural areas. Informal economy work includes activities such as street vending, home-based work, and small-scale businesses. Platform workers also belong to this group, although they work for registered and recognised entities. In this digital era, platform work has expanded quickly, and more people favour it as a primary or secondary source of income (ASEAN, 2022).

Digital literacy empowers women in the informal sector to leverage online marketplaces and e-commerce platforms. Many women in the informal sector rely on mobile banking and digital payment systems for financial transactions. Digital literacy includes the ability to use mobile apps to make payments, transfer money, and manage financial transactions securely. They can use these platforms to sell their products, connect with customers, and manage online transactions. Women working in the informal sector can also benefit from digital literacy by using social media platforms for business promotion. This includes creating business profiles, posting product updates, engaging with customers, and leveraging social networks for marketing.

Many ASEAN countries employ large numbers of their workforce in the **manufacturing sector**. These industries often employ a substantial number of women in various roles, from production and

assembly to quality control and management. In this context, digital literacy can include the ability to input data into digital systems for monitoring and control purposes. This can involve logging production data, monitoring machine performance, and ensuring the efficient operation of manufacturing processes.

In the **healthcare sector**, digital literacy is required to manage, analyse and interpret health data using electronic health records, health information systems, and data analytics tools. They can also contribute to the efficient use of technology to improve patient care and healthcare administration. This includes updating patient information, accessing medical histories, and inputting data accurately to ensure comprehensive and coordinated care.

Also, in the health sector, digital literacy is required for both healthcare providers and patients to use patient portals and mobile applications. Providers use these platforms to communicate with patients, share test results, and manage appointments, while patients can access their health information and engage in self-management.

In rural areas, women play a crucial role in agriculture. They are involved in activities such as crop cultivation, livestock management, and agribusiness. Digital literacy in the **agricultural and farming sector** in the developing world involves the ability to use digital technologies to enhance farming practices, improve yields, and access relevant information for sustainable agricultural development.

Workers in the agricultural and farming sector need digital literacy to operate precision farming technologies and software to make timely decisions regarding planting, harvesting, and irrigation, reducing the impact of adverse weather conditions on crops and so on.

In **everyday life**, digital literacy extends to using mobile banking and financial services for transactions, loans, and financial management, such as internet banking and transferring funds between accounts.

It is important, therefore, for skill development approaches to respond to the varied contexts in which women work and the differing types and levels of digital skills required and valued. In general terms, these can include:

- Self-employed in a home/family-based businesses/entrepreneurs
- Employed by a medium/large organisation (with/not with salary, benefits and entitlements)
- Employed in low-paid, unpaid, insecure and potentially unsafe work
- Employed in ICT/high level digital skill employment
- Employed in basic operational skilled employment; and
- Working as a contractor for a platform-based employer (see Box 1).

Box 1. Platform-based employment

In a report on 'Bridging the Digital Divide', the OECD (2018) stated:

'Platform-enabled digital opportunities may be especially important for women in developing countries and help them leapfrog and contribute to the welfare and well-being of their families and communities.'

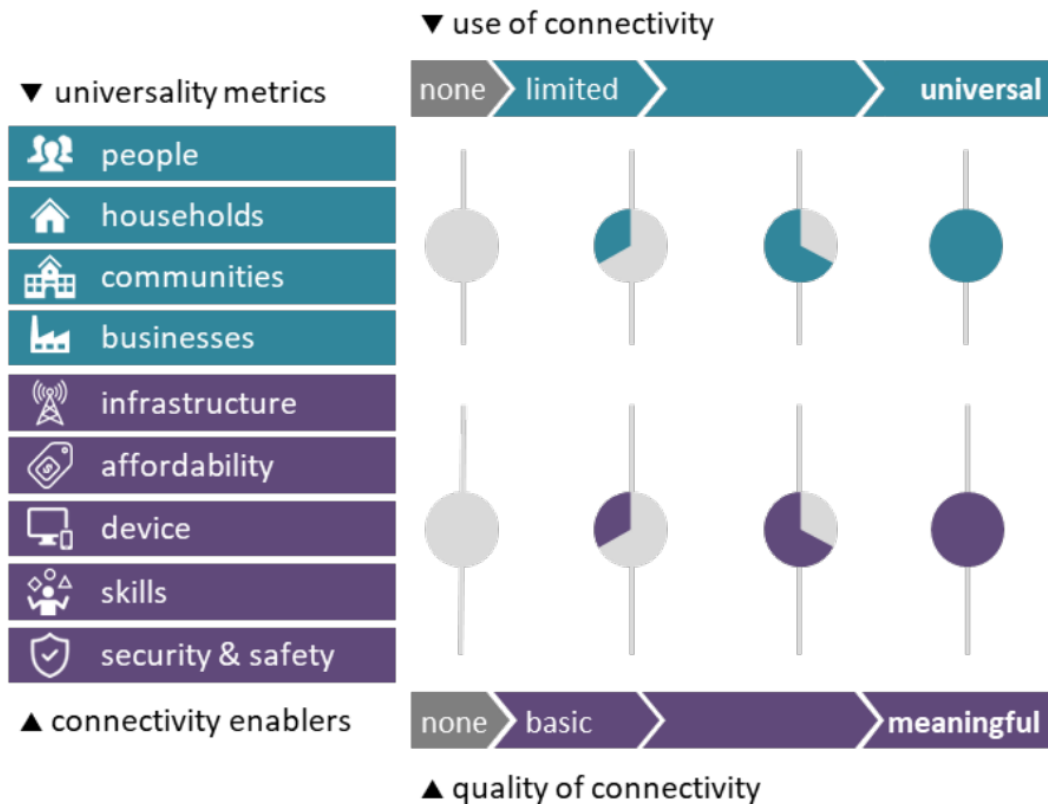
However, for digital platforms to become the empowerment tool that they may represent for women, it is important that policy helps remove the many conscious and unconscious biases and stereotypes which too often constrain women's participation in online platforms.'

Also, action is needed to remove the hurdles that women may encounter, also in digitally enabled working environment. Policies must ensure that online platforms do provide real opportunity, rather than substituting a traditional sweat shop for a digital one.'

3.3 Indicators of digital literacy

Indicators fall into two broad categories: (i) indicators of access and connectivity and (ii) indicators of the digital literacy skills embodied in the resident population. This is reflected in recent work undertaken by the ITU in relation to developing a Framework for Universal and Meaningful Connectivity (see Figure 4).

Figure 4: Framework for universal and meaningful connectivity



Source: ITU (2023) Presentation at 18th World Telecommunication/ICT indicators Symposium (WTIS-23) ([PowerPoint Presentation \(itu.int\)](#))

3.3.1 Access and connectivity

Indicators relating to access and connectivity cover mobile network coverage, internet use, mobile phone ownership and internet subscriptions. High network coverage would indicate robust infrastructure development in the national mobile telecommunications sector. It suggests that the country has invested in building a widespread network of mobile towers and base stations to ensure connectivity across urban and rural areas. This accessibility is crucial for personal communication, business activities, and accessing information and services.

Sustainable Development Goal (SDG) indicators of digital connectivity

Several SDG indicators (ITU, n.d.) provide information on the connectivity of devices which can also be used as measures of ICT access. These include:

- Indicator 5.b.1: Proportion of individuals who own a mobile telephone, by sex
- Indicator 9.c.1: Proportion of population covered by a mobile network, by technology
- Indicator 17.6.1: Fixed Internet broadband subscriptions per 100 inhabitants, by speed
- Indicator 17.8.1: Proportion of individuals using the Internet

SDG Indicator 5.b.1 is particularly important in this context. A higher percentage of female Internet users implies that more women have the opportunity to participate in the digital economy, engage in online businesses, and access job opportunities through digital platforms. Higher percentages of female Internet users also suggest that a larger proportion of women have access to information, educational resources, economic opportunities, and other benefits provided by the Internet.

3.3.2 Digital literacy skills

At the national, regional and international level, digital literacy is generally assessed in standardised assessments through a combination of methods designed to evaluate an individual's proficiency in navigating, understanding, and utilising digital technologies.

Practical tasks may involve using software applications, online platforms, and digital tools to demonstrate the ability to find, evaluate, and utilize information effectively. Some standardised assessments also incorporate scenarios that assess cybersecurity awareness, ethical considerations in digital environments, and the responsible use of technology. Additionally, written or verbal components may be included to evaluate the understanding of digital concepts and the ability to communicate ideas related to technology.

The goal is to assess an individual's readiness to navigate the digital landscape in both educational and professional contexts using a common language and set of assessment criteria.

Examples of digital skills frameworks and assessments include:

- Digital Competence Framework for Citizens (DigComp) – European Commission
- Digital Literacy Global Framework (DLGF) – UNESCO
- International Computer Driving Licence (ICDL) – European Computer Driving Licence Foundation
- Programme for the International Assessment of Adult Competencies (PIAAC)
- International Computer and Information Literacy Study (ICILS) – IEA
- PISA 2025 Learning in the Digital World assessment (forthcoming, with results to be released in 2027).

There are also examples of assessments being developed at a country level. For example, in 2020, Indonesia launched its National Survey of Digital Literacy to measure its digital literacy level, which is also based on the DLGF (see Table 2).

Table 2: Digital literacy frameworks comparison

DigiComp 2.1 (European Union, 2016)	Digital Literacy Global Framework (UNESCO, 2018)	Digital Literacy Index (Indonesian Communications and Information Ministry, 2020)
1. Information 2. Communication 3. Content creation 4. Safety and protection 5. Problem solving	1. Device and software operations 2. Information and data literacy 3. Communication and collaboration 4. Safety 5. Problem solving 6. Career-related competence	1. Technology ability 2. Information and data literacy 3. Communication skills 4. Personal security 5. Device security 6. Critical thinking 7. Ethics in technology

Source: UNESCO (2018), Digital Literacy Global Framework; Indonesian Information and Communications Ministry (2020), National Survey of Digital Literacy

Sustainable Development Goal indicators of digital skill

Currently, the official list of SDG Indicators (Oct 2023) that drive global data collection includes 7 ICT indicators covering 6 targets under Goals 4, 5, 9, and 17.

Target 4.4 contains three indicators under the goal that ‘By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship’.

Only data for 4.4.1 and 4.4.3 are available for ASEAN countries.

Table 3: Summary of indicators – Skills and educational attainment

Indicator	Observations
4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	<p>This global indicator relies on national household surveys or self-assessments to measure the percentage of adults who self-report possessing nine ICT skills.</p> <p>It is based on the percentage of individuals with ICT skills by type of skill.</p> <p>The indicator is calculated as the percentage of people in a given population who say “yes” when asked if they have used ICT skills, for example, inside or outside their school or workplace, have used those skills for a minimum amount of time, and have access to the Internet.</p> <p>In Southeast Asia ITU gather information on the percentage of youth (aged 15 to 24 years) and adults (aged 15 years and older) who have undertaken certain computer-related activities in a given period (e.g. last three months).</p> <p>Up until 2020 the data included the use of a desktop computer, a laptop (portable) computer or a tablet (or similar handheld computer) but not the use of mobile phones. From 2020, the data refer to skills irrespective of the device used.</p>

Indicator	Observations
4.4.2 Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills	<p>This indicator, not yet reported on in Southeast Asian countries is based on the Digital Literacy Global Framework.</p> <p>Devices and software operations form one competence area (0), but the other six competence areas broaden into various aspects of ‘digital literacy’.</p> <p>This indicator is new, and data reported for the first time in 2021.</p> <p>Measurement of this indicator is through participation in the PIACC – Singapore being the only Southeast Asian country to participate in that study to date (UIS, 2022).</p>
4.4.3 Youth/adult educational attainment rates by age group and level of education	<p>Population censuses and household surveys which collect data on the highest levels of education completed by members of a household, through self- or household declaration. In the former case, each household member above a certain age reports his or her own level of educational attainment. In the latter case, one person, usually the head of the household or another reference person, indicates the highest qualification held or level of education completed of each member of the household.</p> <p>This indicator is usually presented for age groups of at least 25 years and older in order to ensure that the majority of the population has completed their education. Younger age groups are often still enrolled in the education system The indicator can be calculated for youth (15-24 years) if desired.</p>

See Annex 2 for further details on the indicators.

3.3.3 General observations on indicators

A recent UNESCO report (2023) states that several ASEAN countries use commercially developed digital frameworks. These tend to have a narrower focus that is related to the world of work. The International Computer Driving Licence (ICDL) is one such example that is used in Malaysia, Thailand and Vietnam. Although it is primarily associated with Microsoft applications, the ICDL has been promoted as a ‘digital skills standard’.

In a global examination of over 60 digital frameworks, Gekara et al. (2019) outlined the limitations of digital skill frameworks that refer to individual attributes and proficiencies, without considering the social context. To be useful for organisations, institutions and individuals, Gekara suggested that digital skills frameworks need to:

- account for technical aspects, e.g. how to use technology
- include cognitive aspects, e.g. knowing how to use information
- be sensitive to context, e.g. job role, workplace).

It is also important to be mindful of data aggregation and the ‘masking’ of underlying causes of disadvantage, particularly where these issues disproportionately impact girls and women. UN Women (2023) recently observed that ‘...age, disability, socioeconomic status and location all play a role in determining women’s digital access and use.

Marginalized groups such as older women, rural women and women with disabilities face significantly greater barriers to connectivity. UNICEF (2023b, p.7) also noted that:

‘...measuring the share of youth who live in households with internet access conceals stark gender disparities relating to device access, internet usage and digital skills within the home. Even once the barrier to accessing digital devices and the internet is crossed, having access to

the internet does not always translate to its actual usage by individuals, and digital competency is also highly gendered’.

A report by the EQUALS Research Group (2019, p. 20) summarised that:

‘... measuring gender digital equality is plagued by definitional and methodological challenges. These include: a lack of internationally agreed definitions and methodologies for collecting data; the sheer range of possible dimensions for measuring gender digital equality; the moving target of technological developments; and low research capacity of both government agencies and academic institutions in most countries.’

The literature suggests a set of common issues that may impact the effectiveness of approaches to the assessment of digital literacy:

- **Narrow Coverage** – Assessments may focus primarily on narrow, basic and operational digital skills, overlooking broader aspects of digital literacy. The assessments may not provide a comprehensive understanding of the breadth of skills needed to navigate digital environments across a range of occupations and industries (see Box 2).
- **Lack of Standardisation** – There may be a lack of standardised definitions and criteria for digital literacy across assessments and frameworks. This lack of standardization makes it challenging to compare results across different assessments, regions, or time periods.
- **Self-Reporting Bias** – Many assessments rely on self-reported data, which can introduce bias. Individuals may overestimate or underestimate their digital skills, leading to inaccurate results. The reliability of assessments is compromised, and the data may not accurately reflect individuals' actual proficiency levels.
- **Rapid Technological Changes** – The digital landscape evolves quickly with new technologies emerging regularly. Frameworks may struggle to keep up with these changes, leading to outdated assessments. The skills deemed essential at the time of assessment may become obsolete, and the frameworks may not reflect the current digital competencies required.
- **Contextual Variability** – Digital literacy is influenced by contextual factors, and assessments may not capture these nuances. What is considered digitally literate in one culture may differ from another. This limitation can lead to a lack of cultural sensitivity in assessments, making it challenging to create universally applicable frameworks.
- **Overemphasis on Formal Education** – Some assessments may focus on skills acquired through formal education, potentially overlooking informal learning and self-directed skill development. The assessments may not accurately capture the digital skills acquired through alternative pathways, limiting the scope of measurement.
- **Challenges in Assessing Soft Skills** – Soft skills such as critical thinking, problem-solving, and creativity are integral to digital literacy but can be challenging to assess objectively. The assessments may not fully capture the holistic nature of digital literacy, as they may focus more on quantifiable technical skills.

Box 2. Quick Guide to Education Indicators for SDG 4 – Target 4.4.1: Proportion of youth/adults with ICT skills, by type of skill

‘One of the main challenges with this indicator [SDG 4.4.1] is its narrow coverage of “relevant skills” proposed by the target. In addition, the indicator is based on self-reported information. Those surveyed provide information on the types of activities they have undertaken but not their proficiency level.

It is impossible to verify the accuracy of these self-assessments, and more importantly, there can be large differences in reporting between groups of different cultural and personal backgrounds. For example, women tend to underreport their abilities in using computers and the Internet, while men tend to overstate their abilities. It is also very likely that someone from one country approaches the question differently from somebody from another country.

In terms of population coverage, the target for youth and adults stresses the fact that young people specifically should be included in the measurement. Context is relevant and may be vastly different from one country to the next. Children in high-income countries may develop skills years ahead of those in low-income countries.’

Source: UNESCO Institute for Statistics (2018), [Quick guide to education indicators for SDG 4 - UNESCO Digital Library](#)

3.4 Frameworks and strategies

Several ASEAN frameworks and strategies have been agreed to guide and support member countries in building digital literacy. These include:

- *ASEAN Digital Economic Framework Agreement (2023)* which emphasises the development of digital talent as part of digital transformation
- *Declaration on the Digital Transformation of Education Systems in ASEAN (2022)* that focuses on the use of digital technology for teaching and learning
- *Framework for Developing Digital Readiness Among ASEAN Citizens (2021)* which describes 3 elements of digital readiness – digital access, digital literacy and digital participation
- *ASEAN Declaration on Human Resources Development for the Changing World of Work, and associated Roadmap (2020)* which identifies digital literacy as a tool for lifelong learning and employability.

The ASEAN UK-SAGE Programme will invest in evidence-based initiatives to tackle the gender barriers to basic digital skills for employment, ensuring that all ASEAN member states and its citizens, can benefit from growth in the digital economy.

3.5 What we do know from the available data

There are a number of relevant data sources that assist with understanding the topic of digital literacy across populations and sub-populations, particularly in developing contexts.

Several studies have noted that there is limited internationally comparable sex-disaggregated official data and geographic coverage on most ICT indicators, especially for developing countries (EQUALS Research Group, 2019). Of the data that is available, UNICEF (2023a) caution that ‘High-level regional data...mask widespread variation at the sub-regional level, and the digital inequalities that can exist within and between countries.

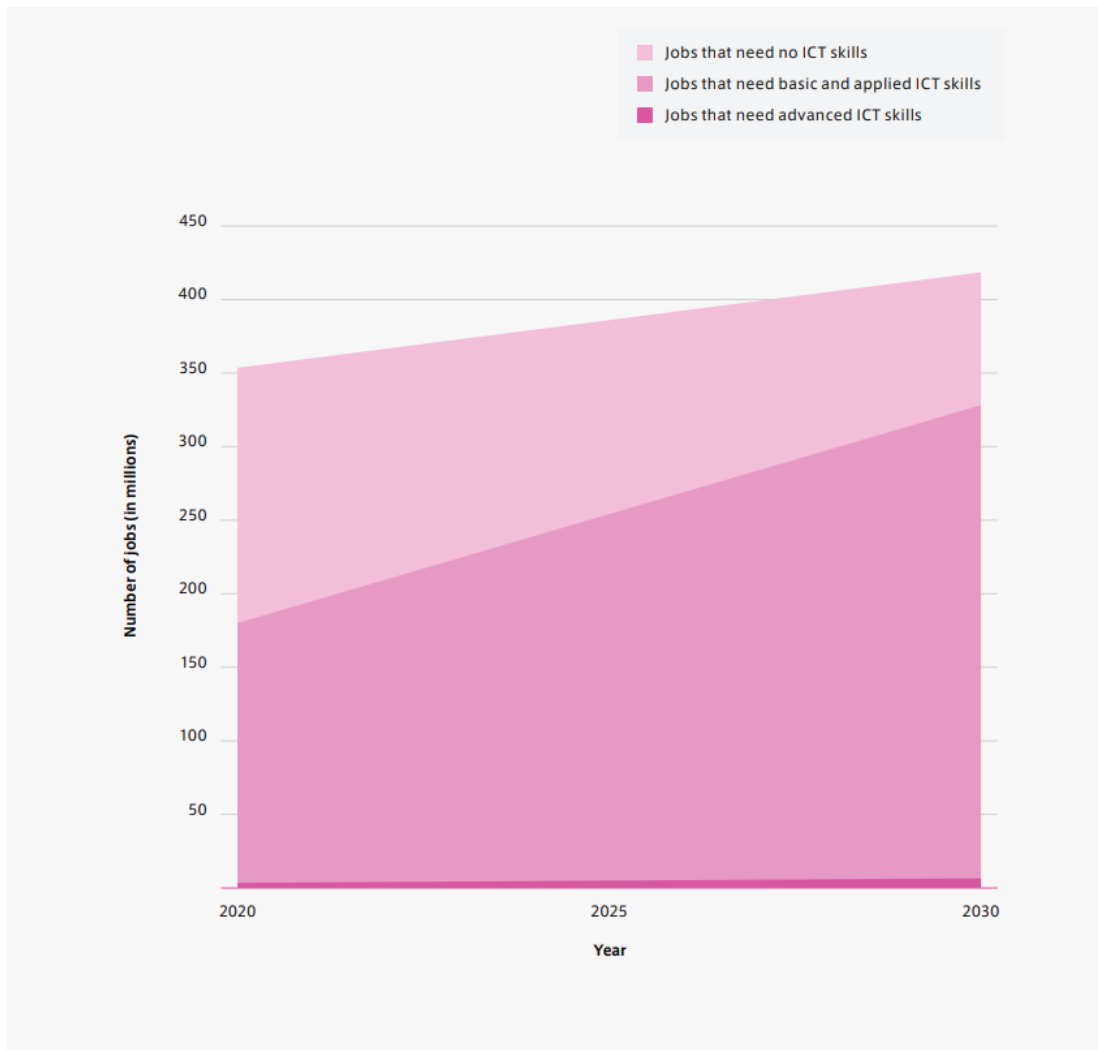
Reporting against the SDG indicators, the United Nations (2023) states that globally ‘Low digital skills hamper progress towards universal and meaningful connectivity’ and that ‘low levels of information and communications technology (ICT) skills are a major barrier to achieving universal and meaningful connectivity’.

While the evidence base on the gender digital divide requires further development, we do know from the available data that:

- Over 90% of jobs worldwide have a digital component (United Nations, 2018) and that by 2030 an estimated 80% of jobs in Southeast Asia will require basic digital skills (Sasakawa Peace Foundation & Dalberg Global Development Advisors, 2017).
- In 2022, an estimated 73% of Asia-Pacific youth aged 15–24 years were using the internet (UNICEF, 2023a). But in 2020, only 37% of youth aged 15 to 24 years had internet access from home (UNICEF and ITU, 2020) and 9 out of 10 adolescent girls and young women are offline in low-income countries.
- However, on average, only 57% of students in the ASEAN region can access the internet at home. In Myanmar, this percentage is 25%, which is lower again in Cambodia and Lao PDR where only 20% of students have access (UNESCO GEM, 2023).
- Even within the same households, adolescent girls and young women have less access to, and fewer skills to make use of, the internet and digital technologies than male household members of the same age (UNICEF, 2023b). Every year, adolescent girls and young women in low- and middle-income countries miss out on US\$15 billion in economic opportunities due to a gap in internet access and digital skills, relative to their male peers (UNICEF, 2023).
- Boys are 1.5 times more likely than girls to own a mobile phone and 1.8 times more likely to own a smartphone. Twenty-seven per cent of girls used the internet on their phones, compared with 46% of boys (Girl Effect & Vodafone Foundation, 2018).
- Women are 25% less likely than men to know how to use technology for basic activities (UNICEF, 2023a). Globally, evidence shows that girls and women have lower levels of digital literacy than boys and men, and in some cases this gap is growing (EQUALS & UNESCO, 2019). The gap is particularly wide among those who are less educated, have lower incomes, and live in developing countries or rural areas (UNICEF, 2023).
- Despite feeling that digital literacy is important for their future, adolescents often only possess basic digital competences. Lack of progression to more advanced digital competences seem to be particularly acute among girls (UNICEF, 2023).
- Globally, 52% of young women have experienced some form of digital harm, and 87% of them believe the problem is getting worse. Of young women who experienced online abuse, 59% say it has affected their emotional and/or physical well-being and their relationships, reduced their confidence in using the internet, and made them less capable than others (Web Foundation, 2020).

Significantly for women and girls in ASEAN countries, rapid digitisation in the workforce is impacting low-skilled jobs that are traditionally dominated by women, such as in the manufacturing and services sectors (Kogiso, 2017). As depicted in Figure 5, it is predicted that up to 80% of future jobs in Southeast Asia will require at least basic digital skills by 2030.

Figure 5: The increasing requirement for basic and applied ICT skills in Southeast Asian jobs




Source: Kogiso, M, et al (2017) Advancing women’s empowerment: ICT skills for girls and women in Southeast Asia, Sasakawa Peace Foundation and Dalberg Global Development Advisors, Tokyo, p. 8.

3.6 Key learnings

The measurement of digital skills among girls and women in ASEAN countries faces various technical challenges, reflecting broader issues related to gender equality and technology adoption. Key considerations include:

- There is significant variability in how terms are defined and a common language is needed.
- Definitions and indicators that prioritise digital skills are only measuring a subset of the broader concept of digital literacy that is necessary to navigate digital environments effectively and safely.
- Girls and women are disproportionately impacted by a lack of ICT access, an issue that is particularly impactful for those living in rural areas.
- To be most effective and informative, indicators of digital connectivity must distinguish between universal (basic) and meaningful connectivity i.e. between ‘access to’ and ‘ownership of’.

- 
- Indicators that conceive of digital literacy as narrowly defined tasks ('Copying or moving a file or folder') are extremely limited in what they can offer, an issue compounded by the poor reliability of self-assessment reporting.
 - There is limited internationally comparable sex-disaggregated official data and geographic coverage on most ICT indicators, especially for developing countries.

4. CHALLENGES OF DEVELOPING GIRLS' AND WOMEN'S DIGITAL SKILLS IN ASEAN COUNTRIES

The challenges associated with developing digital skills are generally conceived of in terms of 'divides'. These divides can be evident in differences between urban and rural; young and old; male and female, among a raft of other factors.

The term '*digital divide*' is considered to have three core dimensions: differences in (a) the access to ICT resources; (b) the attitudes toward technology and digital knowledge and skills; and (c) the usage of ICT and tangible outcomes (Van Dijk, 2020).

The term '*digital gender divide*' is commonly used to refer to gender differences in resources and capabilities to access and effectively utilise ICTs within and between countries, regions, sectors and socio-economic groups, placing a greater emphasis on factors such as agency, ownership and safety (OECD, 2018, p.22).

Despite significant advances in ICT infrastructure and adoption of digital technologies, several challenges continue to hamper the development of digital literacy among girls and women in the ASEAN region.

These barriers include limited access to technology, particularly in rural areas, entrenched gender stereotypes and biases, and disparities in educational opportunities that contribute to a widening digital gender divide.

To further understand these issues, this section details how these barriers impact opportunities in relation to:

- **Meaningful access to ICT infrastructure**, with special consideration of the barriers to (a) ownership of digital devices and (b) online safety
- **Developing digital literacy** in school and post-school education and training
- **Applying digital literacy** in meaningful employment and everyday life.

4.1 Barriers to meaningful access to ICT infrastructure

The OECD (2018) stated that 'Policy makers need to act to unleash the potential of digital technologies to empower all individuals, including women and girls...namely the Internet and digital platforms, mobile phones, and electronic payments, as they offer "leapfrog" opportunities for all, and have the potential to improve the lives of women and girls in particular' (OECD, 2018, p.36).

The ASEAN region faces several challenges and barriers to achieving meaningful access ICT infrastructure.

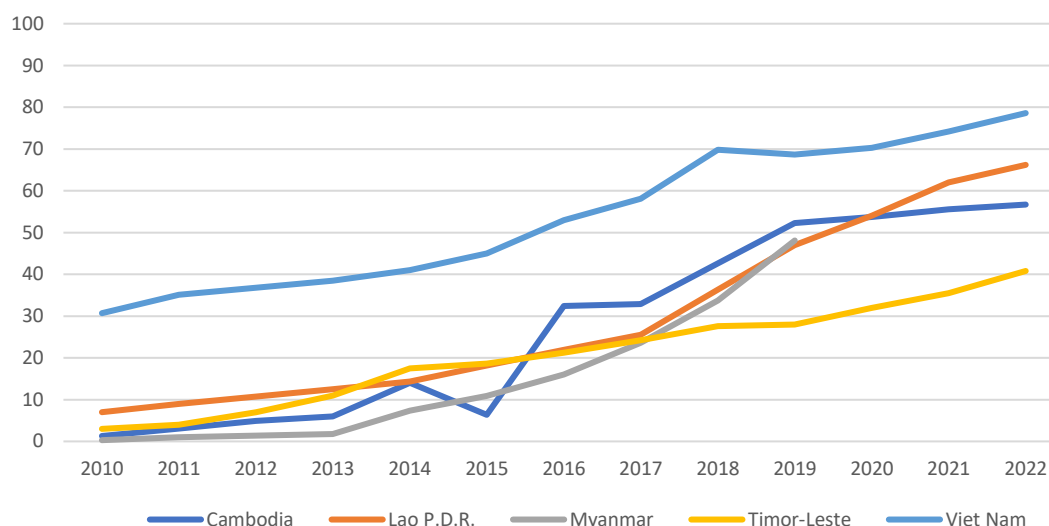
Infrastructure gaps

The ITU (2023) states that 'Over the past decade, the connectivity challenge has become more complex and demanding. Bringing everyone online is no longer enough. Meaningful connectivity – the possibility to enjoy a safe, satisfying, enriching, productive and affordable online experience – is the new imperative'.

Inadequate ICT infrastructure, particularly in rural and remote areas, poses a significant barrier. Limited availability of reliable and high-speed internet connectivity, lack of electricity in some regions, and insufficient telecommunications infrastructure can hinder widespread access to ICT.

ASEAN’s overall internet infrastructure compares well with global averages and access to the internet continues to grow over time (see Figure 6). However, it is uneven across the region with large development gaps between and within countries (ERIA, 2020). Internet penetration may not reach some rural or isolated regions, severely impacting the availability of digital technologies and skill building opportunities in those areas.

Figure 6: Individuals using the Internet, total (%)



There are interesting variations in gender gaps at a country level. For example, research by the Equals Research Group (2019, p. 225) noted that Cambodia has the lowest internet penetration of the countries surveyed in Asia, (in line with Ghana and Kenya). Nevertheless, Cambodia’s gender gap for mobile phone ownership is just 20%, by far the lowest of the Asian countries surveyed - 15 percentage points below Pakistan and Bangladesh, and 25 percentage points below India.

At a national level, the difference between girls’ and boys’ digital access varies widely across the region (UNICEF, 2023, p.21) (Table 4). There are gender differences between age groups, locations and socioeconomic status.

While there have been improvements in the rate of internet subscription per 100 persons since 2017, countries such as Cambodia, Lao PDR, Philippines and Myanmar continue to be significantly lower than in other parts of the ASEAN region.

Table 4: Internet use by sex, ages 15-24 years

Country	Internet Use: Females	Internet Use: Males	Gender Parity Ratio (F/M)	Mobile Phone Ownership : Females	Mobile Phone Ownership : Males	Survey Source	Survey Year
Cambodia	--	--	--	--	--	--	--
Lao PDR	44%	41%	1.06	76%	80%	MICS	2017
Myanmar	--	--	--	--	--	--	--
Timor-Leste	36%	40%	0.89	66%	67%	DHS	2016
Viet Nam	92%	89%	1.03	92%	87%	MICS	2020-21

Source: UNICEF (2023), Bridging the gender digital divide: Challenges and urgent call for action for equitable digital skill development.

Affordability and financial barriers

The cost of ICT services, including internet access and devices, can be a major impediment. Many individuals, especially in low-income communities, may find ICT services unaffordable. High data costs, device prices, and ongoing expenses for internet subscriptions can limit meaningful access and may pose a significant financial barrier for girls and women, particularly in low-income and rural households.

The issue of ownership is itself predicated on affordability, to purchase, maintain and upgrade digital devices. Women and girls may not have the money needed to access and use digital ICTs, either because of poverty and/or lack of control over own/household finances. For example, women may not be able to buy and maintain a mobile phone or a computer, or to afford internet access at home or in a cybercafé.

UNICEF (2023, p.35) observed that 'In Lao PDR and Timor-Leste especially, key informants observed that broadband and data costs presented a significant barrier, particularly for rural populations. These populations were consequently limited in the types of activities they could engage in online and the amount of time they could spend using internet services.

The same UNICEF paper further observed that '..., digital devices can be prohibitively expensive for low-income households, particularly among rural populations. Key informants in Viet Nam observed that young people in rural areas therefore often did not own smartphones until they were older (e.g., 14 years old), whereas in urban areas key informants felt that children tended to gain access and ownership at a much younger age (e.g., as young as 6 years old). A similar theme was observed by key informants in Cambodia, Indonesia, Lao PDR and Timor-Leste' (pp.35-36).

Language and cultural barriers

The language that digital content is written or spoken in can act as barriers in instances where adolescents are not sufficiently familiar with them (UNICEF, 2023, p.37).

In some cases, language and content may pose barriers to meaningful access. Limited availability of content in local languages and insufficient localization of digital tools may reduce the relevance and usability of ICT for certain communities. If digital content and resources are available in a language that girls and women are not proficient in, it can limit their access to essential information and educational materials, hindering their digital literacy development.

Language barriers can extend to technical terminology, user interfaces and software applications. If digital tools require language that is not spoken by girls and women, it can create a barrier that may prevent them from utilising technology for learning and skill development.

Content that lacks cultural relevance or examples familiar to girls and women may not resonate with them and may limit their ability to relate to, or find practical applications for, digital devices. This cultural disconnect can impede the motivation to engage in digital literacy initiatives.

Limited personal ownership

While access and use of devices and the internet are accepted methods for measuring basic access, additional factors of ownership and control over devices are important to consider when examining power dynamics that may specifically affect women.

From the limited data available, we can see that ownership of digital devices, such as smartphones or computers, is not evenly distributed by gender (see Table 1). This limits girls and women's opportunities to access a range of education, training and employment opportunities. While they

may 'live in a household with a computer', meaningful opportunities are predicated on their ownership and autonomy over the use of their computers, smartphones and other digital devices.

Research in low- and middle-income countries (Girl Effect and Vodaphone, 2022) has found that women are on average 10% less likely than men to own a phone, with the gap even wider in relation to use of mobile internet. Within the same household in Lao PDR, adolescent girls are 8.5% less likely to own a mobile phone than adolescent boys, 6.2% less likely in Viet Nam, and 4.8% less likely in Timor-Leste (UNICEF, 2023).

Table 1: Female mobile phone ownership as a % of total female population

Country	Most recent year	% of Females who own a mobile phone
Cambodia	2019	71
Lao PDR	--	--
Myanmar	2017	57
Timor-Leste	--	--
Viet Nam	2019	77

Source: ITU, Digital Development Dashboard, [Digital Development \(itu.int\)](https://www.itu.int)

Ownership of digital devices can offer individuals greater autonomy and control over their digital experiences. When girls and women own their digital devices, they have the flexibility to use the device for their own purposes and needs, personalise the settings, install applications that suit their own needs, and manage their online presence on their terms.

Owning a digital device can also facilitate continuous learning and skill development. It allows girls and women to explore various applications, educational resources, and online courses, enhancing their digital literacy and proficiency in using technology for personal and professional growth.

More broadly, ownership provides individuals with the ability to manage their own digital well-being. Owning a digital device facilitates access to essential services, including healthcare, education, and information. Women can utilise digital platforms for access to health and medical services, online learning, and staying informed about crucial issues, improving their overall well-being.

Lack of online safety

It is not simply an issue of connectivity to infrastructure and devices. Women and girls often have limited opportunities to access and own digital ICT devices and/or to use them in ways that increase their voice and influence for individual empowerment and civic engagement.

Concerns about online security and privacy may discourage individuals from actively using ICT. Cybersecurity threats and inadequate protection measures can contribute to a lack of trust in digital technologies. However, ownership of a digital device can potentially enhance digital safety and security. Women who own their device, as opposed to using shared or public devices, can implement privacy measures, secure their data, and control access to personal information, mitigating some of the risks associated with online threats and harassment.

4.2 Barriers to developing digital literacy

The acquisition of digital skills often begins in formal education, continues through informal learning experiences, and may involve self-directed exploration and learning through family and peer networks.

Self-learning involves active engagement with online resources, experimenting with digital tools, and adapting to evolving technologies, thereby gaining hands-on experience and a deeper understanding of digital platforms.

Social learning is also important to adolescents' digital literacy development. A survey with 8,000 young people aged 10–24 years across the ASEAN region (61% of whom identified as female) found that support from others, particularly friends and siblings, played a key role in helping young people to develop their digital literacy (UNICEF, 2020).

However, these informal means of building digital skills are more suitable for those who have already developed some basic digital skills.

'Research with adults found self-learning was especially important to those who were more confident experimenting and who have already mastered the basics (e.g., turning the device on and off, navigating device interfaces, and playing videos)... this is because self-learning tends to require some basic digital knowledge, particularly when it involves video tutorials, as the learner must know how to navigate to the videos and play them (UNICEF, 2023a).'

Unequal access to quality education and resources can be a significant barrier to the development of the basic digital skills that underpin further skill development through informal learning mechanisms. Girls and women may face challenges in accessing educational programs and courses that focus on digital skills. Additionally, there may be a lack of female role models, which can impact the aspirations and confidence of girls.

Family and social expectations and priorities

Research³ has found that girls' social networks, particularly friends and peers, play an important role in helping them learn how to use mobile phones. Social networks helped to increase girls' motivation and interest in learning by raising their awareness of the relevance of phones to their own life. The research also found that parents and caregivers play a smaller role in the learning process for adolescents, and teachers even less of a role. Research with 15-year-old students in Viet Nam found that just 9% reported receiving suggestions from parents or caregivers on how to use the internet safely, and only 4.7% received this type of assistance from teachers.

Family investment and priorities can contribute to limited access to education for girls, as families facing financial constraints may prioritise boys' education over girls.

Limited access to ICT infrastructure and digital skills at school

In some areas of the ASEAN region, particularly in rural and underserved communities, there may be limited access to quality education. Schools may lack the necessary infrastructure, qualified teachers, and updated curriculum to effectively teach digital literacy skills.

The COVID-19 pandemic has highlighted challenges related to remote learning. Girls in areas with limited access to digital devices and reliable internet may face difficulties participating in online education, hindering their development of digital literacy skills.

UNICEF (2023, p36) stated that 'schools in rural areas are often also poorly equipped for teaching ICT. In Cambodia, Lao PDR and Timor-Leste, key informants observed that this was a challenge for the public school system more broadly, but particularly in rural areas.'

The capability of teachers to not only have the requisite ICT skills but know how to teach them in integrated ways requires attention. The percentage of teachers who have not received pre- or in-

³ Girl Effect & Vodafone Foundation (2018) 'Real girls, real lives, connected.'

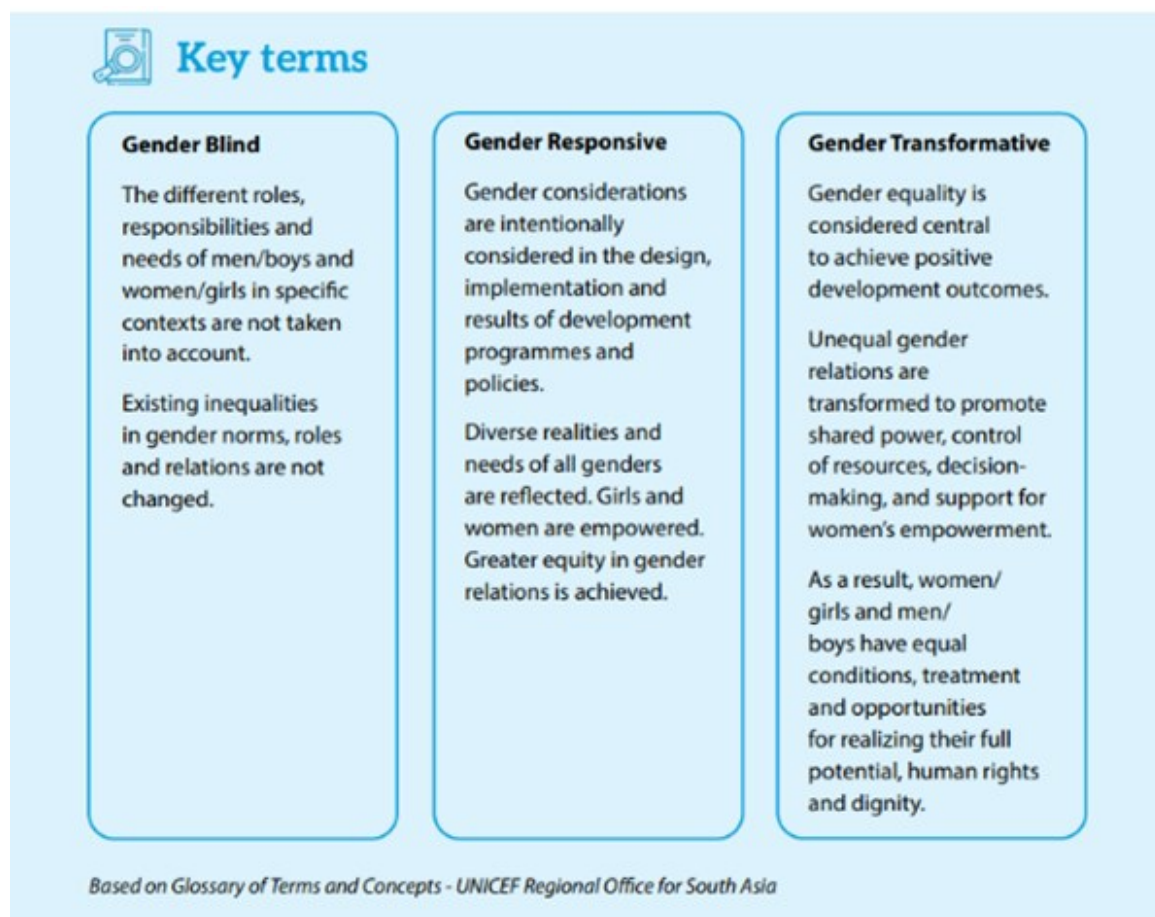
service ICT training ranges from 3% in Viet Nam to 65% in Cambodia and Lao PDR (UNESCO GEM, 2023).

Gender bias in educational practices and resources

Girls' and women's participation in school and further education and training has made significant progress in the last two decades. According to UNESCO's school enrolment data in 2015, global average figures show gender parity in both primary and secondary education, although the gender gap persists in some regions,

Despite these improvements, there remain significant gaps in relation to developing digital literacy. The reason for this can be complex. Textbooks, curricula, and educational resources may contain gender biases, reinforcing stereotypes that certain subjects or skills are more suitable for boys. This can discourage girls from engaging in digital skill development opportunities within the school system. Limited educational resources, particularly in rural areas, may contribute to lower digital literacy rates among women.

Figure 7: Definitions of gender blind, gender responsive and gender transformative approaches



Source: UN Brief (2023) Digital Innovation and Technology for Gender Equality in Viet Nam, p. 6.

Despite equal representation of girls and boys in the classroom, some research suggests that teachers tend to interact with boys more than girls when teaching technical subjects (The Sasakawa Peace Foundation and Dalberg, 2017). However, UNICEF (2023) recently reported that data from an online teacher survey demonstrates that the majority of teachers in Cambodia, Timor-Leste and Viet Nam did not perceive any differences in how girls were taught compared with boys, and nor did they feel that differences between girls and boys needed to be considered. This approach to the inclusion

of girls in education can be described as 'gender blind', as outlined in Figure 7 above. Although the approach may appear to be free of bias, UNICEF (2023, p.8) observed that gender blind teaching could 'act as a further barrier to girls' digital literacy development, given the sociocultural norms that need to be addressed to support girls' progression to more advanced digital competences.' Gender transformative approaches that are designed to bring about change in unequal gender relations are proposed as more beneficial.

Data indicate that girls at the secondary level tend to have lower self-efficacy and lower interest in STEM subjects, as well as lower aspiration for STEM careers, compared to boys. While STEM education at the secondary level creates a critical foundation for further developing their high-level digital skills, it seems that girls gradually move away from STEM studies regardless of their competence and potential. Apparently, these gender differences in attitude and motivation in STEM can affect their decision to choose a college major.

There is also evidence to suggest that school leavers with aspirations of post-school education and training may receive career guidance, information and advice that steers them away from particular education, training and employment opportunities.

While improvements are being made in schooling years, several challenges remain. In 'Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia', UNICEF (2021) states:

'While education is perceived to be critical in job market signaling by young women, it is viewed as inadequate in developing entrepreneurial skills and equipping them for work. Skills development options are particularly restricted for young women who cannot afford to access or travel to these programs. These limitations are further compounded for girls who are married early or face the stigma of teenage pregnancy.'

Adolescent girls drop out of school due to factors including cost of upper secondary education (schooling is only free until class nine,) child marriage, pregnancy, and child labour. Lao PDR has the highest rate of child marriage and adolescent birth in the region with 37 percent of women now aged 20-49 having been married by the age of 18.'

Limited extracurricular opportunities

Extracurricular activities play a vital role in honing practical skills and fostering a deeper understanding of theoretical concepts. Without access to these activities, girls and women may experience a skills development gap, making it challenging for them to compete on an equal footing in the digital job market.

Extracurricular activities often provide a space for individuals to experiment, make mistakes, and learn from hands-on experiences. The absence of such opportunities can result in reduced confidence among girls and women when it comes to navigating and utilising digital tools.

Limited extracurricular opportunities for girls in activities, clubs, or competitions can restrict their exposure to hands-on experiences that foster digital literacy. The lack of extracurricular opportunities can exacerbate this divide, leaving girls and women without the necessary skills to fully participate in the digital economy.

4.3 Barriers to applying digital literacy in meaningful employment

It is not enough for women to have jobs in the digital economy: the types of jobs also matter (Marsan & Sey, 2021). In Southeast Asia, women are employed predominantly in sectors and jobs that require few or no skills in ICT and there is currently limited momentum for women to adopt ICT skills (The Sasakawa Peace Foundation and Dalberg, 2017). A lack of exposure in the workplace to digital environments means that women have fewer opportunities to build or develop their skills in a meaningful context.

In ASEAN countries there are significant gender-based pay gaps in jobs that require ICT skills. According to research (The Sasakawa Peace Foundation and Dalberg, 2017), ‘women view ICT jobs as unattractive because they (i) receive lower wages and (ii) gain fewer promotions than men’. Unequal compensation may deter women from pursuing digital careers and reduce their motivation to develop digital literacy for employment.

Technology-centric job requirements

Increasingly jobs in many industry sectors require digital literacy skills. As industries adopt digital technologies and automation, proficiency in using computers, software, and online tools will become essential. Having been limited in their access to ICT infrastructure, devices and fundamental concepts during schooling, women with limited digital literacy skills may struggle to meet the requirements of such technology-centric jobs, limiting their future employability.

In ‘*Advancing women's empowerment: ICT skills for girls and women in Southeast Asia*’, the SPF and Dalberg (2017, p. 20) states:

‘Women looking to enter the ICT-related employment face an unfavourable environment, where representation is low and remuneration is unequal. They are, therefore, likely to be dissuaded from entering at all and are discouraged from learning ICT skills, even for jobs outside the ICT sector.’

Workplace discrimination and inequitable opportunities for career advancement

Discrimination and bias within the workplace can create a hostile environment for women in digital roles. Experiencing discrimination or harassment can undermine confidence, discourage professional growth, and limit the overall participation of women in digital employment.

Deep-seated gender stereotypes and biases can influence hiring practices and workplace attitudes. Preconceived notions about gender roles may lead to the perception that certain digital roles are more suitable for men, discouraging women from pursuing careers in technology and hindering their access to digital literacy training and employment opportunities.

Gender-based inequities in career advancement opportunities can impede the progression of women in digital fields. Biases in promotion and leadership selection processes result in fewer women reaching leadership positions within occupations and roles that require digital literacy.

In addition to a lack of female representation in leadership roles, a lack of mentorship and guidance can further exacerbate the challenges, as girls may not receive the support needed to successfully navigate education, training and employment transitions and pathways.

Seeing women successfully navigating digital careers can boost the confidence of girls and women, assuring them that they too can excel in these fields. Without visible role models, individuals may question their own capabilities and may be less likely to pursue and persist in developing digital skills.

The absence of female role models can impact girls' aspirations and interest in digital literacy. A scarcity of female role models and mentors in their chosen sector and industry of work can impact girls' and women's perceptions of their potential success in digital careers, making it challenging for them to aspire to pursue such roles in the future.

Limited networking and entrepreneurship opportunities

Networking plays a crucial role in career development, and women may face challenges in building professional networks within male-dominated industries. Limited networking opportunities can affect access to job opportunities, mentorship, and career advice.

Women interested in digital entrepreneurship may encounter additional challenges, including limited access to funding, mentorship, and networking opportunities for female entrepreneurs. Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia, UNICEF (2021) states:

'The research situates entrepreneurship in a broader framework of women's agency and empowerment. The research looks beyond the narrow act of starting and operating a business; to women's capacity to exercise agency, make decisions, lead, take action, and pursue goals. In the same way, capacity for entrepreneurship reflects a set of capabilities and skills that can be applied in diverse fields.'

4.4 Key learnings

There are significant challenges in developing girls' and women's digital skills. These reflect a range of infrastructure and technical challenges, reflecting broader issues related to gender equality and technology adoption. Key considerations include:

- **Barriers to meaningful access to ICT infrastructure** – Despite increasing rates of adoption and connectivity overall, there remain issues relating to infrastructure gaps; affordability of devices and access to the internet, language and cultural factors; limited personal ownership of digital technologies; and a lack of online safety for girls and women.
- **Barriers to developing digital literacy** – Opportunities for girls and women to develop digital literacy can be hampered by family and social expectations and priorities; limited access to ICT infrastructure and digital skills in schools; gender bias in educational practices and resources; and limited access to extra-curricular activities.
- **Barriers to applying digital literacy in meaningful employment** – Although jobs in a wide range of industries increasingly require digital skills, women are predominantly employed in sectors or jobs that do not require digital skills, limiting opportunities for them to develop digital skills in the workplace. Women's use of digital skills in meaningful employment is impacted by workplace discrimination and inequitable opportunities for career advancement; and limited networking and entrepreneurship opportunities.

In 'Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia', UNICEF (2021, Executive Summary, p. 8) summarises that:

'By the time they reach adulthood... barriers have layered onto one another and compounded to constrain young women's agency and to limit their economic, social, and political participation. This has huge resulting costs to women, and to their communities and societies.'

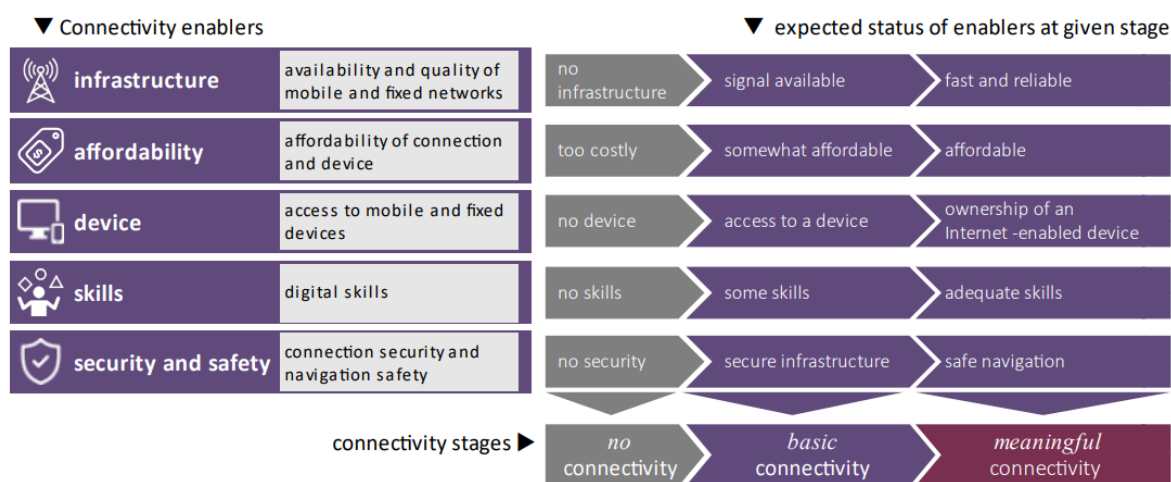
For example, as a result of gendered social norms, young women in Asia-Pacific spend triple the time on unpaid care and domestic work than young men, limiting the time they have for other pursuits.

In parallel, girls and young women do not have equal access to the spaces where they can acquire the knowledge, skills and connections to pursue economic opportunities. They have more limited access to and control over productive assets.

Their options may be constrained by gendered expectations regarding appropriate roles for women — affecting the choices that are made for them from an early age as well as their own aspirations.'

The ITU (2022) offers a useful summary of these issues, as shown in **Figure 2** below.

Figure 2: Expected status of enablers by stage of connectivity



Source: Achieving universal and meaningful digital connectivity – Setting a baseline and targets for 2030, p. 4, [itu.int](https://www.itu.int)

5. CHARACTERISTICS OF PROMISING INTERVENTIONS

This section draws on a rapid review of literature to identify interventions with features or characteristics that support girls' and women's development of digital skills. Given the large volume of research on the topic of girls' education in the ASEAN region, and the rapid development of interventions to support digital literacy, not all 'promising' interventions can be captured in this report. It is likely that there are additional practices and interventions available in the ASEAN region that are yet to demonstrate evidence of effectiveness or have not published outcomes data. This does not mean that the programs are not effective, only that they have not been researched at this time.

While stand-alone interventions can address barriers to girls' and women's digital skill development, a more strategic, long-term solution is to ensure that digital skills development is embedded in all school and post-school learning. In guidelines developed for education policymakers, UNESCO (2022, p.136) stated:

In a digital society, the introduction of ICT in education should not be seen as an 'exceptional' or 'extra' activity but rather as a fundamental element that informs the activities in which teachers and students engage at and beyond school. In this context, the purposeful integration of ICT in teaching and learning activities should be guided by sound pedagogical practices aimed at achieving well-defined learning objectives.

With ASEAN countries working towards gender parity in access to school education, an embedded approach to ICT teaching and learning is likely to be the most effective way to ensure that girls develop digital skills. The UNESCO guidelines suggest that digital competences can be integrated 'into the different levels (grades) of the curriculum as an independent subject, as cross-curriculum (transversal) aims, and as part of the aims of other subjects (UNESCO, 2022, p. 139). Given that girls may experience gender-based barriers to participation in ICT learning as an independent subject, cross-curriculum approaches and embedding into other subjects are likely to be the most effective mechanisms for ensuring equitable access to skill development opportunities.

As identified in the previous section, equitable access to ICT devices and the internet is a critical first step for developing girls' and women's digital skills. Girls and women need safe spaces to engage with technology, to experiment, and to discover meaningful uses for it in their learning and livelihood.

Whilst the literature has provided examples of programs that build specialist digital skills for employment, and programs that integrate digital skills with business skills to support entrepreneurship, there appears to be a gap in the availability of programs that build basic digital skills relevant for work environments outside the ICT sector (see Box 3).

Box 3. Examples of where people develop basic digital skills

Personal Exploration via Self-Directed Learning: Some basic digital skills may be learned through self-directed exploration. This can involve experimenting with computer software, online resources, and mobile applications on one's own initiative.

Informal Learning via Family, Peer and Online Networks: Basic digital skills may be acquired through informal learning within families or peer networks. Family members or friends with digital expertise may share their knowledge and provide guidance on using technology. Online networks can also provide opportunities for girls and women to connect with peers, teachers, mentors and leaders.

Formal education via Schools and Educational Institutions: Many individuals first learn basic digital skills as part of their formal education. Schools, colleges, and universities may integrate digital literacy into their curriculum to teach students essential skills such as using computers, navigating software, and accessing information online.

E-learning Courses via Online Learning Platforms: Various online platforms offer courses and tutorials covering a wide range of digital skills. These courses provide accessible and self-paced learning opportunities for individuals looking to enhance their digital literacy.

Employment-based Learning and On-the-Job Training via Workplaces and Professional Training: Employees often acquire digital skills through on-the-job training provided by employers. This can include training sessions, workshops, or mentorship programs focused on using specific tools and software relevant to the job.

Digital Inclusion Programs via Government, Community Nonprofit Initiatives: Governments, community centres, libraries, and other public spaces and nonprofit organisations may run digital inclusion programs aimed at providing basic digital skills to local communities. These programs often target populations that face barriers to accessing technology. They may provide hands-on training in computer use, internet navigation, and other fundamental digital competencies.

Research on girls' digital literacy in the East Asia and Pacific region (UNICEF EAPRO, 2023a) identified 4 'innovative techniques to encourage girls' motivation and interest, build their confidence and empower them to believe in their digital capabilities.'

The 4 innovative techniques identified in effective NGO programs include:

- **Female role models and mentors:** Women who are already working in the technology domain are identified as role models and mentors. Visible role models and mentors provide support and inspiration for girls by negating gender-based stereotypes and demonstrating that technology provides a possible career pathway for girls. Role models who are 'closer' (in age, background and level of career progression) may have the most impact, as they are easier for girls to identify with.
- **Project-based learning:** Student engagement in interactive and practical projects encourages them to use their own motivation and creative thinking to complete assignments, which can build their self-confidence. Additionally, this approach supports students to develop a range of soft skills that are important to digital literacy, including critical thinking and problem-solving.
- **Focusing on real-world, relevant problems:** Students are encouraged to address a real-world problem through the development, or use of, digital devices and applications. This helps them to see the relevance of digital skills and technology to their lives.
- **Safe, supportive learning environments:** Programmes that are only open to girls can ensure they feel comfortable expressing themselves during the learning process. Even when programmes include girls and boys, emphasis can be put on ensuring the environment is collaborative, non-judgemental and fun, to encourage girls' participation. (EAPRO, p.40)

Analysis of the interventions identified in the rapid review revealed a selection of programs that applied some or all these techniques. Of these, 8 were found to have an explicit emphasis on supporting girls or women to develop digital skills (basic to intermediate) and soft skills for employment or entrepreneurship.

A further 10 programs, while not specifically focused on basic digital skills for girls and women, nevertheless demonstrated techniques that address some of the barriers raised in Chapter 4. These include programs that support girls and women into STEM learning and employment, programs that use digital devices as learning platforms, and programs that support basic access to ICT as a first step to engagement with learning.

5.1 Female role models and mentors

Young girls' aspirations and their parents' aspirations for them are shaped by the female role models that are visible in their community and society. Many interventions have identified a lack of female role models in STEM professions and the effect that has on girls' and women's interest in pursuing the development of digital and ICT skills. As digital skills are increasingly embedded in a wide range of industries and job roles, there is a need for girls and women (and their parents) to understand that digital skills are relevant for future work in health care, agriculture, transport and many other diverse fields. (UNICEF EAPRO, 2023a)

The lack of role models for girls was identified in research to address gender barriers to entrepreneurship among girls and young women in Southeast Asia (UNDP and UNICEF, 2021. P. 42). Contributors to the research stated that 'examples can be a strong trigger for girls to learn and develop themselves.'

Box 4. Sisterhood for Development

The initiative used youth mentorship and networking approaches to support the empowerment of Hmong ethnic women and girls in Lao PDR. Through a collaboration with Enterprise and Development Consultants, Sisterhood for Development built an online platform to help ethnic women and girls access formal and non-formal education opportunities.

The online platform gave project participants the opportunity to build digital skills by taking an active role in leading and guiding change. The project provided internships to 20 students in which young people developed the skills to train others in their villages, schools and universities. Through the project, participants learned skills in video editing and social media marketing and produced 5 training videos.

By reaching into the community through mentoring and networking, the program provided opportunities for women and girls to explore how customary law and gender norms impacted them and their families and created a foundation for change. Participants developed digital skills in a broader context of social and economic empowerment. Outcomes related to the needs of individuals and communities and included support for mental and physical wellbeing, skills coaching and handicrafts social enterprise.

'Before I never thought that ethnic girls from a rural place like myself could use an editing program like this. I am very happy, not just that I can edit, but that I also can train other friends as well.' – Ong Vue, a student participating in the project.

5.2 Project-based learning

While much of the literature concentrates on digital skills and their relationship to specialist ICT or STEM employment, less focus is given to examining the way in which these skills are best learned and applied, especially for girls and women who may not have had much exposure to ICT, nor the opportunity to work with these technologies in meaningful ways, particularly if they have had limited schooling.

Programs that use Project-based learning (PBL) can assist girls and women to connect ICT skills and applications with personal interests or challenges of their immediate community life or broader aspirations for entrepreneurship or paid employment.

Working together on projects of interest helps participants build relationships and work on team building and collaboration skills. Opportunities to try and fail in a supportive environment are crucial to build reliance and confidence prior to applying skills in real workplace environments.

Box 5. Technovation Cambodia

This global competition provides opportunities for girls aged 10-18 to develop digital skills while working in teams to tackle a real-world problem relevant to their community. Through the program girls develop and apply critical and creative thinking skills in tandem with the digital skills to create ICT applications.

The program comprises elements that allow participants to build their skills through collaborative problem solving and solution identification. Initially a 'kid-hack day' introduces participants to the competition by providing awareness raising and an opportunity to form teams. Then, 12 weeks of training equips participants with the skills and opportunity to identify problems relevant to them and explore possible digital solutions. In 2023, the program focused on developing mobile app solutions to address social problems related to the SDGs. After a 'bootcamp' where the teams build their promotional and communication skills, the program culminates in a 'national pitch' when participants showcase their solutions to the public.

The program builds pride and achievement for the participating girls and provides a scaffolded support for developing participants' knowledge and hands-on experience in technology and entrepreneurship skill building through projects that are relevant to the participating girls' context. National publicity and recognition for teams that advance to national and global finals can help to raise awareness of opportunities for girls through the development of digital skills.

5.3 Real-world, relevant problems

ICT can offer women entrepreneurs greater access to high growth markets by offering better market information and the opportunity to sell products and services through online retail platforms and social media. (UNESCAP, 2018)

Young women, especially those in rural areas, often become entrepreneurs not only because of a lack of local formal employment opportunities; but also due to the flexibility that entrepreneurship affords for balancing income generation with care responsibilities.

Without access to technology and the digital capability to 'market and sell', women's small businesses can be restricted to local markets and have limited opportunity for growth. Projects that build women's skills for entrepreneurship can often be usefully combined with opportunities for building digital skills. Initiatives that allow women to focus their digital skill building on the real-world needs and demands in their local community can allow them to use their knowledge to make a

difference to local enterprise and community wellbeing and shift perceptions about women's societal roles and contributions.

Building women's capacity as agents of change through the development of digital skills may involve opportunities to:

- codesign health and wellbeing messages (e.g. menstrual and reproductive health)
- establish online communication with other young women in safe ways (such as teleconferences, webinars and virtual communities of practice)
- create networks for social engagement and empowerment, enabling cohorts of women to confidently express their opinion about gender-sensitive issues and participate in social and political dialogues online.

Box 6. Go Digital ASEAN

Working with governments, local partners, and volunteers across the region, Go Digital ASEAN delivers digital skills training to small business owners and workers, empowering them to participate and maximize opportunities in the digital economy. By working with local implementing partners, the program benefits from deep-rooted experience working with rural and disadvantaged communities and expertise in the informal sector and in industries such as agriculture and tourism.

Launched in 2020, the first phase of the program trained over 225,000 micro, small and medium enterprises (MSMEs) and workers from underserved communities in ASEAN, with a special emphasis on women. The second phase expands the program's reach and provides advanced and fit-for-purpose training on business and financial literacy, digital marketing, cybersecurity, and carbon footprint reduction to up to 200,000 MSME owners and workers in the region.

Box 7. THRIVE (Train Her to Promote Resilient, Inclusive Value Chains and Economic Empowerment)

[Grow Asia](#) and [Corteva Agriscience™](#) have partnered to progress the economic empowerment of women farmers and agripreneurs in Southeast Asia. The joint initiative has two goals: to help strengthen farm management, digital and business skills among women farmers; and to directly support women farmers and agripreneurs through networking events and mentorship opportunities. The program aims to empower women to increase their productivity, incomes and resilience, allowing them to bring prosperity to their families and communities.

In Viet Nam, the program has been tailored to the local context and is directly relevant to the lives and practical needs of women farmers, farm-level influencers and agripreneurs. The training program includes a module on using a mobile phone to access information about climate and farming and to establish online networks for women farmers.

The program, which will include training sessions, business development, mentoring and networking events, is being piloted in 8 territories across Viet Nam.

Women in the program reported that they moved from using their mobile phone purely for telephone calls and SMS to being able to use it to assess information relevant to agriculture.

5.4 Safe, supportive learning environments

Many women are wary of operating online, because of the high incidence of cyber-bullying and sexual harassment experienced online (EQUALS, 2019), and see no reason to use digital products, services or content. This is particularly true for women who have LBQTI, ethnic minority or disabled identities (United Nations Population Fund, Making all spaces safe (New York, 2020).

Programs that allow women from varying backgrounds and skill levels to learn, test their skills in useful ways, and discuss failure without the fear negative repercussions, help to build self confidence and trust in using digital technologies in safe and empowering ways.

Box 8. Skills4Girls

The UNICEF Skills for Girls portfolio takes a girl-centred approach to skills building in STEM, digital technologies and social entrepreneurship, in combination with life skills such as problem solving, negotiation, self-esteem and communication. In Viet Nam, the program is working with the Ministry of Education and Training and civil society organisations to support the development of digital literacy for ethnic minority girls.

One initiative has introduced girls to augmented/virtual reality headsets in their rural and remote classrooms. By also providing training for teachers to use the innovative technologies, a safe space can be provided to encourage girls to participate in STEM subjects and engage with technology.

In addition, over 400 teachers (67% female and 24% from ethnic minority groups) have been trained to deliver the curriculum in adaptive and collaborative ways using technology.

Scholarship programs can provide a mechanism for enabling girls and women to access safe and supportive learning environments. These can be especially beneficial for marginalised young women who do not otherwise have the resources to access these opportunities.

Box 9. Cambodia Tertiary Scholarship Program

Funded by the Merali Foundation and implemented by KAPE (Kampuchea Action to Promote Education) in collaboration with The Asia Foundation, the Cambodia Tertiary Scholarship Program has empowered marginalised young women to take-up tertiary education in banking, management, education, accounting and public administration. The scholarship program prepares women for tertiary study and supports them through their studies by providing regular monitoring and support, and training for skill development. Participants are specifically supported to develop their English language skills, digital/ICT skills, and career development skills, including leadership motivation and communication skills.

Between 2010 and 2015, 116 young women were supported to undertake a four-year degree. Upon graduation, the women secured employment in companies, banks and NGOs. By giving young women the opportunity to access tertiary education and successful careers, the program aims to combat gender stereotypes and promote positive change in Cambodian society.

In 2016, the program was extended, enabling another 30 young women to commence tertiary studies.

5.5 Key learnings

Digital literacy and digital skills can be developed through a range of formal and informal learning activities. These include opportunities for learning in personal, family, peer, community, employment and institutional contexts.

UNICEF (EAPRO, 2023, p. 40) has documented 4 innovative techniques to encourage girls' participation and empowerment through digital literacy programs.

- **Female role models and mentors:** Visible role models and mentors provide support and inspiration for girls by negating gender-based stereotypes and demonstrating that technology provides a possible career pathway for girls.
- **Project-based learning:** Interactive and practical projects build participants' self-confidence and support the development of soft skills that are important to digital literacy.
- **Focusing on real-world, relevant problems:** Addressing real-world problems through the development, or use of, digital devices and applications helps participants see the relevance of digital skills and technology to their lives.
- **Safe, supportive learning environments:** Programmes that are only open to girls can ensure they feel comfortable expressing themselves during the learning process.

Beyond stand-alone programs, UNESCO (2022, p. 136) has advised that, in a digital society, ICT education should be regarded as a 'fundamental element that informs the activities in which teachers and students engage at and beyond school'. Embedding opportunities for digital skills development in the delivery of all formal and informal learning may be the most effective way to build girls' and women's digital literacy.

6. CONCLUSIONS AND RECOMMENDATIONS

To fully benefit from a growing digital economy, ASEAN countries must ensure their populations have the digital literacy skills that will be required in the future workforce. Current gender and socio-economic inequalities in relation to ICT connectivity and access to digital learning mean that girls and women may miss out on the personal, social and economic benefits that arise from being digitally literate – leading to greater inequality.

For all people to benefit from opportunities presented by the digital economy, more needs to be done to bridge the digital gender divide. UNICEF (2021) has advised that building digital literacy is key to closing the gender digital divide. However, solutions for building digital literacy extend beyond stand-alone interventions.

In April 2023, UN Women Executive Director, Sim Bahous stated:

‘Training programmes, while important, are not enough. It is not about ‘fixing women and girls’. We need something more fundamental, to promote change among the people and institutions that are perpetuating stereotypes and change unsupportive education and work environments... Promoting girls’ digital skills through affordable, equitable and inclusive education is not only a matter of equality. It is an economic imperative.’

There are a series of actions that policymakers can take to work toward a goal of affordable, equitable and inclusive education that supports girls and women to develop the digital skills and digital literacy they need for a secure and productive future.

6.1 Develop digital literacy not narrow ICT skills

Regardless of job role or industry sector, everyone in a modern society needs digital literacy to participate in economic and social life by accessing and engaging with information safely through digital devices and networked technologies. These activities require more than basic digital skills. Digital literacy encompasses an ability to transfer skills across digital contexts by applying skills and knowledge relating to critical and computational thinking, information management and content creation.

A focus on digital literacy – of which digital skills are a subset – prompts a necessary shift away from the pursuit of narrowly-defined and functional skills developed through specialised ICT pathways. Instead, emphasis should be on cultivating transferable digital literacy from an early age, rather than developing proficiency in the use of specific platforms and tools.

By integrating digital literacy into school and post-school learning, girls and women can acquire skills in contexts that are relevant to them and develop a foundation on which to build further, more specialised skills if required. This approach challenges the stereotype that digital proficiency is solely for specialists, fostering a broader appreciation for the practical applications of digital skills. An inclusive, embedded approach also ensures that girls who are not on a formal qualification pathway will still leave school with digital literacy that will support their future participation in employment, further learning and community contexts – thereby narrowing the gender divide.

6.2 Use a common reference point to describe digital literacy

The concept of digital literacy is not well understood. Ongoing debate around definitions, terminology and appropriate methods of assessments do not address the development needs of individuals. However, to effectively monitor progress among populations and individuals, there must be a shared understanding of digital literacy, utilising common reference points at skill level.

A common reference point could facilitate communication and collaboration among diverse stakeholders, including governments, educational institutions, businesses, and individuals. Shared terminology can ensure that discussions around digital literacy are clear, effective, and understood by all involved parties. This promotes a unified vision for digital literacy across the ASEAN countries.

The Digital Literacy Global Framework (DLGF) offers the opportunity to talk about digital literacy beyond technologies and operations using a common reference point. Use of the DLGF as a common reference point has potential to foster inclusivity by breaking down language barriers and ensuring that digital literacy initiatives are accessible to people from diverse linguistic backgrounds. This inclusivity is particularly important in the multicultural and multilingual ASEAN region, where a shared language can promote equal opportunities for all individuals, regardless of their native language.

6.3 Ensure indicators are measuring what matters

A notable challenge in assessing the digital gender gap lies in the limited availability of internationally comparable, sex-disaggregated official data, especially in developing countries. This scarcity hampers the ability to formulate informed policies and interventions. It prompts the need to critically question whether current methodologies are measuring the right aspects of digital access, literacy, and skills.

For indicators of digital connectivity to be truly effective and informative, a critical distinction must be made between universal (basic) and meaningful connectivity. The literature highlights the difference between mere 'access to' and the nuanced concept of 'ownership of' digital resources. This distinction is pivotal in understanding the true extent of digital inclusion and assessing the depth of engagement individuals have with digital technologies. Without such differentiation, the indicators risk oversimplification, failing to capture the multifaceted nature of digital connectivity.

In addition to difficulties in measuring digital access, narrowly defined indicators of digital skill restrict the scope of what is considered to be digital literacy. There are significant limitations of using tasks like 'copying or moving a file or folder' as a measure of digital literacy. In an environment of rapidly changing technologies, this type of indicator can quickly become redundant, and is additionally compromised by the unreliable nature of self-assessment reporting. To advance understanding of digital literacy, indicators need to embrace broader definitions of digital literacy that go beyond routine tasks to capture the comprehensive range of skills required in the digital era.

To better understand the digital literacy of girls and women there would also be value in adopting a gender and intersectionality lens within indicators. Considering the use or ownership of a phone and whether girls and women have a 'freedom of choice' over the way in which they access technology, can offer a more nuanced understanding of disparities. Insights could be gained by disaggregating data by sub-populations to understand the unique challenges faced by females in rural areas, females over 45, and females from minority ethnic groups. Similarly, taking a longitudinal view of the gender digital gap is essential to comprehend how it evolves over time. Understanding the dynamics of this gap and its widening trajectory is crucial for developing targeted interventions.

There is a pressing need for more evidence and indicators that provide insight into the barriers and challenges facing girls and women over the lifespan. The development of consistent assessment measures against an agreed digital literacy framework, such as the DLGF, would strengthen capacity for monitoring and reporting on patterns and trends – and could inform targeted policy and program interventions.

6.4 Design embedded and stand-alone programs that empower girls and women

Supporting girls and women to build their digital literacy requires strategic effort on multiple fronts. As previously noted, integrating digital literacy and skills development in schools and post-school learning will provide an opportunity for all girls to acquire a foundation of digital literacy – not only those who are pursuing an ICT specialist pathway. By infusing technology into various educational disciplines, girls could be encouraged to engage with, and derive utility from, digital tools and platforms from an early age.

In the foreseeable future, stand-alone interventions will continue to be needed to address the existing gender divide and ensure that girls and women have opportunities to acquire the digital literacy they need to pursue their own learning, employment and entrepreneurial pathways. The research has highlighted techniques to encourage participation in these programs by girls and women. Accordingly, the design of stand-alone programs should include:

- **Female role models and mentors** – the presence of female representation, role models, and cultural leaders is crucial in supporting and uplifting the aspirations of girls and women. These figures play a vital role in breaking down societal barriers and inspiring confidence in girls and women to actively engage with technology.
- **Project-based learning**
- Focusing on **real-world, relevant problems**
- **Safe, supportive learning environments** – the risk of exploitation is a significant barrier for girls' and women's engagement with digital technology. Safe spaces that allow them to freely express their views and opinions are important for learning and confidence-building.

The effectiveness of both embedded and stand-alone programs for supporting girls and women could be enhanced by considering the following program design principles.

Evidence-based program design

Robust evidence of program outcomes and impacts is limited. A scarcity of comprehensive data on program outcomes hinders the ability to discern effective strategies for promoting digital literacy and poses a challenge for policymakers and educators seeking to design effective interventions. Without a more nuanced understanding of the impact of program features in various contexts, there is a risk of designing and implementing programs that do not yield the desired outcomes.

Compounding the challenge is the context-specific nature of the available information on program design and implementation. The existing evidence tends to be tailored to particular settings, limiting its applicability to broader contexts. This underscores the need for more universally applicable research and evidence, facilitating the development of scalable and adaptable interventions. As efforts continue to bridge the digital literacy gap, a concerted effort is required to gather comprehensive evidence that can inform effective program design and implementation across diverse settings.

To achieve a better understanding of what works in various contexts, reliable and standardised approaches for assessing digital skills at different levels are needed. One possible approach to inform understanding would be to prepare Southeast Asian countries to participate in the International Computer and Information Literacy Study (ICILS) in 2028. Collaboration in this endeavour could facilitate sharing of insights that would support more targeted and evidence-based interventions.

Providing access to digital technology infrastructure

Connecting the many million women that still lack access to broadband and mobile networks is crucial for fostering a more inclusive digital world. The barriers obstructing girls' and women's access to ICT infrastructure are often deeply rooted in societal and cultural norms, presenting formidable challenges to overcome. Particularly in male-dominated industry sectors and occupations, these barriers can be entrenched, making it difficult to expand opportunities for girls and women.

The research literature highlights the importance of addressing issues related to access to affordable ICT infrastructure and devices, equitable educational opportunities, and ownership of devices for girls and women. Cost is one of the key obstacles for women in accessing the Internet. Bridging the digital gender gap will require infrastructure investments and the provision of affordable technology.

Gender transformative

UNICEF (2021) state that 'including girls' voices is essential when developing any digital products or services, or any digital development programmes'. ("What We Know About the Gender Digital Divide for Girls: a Literature ...") Designing programs in collaboration with girls and women ensures that the program responds directly to their needs and aspirations – meeting them where they are currently and providing them with the tools to reach their goals.

Beyond responding to the challenges faced by girls and women in relation to the acquisition and application of digital literacy, interventions can also seek to change the status quo. Programs that empower girls and women to become role models and make change within their local context can be transformational at a community and societal level beyond the outcomes they deliver for individual participants. By developing female role models, gender transformative programs can establish a pipeline of mentors, leaders, entrepreneurs and future employers on which to continue building the aspirations of the next generation of girls and women.

7. REFERENCES

- Afiani, I. (2018). Advancing Women's Digital Skills and Economic Empowerment through Girls in Tech Indonesia: A Case Study. *Salasika*, 1(1), 21-32. <https://doi.org/10.36625/sj.v1i1.39>
- Alliance for Affordable Internet (2021). *The Costs of Exclusion: Economic Consequences of the Digital Gender Gap*. Web Foundation.
- ASEAN Digital Integration Index (ADII) (2021). Available at: asean.org/wp-content/uploads/2021/09/ADII-Report-2021.pdf. (Accessed 28 February 2024)
- ASEAN Gender Mainstreaming Strategic Framework, (2021). Available at: asean.org/wp-content/uploads/2022/01/ASEAN-Gender-Mainstreaming-Strategic-Framework-endorsed-by-AMMW.pdf. (Accessed 28 February 2024)
- ASEAN Secretariat. (2022). The ASEAN. Promoting Decent Work and Protecting Informal Workers. Available at: <https://asean.org/wp-content/uploads/2022/05/The-ASEAN-Magazine-Issue-21-2022-Informal-Economy.pdf>. (Accessed 28 February 2024)
- ASEAN Secretariat. (2023). ASEAN Employment Outlook: The Quest for Decent Work in Platform Economy: Issues, Opportunities and Ways Forward, Jakarta.
- ASEAN Secretariat. (2023). ASEAN Statistical Highlights 2023. Available at <https://www.aseanstats.org/wp-content/uploads/2023/10/ASH-2023-v1.pdf>. (Accessed 28 February 2024)
- Asian Development Bank Policy Brief 8 (2021). Women's Economic Empowerment in Asia. Available at: [Newsletter \(adb.org\)](https://www.adb.org/publications/newsletter) (Accessed 28 February 2024)
- Chen L., Ruddy, L. (2020). "Improving Digital Connectivity: Policy Priority for ASEAN Digital Transformation," Working Papers PB-2020-07, Economic Research Institute for ASEAN and East Asia (ERIA).
- Contreras Suarez, D. & Cameron, L. (2017). Women's Economic Participation in Indonesia: A study of gender inequality in employment, entrepreneurship, and key enablers for change.
- EQUALS Research Group (2019) Taking stock: Data and evidence on gender equality in digital access, skills, and leadership. Available at: <https://www.equalshintech.org/taking-stock>
- ESCAP (2022). Female Labour Force Participation and the care economy in Asia and the Pacific. Available at: [Female labour force participation and the care economy in Asia and the Pacific | ESCAP \(unescap.org\)](https://www.unescap.org/publications/female-labour-force-participation-and-the-care-economy-in-asia-and-the-pacific) (Accessed 28 February 2024)
- Eshet, Y. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93-106. Norfolk, VA: Association for the Advancement of Computing in Education (AACE). Available at: [Digital Literacy: A Conceptual Framework for Survival Skills in the Digital era - Learning & Technology Library \(LearnTechLib\)](https://www.learn-tech-lib.org/digital-literacy-a-conceptual-framework-for-survival-skills-in-the-digital-era). (Accessed 28 February 2024)
- European Disability Forum (2015). Recommendations for an Inclusive Digital Single Market, Available at: [European Disability Forum: Recommendations for an Inclusive Digital Single Market | FUTURIUM | European Commission \(europa.eu\)](https://www.futurium.europa.eu/publications/european-disability-forum-recommendations-for-an-inclusive-digital-single-market). (Accessed 28 February 2024)
- Gekara, V, Snell, D, Molla, A, Karanasios, S & Thomas, A. 2019, Skilling the Australian workforce for the digital economy: support document 1 – a review of digital skills frameworks literature, NCVER, Adelaide. Available at: [Skilling the Australian workforce for the digital economy \(ncver.edu.au\)](https://www.ncver.edu.au/publications/skilling-the-australian-workforce-for-the-digital-economy). (Accessed 28 February 2024)

- Girl Effect, & Vodafone Foundation. (2018). Real girls, real lives, connected. Available at: [GE_VO_Executive+Summary+Report.pdf \(squarespace.com\)](#) (Accessed 28 February 2024)
- Ikumo Isono, H., 2023. ASEAN's Digital Integration Evolution of Framework Documents, Economic Research Institute for ASEAN & East Asia. Indonesia. Available at: [ASEAN's Digital Integration Evolution of Framework Documents | Policy Commons](#) (Accessed 28 February 2024)
- Ilomäki, L, Kantosalu, A, & Lakkala, M (2011) What is digital competence? In *Linked portal*. Brussels: European Schoolnet. Available here: https://www.researchgate.net/publication/266852332_What_is_digital_competence_In_Linked_portal_Brussels_European_Schoolnet_httplinkedeurorgwebguestin-depth3
- Iordache, Catalina & Mariën, Ilse & Baelden, Dorien. (2017). Developing Digital Skills and Competences: A Quick-Scan Analysis of 13 Digital Literacy Models. *Italian Journal of Sociology of Education*. 9. 6-30. 10.14658/pupj-ijse-2017-1-2.
- ITU (n.d.). The ITU ICT SDG indicators. Available at: <https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx> (Accessed 28 February 2024)
- ITU (2023). Measuring digital development Facts and Figures: Focus on Least Developed Countries March 2023. Available at: <itu.int/itu-d/reports/statistics/facts-figures-for-ldc/>. (Accessed 28 February 2024)
- Kampuchean Action for Primary Education, Annual Report 2015 (Released Jan 2016) Cambodia Tertiary Scholarship Program (CTSP) - Kampuchea Action to Promote Education (KAPE) (kapekh.org)
- Kogiso, M, Yu, L, Masuda, R, Gupta, G, Koyama, N, Oberoi, J, Sonderegger, P, Arora, K & Reddy, S 2017, Advancing women's empowerment: ICT skills for girls and women in Southeast Asia, Sasakawa Peace Foundation and Dalberg Global Development Advisors, Tokyo. Available at: [ICT Skills for Girls and Women in Southeast Asia | Gender Investment and Innovation Program-Reports and Books | THE SASAKAWA PEACE FOUNDATION \(spf.org\)](#) (Accessed 28 February 2024)
- Law, N. & Woo, David & Wong, Gary. (2018). A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2. UNESCO Institute for Statistics.
- Mughal Awan, M. Z., & Awan, S. A. (2023). Digital Empowerment: Advancing Women's Economic Status in Developing Countries. *Journal of Global Peace and Security Studies (JGPSS)*, 4(2). Available at: [Digital Empowerment: Advancing Women's Economic Status in Developing Countries | Journal of Global Peace and Security Studies \(JGPSS\) \(pakistanreview.com\)](#). (Accessed 28 February 2024)
- Organisation for Economic Co-operation and Development (2022). Strengthening Women's Entrepreneurship in Agriculture in ASEAN Countries.
- Organisation for Economic Co-operation and Development (2016) Skills for a digital world, OECD policy brief on the future of work, December 2016, OECD, Paris. Available at: [Skills-for-a-Digital-World.pdf \(oecd.org\)](#). (Accessed 28 February 2024)
- Organisation for Economic Co-operation and Development (2008). Bridging the Digital Divide: Include, Upskill, Innovate. Available at: [bridging-the-digital-gender-divide.pdf \(oecd.org\)](#) (Accessed 28 February 2024)
- Ratnasari, E., Sumartias, S., & Romli, R. (2021). Social Media, Digital Activism, and Online Gender-Based Violence in Indonesia. *Nyimak: Journal of Communication*, 5(1), 97. Available at: <https://doi.org/10.31000/nyimak.v5i1.3218>. (Accessed 28 February 2024)
- Sey, A. & Hafkin, N. (Eds). (2019). Taking stock: Data and evidence on gender equality in digital access, skills and leadership. United Nations University Institute on Computing and Society/International Telecommunications Union: Macau.

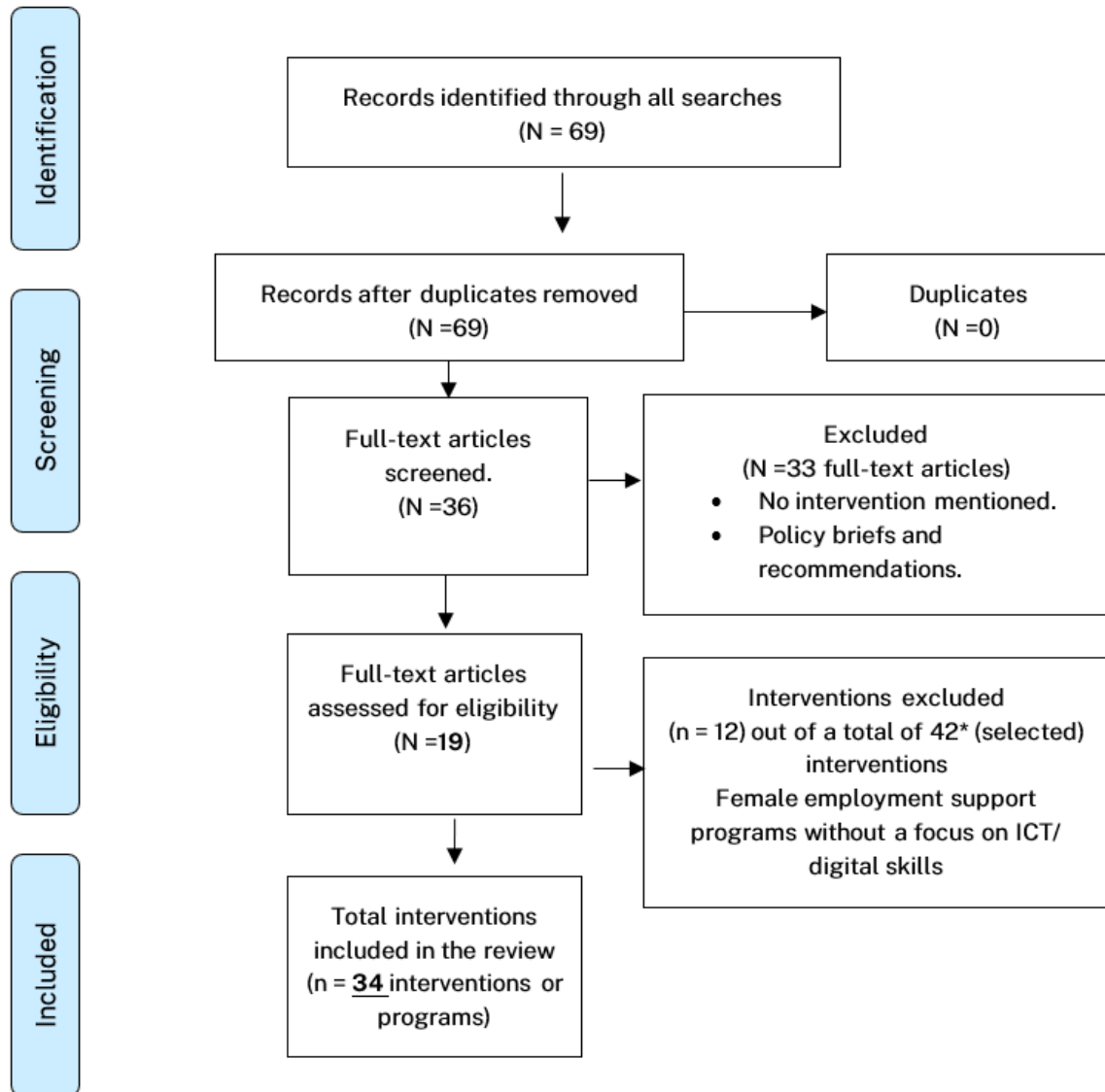
- Sey, A., Kingsley, S. (2022) Women and Leadership in the ASEAN Digital Economy: Mapping the Rhetorical Landscape, Economic Research Institute for ASEAN and East Asia
- Sey, A., Marsan, A. (2021) ERIA Policy brief no 2020-09, Women's participation in the Digital Economy: Improving access to skills, entrepreneurship, and leadership across ASEAN.
- Sims, K., Thuo, S. (2020). Girls' education programmes in the ASEAN region. K4D Helpdesk Report 902. Brighton, UK: Institute of Development Studies
- Skill for All Foundation (2019) Digital Skills critical for jobs and social inclusion <http://skillforall.com/digital-skills-critical-for-jobs-and-social-inclusion/>
- Song, T, Tang, J 2016, Managing skills challenges in ASEAN-5, Singapore Management University, Singapore. Available at: "[New skills at work: Managing skills challenges in ASEAN-5" by Kim Song TAN and James T. H. TANG \(smu.edu.sg\)](https://www.smu.edu.sg/~kim-song-tan/). (Accessed 28 February 2024)
- The Asia Foundation (2022) Go Digital ASEAN: Regional Impact Summary. Available at: [Go Digital ASEAN: Regional Impact Summary - The Asia Foundation](https://www.asiafoundation.org/~/media/2022/02/Go-Digital-ASEAN-Regional-Impact-Summary-The-Asia-Foundation-KANTAR.pdf) KANTAR. (Accessed 28 February 2024)
- Tyers, A. Banyan Global (2020), Gender Digital Divide Desk Review Report, USAID. [WE3: Gender Digital Divide; Desk Review \(marketlinks.org\)](https://www.marketlinks.org/~/media/2020/09/WE3-Gender-Digital-Divide-Desk-Review.pdf). (Accessed 28 February 2024)
- Umukoro, I.O., Omolade-Lawal, A.O., Babalola, S.O., Akinsumbo, K.S., Aligwa, R.M., & Abdul-Jeleel, B.A. (2021). Gender Differences in Access to and Use of ICTs in Nigeria.
- UN Brief (2023) Digital Innovation and Technology for Gender Equality in Viet Nam
- UNFPA (2020) Technology-facilitated Gender-based Violence: Making All Spaces Safe, UNFPA [UNFPA-TFGBV-Making All Spaces Safe.pdf](https://www.unfpa.org/sites/default/files/pub-pdf/UNFPA-TFGBV-Making-All-Spaces-Safe.pdf) (Accessed 28 February 2024)
- UNDP and UNICEF (2021). Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia. Bangkok: UNDP Bangkok Regional Hub and UNICEF East Asia and the Pacific Regional Office.
- UNESCAP (2018) Fostering Women's Entrepreneurship in ASEAN: Transforming prospects Transforming Societies, ASEAN,
- UNESCO (2022). Guidelines for ICT in education policies and master plans, Paris. Available at: [Guidelines for ICT in education policies and masterplans - UNESCO Digital Library](https://unesco.org/en/rep/rep_en/2022/02/Guidelines-for-ICT-in-education-policies-and-master-plans). (Accessed 28 February 2024)
- UNESCO (2023) #HerEducationOurFuture, Innovation and technology for gender equality, Global Education Monitoring Report
- UNESCO Global Education Monitoring Report Team. (2023) Global Education Monitoring Report 2023: Southeast Asia: Technology in education – A tool on whose terms. UNESCO, Paris. Available at: [Global education monitoring report 2023, Southeast Asia: technology in education: a tool on whose terms? Summary - UNESCO Digital Library](https://unesco.org/en/rep/rep_en/2023/02/Global-Education-Monitoring-Report-2023-Southeast-Asia-Technology-in-education-a-tool-on-whose-terms-Summary-UNESCO-Digital-Library). (Accessed 28 February 2024)
- UNESCO Institute for Statistics (2022). Measurement Strategy for SDG Global Indicator 4.4.2 using International Large-scale Assessments. Available here: <https://tcg.uis.unesco.org/wp-content/uploads/sites/4/2022/02/Measurement-Strategy-SDG-4.4.2-Jan-2022.pdf>
- UNICEF (2020) Reimagine Education: ICT & Innovation in Timor-Leste www.unicef.org/timorleste/media/3806/file/ICT%20in%20Education%20Conference%20%20Final%20Report.pdf
- UNICEF (2020) Digital literacy in education systems across ASEAN: Key insights and opinions of young people. Available here:

- <https://www.unicef.org/eap/media/7766/file/Digital%20Literacy%20in%20Education%20Systems%20Across%20ASEAN%20Cover.pdf>
- UNICEF East Asia and Pacific Regional Office (EAPRO). (2023a). Girls' digital literacy in the East Asia and Pacific region: Spotlight on Cambodia, Indonesia, Lao PDR, Timor-Leste and Viet Nam
- UNICEF East Asia and Pacific Regional Office (EAPRO). (2023b). Girls and STEM: How can we support girls in ASEAN to enter STEM careers?, Spotlight on Cambodia, Indonesia and Viet Nam
- UNICEF (2023). Bridging the Gender Digital Divide: Challenges and an Urgent Call for Action for Equitable Digital Skills Development. Available at: <https://reliefweb.int/report/world/bridging-gender-digital-divide-challenges-and-urgent-call-action-equitable-digital-skills-development>. (Accessed 28 February 2024)
- United Nations (2023). The Sustainable Development Goals Report 2023: Special Edition. Available at: <https://unstats.un.org/sdgs/report/2023/The-Sustainable-Development-Goals-Report-2023.pdf>. (Accessed 28 February 2024)
- UN Women (2023). Statement: Digital skills for life. Available at: <https://www.unwomen.org/en/news-stories/statement/2023/04/statement-digital-skills-for-life>
- Van Dijk, J. (2020). The Digital Divide. John Wiley & Sons.
- West, M., Kraut, R., & Ei Chew, H. (2019). I'd blush if I could: closing gender divides in digital skills through education. UNESCO.
- World Bank. (2023) Gender and Digital Development in Thailand. Knowledge Management Note; 6. World Bank, Washington, DC. Available at: [Gender and Digital Development in Thailand \(worldbank.org\)](https://www.worldbank.org/). (Accessed 28 February 2024)
- World Economic Forum. (n.d.) Digital ASEAN. Available at: <https://www.weforum.org/projects/digital-asean/>. (Accessed 15 April 2024)

ANNEX 1: REVIEW METHODOLOGY

Figure 3: PRISMA flow diagram showing the identification and selection of interventions

Note: * The 19 full text documents contained information on many more interventions/ programs, but only 42 of those were relevant for the purposes of this rapid review. Out of those, 12 articles only covered issues related to female empowerment and employability skills and nothing on digital skills. Therefore, the final list only considers 34 interventions which focused on both ICT/ digital skills and female employment. An additional screening process was applied, which narrowed the list to 18 interventions (see Annex 3).



ANNEX 2: DEFINITIONS AND INDICATORS

Body	Term used	Definition
Association of Southeast Asian Nations (ASEAN)	Digital literacy	'knowledge, skills and attitudes...'
International Telecommunication Union (ITU)	Digital skills	'...ability to use ICTs in ways that help individuals'
UNESCO Bangkok	Digital citizenship	'being able to find, access, use and create information effectively; engage with other users and with content in an active, critical, sensitive and ethical manner; and navigate the online and ICT environment safely and responsibly, while being aware of one's own rights'
UNESCO	Digital skills	'...a range of abilities to use digital devices, communication applications, and networks to access and manage information. They enable people to create and share digital content, communicate, collaborate, and solve problems'.
Council of Europe	Digital citizenship	'competent and positive engagement with digital technologies (creating, working, sharing, socializing, investigating, playing, communicating and learning); participating actively and responsibly (values, attitudes, skills, knowledge) in communities ... at all levels ...; being involved in a double process of lifelong learning ...; and'
European Commission	Digital competences	'...confident, critical and responsible use of, and engagement with, digital technologies ... information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety ..., intellectual property related questions, problem solving and critical thinking'
SEAMEO/UNESCO Digital Kids Asia-Pacific	Digital literacy	'ability to seek, critically evaluate and use digital tools and information effectively'

Sources: Council of Europe (2017), European Commission (2019), ITU (2018), and UNESCO (2018) in UNESCO (2023)

SDG indicators 4.4.1

4.4.1 indicators (Used until 2020) Source: Indicator 4.4.1 - E-Handbook on SDG Indicators - UN Statistics	Updated indicators (from 2020) Source: Metadata-04-04-01.pdf (un.org)
1. Copying or moving a file or folders	<ul style="list-style-type: none"> Using copy and paste tools to duplicate or move data, information and content in digital environments (e.g. within a document, between devices, on the cloud)
2. Finding, downloading, installing and configuring software	<ul style="list-style-type: none"> Finding, downloading, installing and configuring software and apps
3. Using copy and paste tools to duplicate or move information within a document	<ul style="list-style-type: none"> Using copy and paste tools to duplicate or move data, information and content in digital environments (e.g. within a document, between devices, on the cloud)
4. Creating electronic presentations with presentation software (including text, images, sound, video or charts)	<ul style="list-style-type: none"> Creating electronic presentations with presentation software (including text, images, sound, video or charts)
5. Sending e-mails with attached files (e.g. document, picture, video)	<ul style="list-style-type: none"> Sending messages (e.g. e-mail, messaging service, SMS) with attached files (e.g. document, picture, video)
6. Transferring files between a computer and other devices	<ul style="list-style-type: none"> Transferring files or applications between devices (including via cloud-storage)
7. Using basic arithmetic formulae in a spreadsheet	<ul style="list-style-type: none"> Using basic arithmetic formulae in a spreadsheet
8. Writing a computer program using a specialised programming language	<ul style="list-style-type: none"> Programming or coding in digital environments (e.g. computer software, app development)
9. Connecting and installing new devices (e.g. modem, camera, printer)	<ul style="list-style-type: none"> Connecting and installing new devices (e.g. a modem, camera, printer) through wired or wireless technologies
	<ul style="list-style-type: none"> Setting up effective security measures (e.g. strong passwords, log-in attempt notification) to protect devices and online accounts Changing privacy settings on your device, account or app to limit the sharing of personal data and information (e.g. name, contact information, photos) Verifying the reliability of information found online

SDG indicators 4.4.2

Competence areas	Competences
0. Devices and software operations	0.1 Physical operations of digital devices 0.2 Software operations in digital devices
1. Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licences 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem-solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps 5.5 Computational thinking
6. Career-related competences	6.1 Operating specialised digital technologies for a particular field 6.2 Interpreting and manipulating data, information and digital content for a particular field

Source: [Guidelines for Data Collection to Measure SDG 4.4.2 \(unesco.org\)](https://unesco.org)

ANNEX 3: INITIATIVES WITH EFFECTIVE ENGAGEMENT FEATURES

- Explicit emphasis on digital skill development (basic to intermediate) and 21C soft skills,
- An employment/livelihood focus
- Gender responsive design and selection of participants.
- Effective engagement features: Female role models and mentors; Project-based learning; Focus on real-world, relevant problems; Safe, supportive learning environments.

Program	Country	Comment	Literature source
Skills4Girls	Vietnam	Part of UNICEF portfolio of programs in partnership with Ministry of Education and Training and other organisations – uses AVR (Augmented and Virtual Reality) and innovative technologies to increase educational participation of girls in rural remote settings. Foster innovation among students and teachers using technology in order to prepare them for jobs in the digital economy. Includes training for training for teachers, parents, and community members	Sims, K., Thuo, S. (2020). Girls’ education programmes in the ASEAN region. K4D Helpdesk Report 902. Brighton, UK: Institute of Development Studies
Go Digital	Vietnam	Endorsed by ASEAN governments, supported by large organisations, aligned to business development aims, Go Digital Vietnam had more of a focus on girls and women than the same initiative in other ASEAN countries.	The Asia Foundation (2022) Go Digital ASEAN: Regional Impact Summary. Available at: Go Digital ASEAN: Regional Impact Summary - The Asia Foundation KANTAR.
Sisters of Code	Myanmar	Free 15–18-week extra-curricular programs (has been running many years with international partnerships). Recently announced a new pre-employment program, offering women over 20 years old the opportunity to study professional skills in digital marketing or UX/UI website development for free over a six-month period.	UNICEF East Asia and Pacific Regional Office (EAPRO). (2023a). Girls’ digital literacy in the East Asia and Pacific region: Spotlight on Cambodia, Indonesia, Lao PDR, Timor-Leste and Viet Nam
Girls in Tech	Indonesia, Malaysia, Singapore, Vietnam	Country chapters of a worldwide network that provides access to skill building, networking and entrance into the tech industry.	Afiani, I. (2018). Advancing Women’s Digital Skills and Economic Empowerment through Girls in Tech Indonesia: A Case Study. Salasika, 1(1), 21-32. https://doi.org/10.36625/sj.v1i1.39

Program	Country	Comment	Literature source
Youth Co:Lab Movers Program	Vietnam and Cambodia	Train-the-trainer workshops to develop digital and soft skills - focused on youth empowerment (open to all but with gender specific projects)	UNDP and UNICEF (2021). Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia. Bangkok: UNDP Bangkok Regional Hub and UNICEF East Asia and the Pacific Regional Office.
Technovation	Cambodia	Local instance of a global tech innovation challenge for teams of girls aged 8-18 based on using technology to solve local problems. Strong mentorship and alumnae.	Kogiso, M, Yu, L, Masuda, R, Gupta, G, Koyama, N, Oberoi, J, Sonderegger, P, Arora, K & Reddy, S 2017, Advancing women's empowerment: ICT skills for girls and women in Southeast Asia, Sasakawa Peace Foundation and Dalberg Global Development Advisors, Tokyo.
Markoding: 'Innovation Challenge' – Generasi Terampil	Indonesia	The aim is to empower underprivileged youth with twenty-first-century skills, through co-creation of digital solutions for positive change in local communities. Adolescents are first exposed to role models from the technology sector, before collaborating in teams to devise a technology solution for a local issue of their choice. Focus on 21st century skills for young people (Girls are matched with female mentors to support their progression) 58 % female participation in 2021.	UNICEF East Asia and Pacific Regional Office (EAPRO). (2023a). Girls' digital literacy in the East Asia and Pacific region: Spotlight on Cambodia, Indonesia, Lao PDR, Timor-Leste and Viet Nam
Sisterhood for Development	Lao PDR	Not traditional digital literacy skills but video editing and social media marketing. Example of meeting women at area of need and useful context. Development of video editing skills for economic development and employment, linked to internships.	UNDP and UNICEF (2021). Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia. Bangkok: UNDP Bangkok Regional Hub and UNICEF East Asia and the Pacific Regional Office.

Gender responsive programs designed specifically for women that have implicit digital skill components or potential for a stronger integrated digital skill component within the program.

Program	Country	Comment	Literature source
Leadership and Entrepreneurship Camp for Young Women programme	Laos	<p>A supportive environment for ethnic minority girls and young women aged 14 to 22 to gain the skills and confidence that are not developed in a typical classroom.</p> <p>Mentorship in identifying, designing, and implementing community-service oriented business start-ups.</p> <p>Skills development to help participants find jobs and to help their communities including accounting, business and trade skills, followed by English language and hospitality skills. No specific focus on digital skills/literacy development.</p>	UNDP and UNICEF (2021). Addressing Gender Barriers to Entrepreneurship Among Girls and Young Women in South-East Asia. Bangkok: UNDP Bangkok Regional Hub and UNICEF East Asia and the Pacific Regional Office.
Cambodian Tertiary Scholarship Program	Cambodia	<p>Targeted vulnerable and poor girls who graduated high school. Program was extended for 2016-2020.</p> <p>Giving opportunities for girls to access tertiary education and successful careers to promote positive change in Cambodian society and reduce gender stereotype perceptions.</p> <p>Program activities included career development workshops that covered:</p> <ul style="list-style-type: none"> • Leadership, motivation, communication skills • Understanding internships • Study tours • IT (Information Technology) training (basic computer skills) • English language skills <p>Degrees pursued were in Finance and Banking, Accounting, Management, and Education.</p>	Kampuchean Action for Primary Education, Annual Report 2015 (Released Jan 2016) Cambodia Tertiary Scholarship Program (CTSP) - Kampuchea Action to Promote Education (KAPE) (kapekh.org)

Programs marketed as STEM programs that could provide a useful digital literacy development pathway

Program	Country	Comment	Literature source
Generation Girl	Indonesia	<p>Generation Girl introduces girls and women to STEM from an early age through a range of fun and innovative programmes, including holiday clubs and hackathons. It focuses on creating a safe community space for girls to learn through student-centred, project-based approaches. The organization uses technology to simultaneously develop soft skills, including critical thinking and problem-solving.</p> <p>It focuses on creating a safe community space for girls to learn through student-centred, project-based approaches.</p> <p>Marketed with a STEM focus not basic digital skills, and possibly catering for a more advantaged learner cohort.</p>	UNICEF East Asia and Pacific Regional Office (EAPRO). (2023a). Girls' digital literacy in the East Asia and Pacific region: Spotlight on Cambodia, Indonesia, Lao PDR, Timor-Leste and Viet Nam
STEM4Women	Cambodia	<p>Program conducted from 2016-2018, supported 7 young Cambodian women from disadvantaged families to access training in STEM to prepare for and enter tertiary STEM study in Thailand.</p> <p>Focus on STEM not basic digital literacy.</p>	Kampuchean Action for Primary Education, Annual Report 2015 (Released Jan 2016) Cambodia Tertiary Scholarship Program (CTSP) - Kampuchea Action to Promote Education (KAPE) (kapekh.org)

Programs that utilise digital devices as learning platforms for engagement, empowerment, safety etc.

Program	Country	Comment	Literature source
Dawn of Civilization - Play and Learn English!	Timor Leste	<p>A multi-subject game app that can be played both online and offline from any smartphone. The app aims to benefit middle schools' children up until college students in rural areas.</p> <p>Teachers y can additionally monitor and evaluate their students' learning behaviors and progress through Learnalytics, as understanding receptivity to these programs is essential for their success.</p> <p>Though not specifically targeting women/girls and the primary skill development focus is on English utilising a smartphone as a learning platform is a useful introduction to digital skills.</p>	UNICEF (2020) Reimagine Education: ICT & Innovation in Timor-Leste www.unicef.org/timorleste/media/3806/file/ICT%20in%20Education%20Conference%20%20Final%20Report.pdf

Programs that have supported basic access to ICT as a first step to engagement.

Program	Country	Comment	Literature source
Remote Area Community Hotspots for Education and Learning (RACHEL)	Timor-Leste	<p>World Possible makes and distributes RACHEL (Remote Area Community Hotspot for Education and Learning), a server/router that hosts offline free educational content such as Khan Academy, Wikipedia, Project Gutenberg and others via Wi-Fi. RACHEL is designed so that students or schools that do not have internet connections but may already have devices (such as cell phones, tablets, laptops or desktops) that can receive data via wi-fi, can access educational content via RACHEL as a server. Content has been tailored to meet locally relevant demand.</p> <p>Though not specific to digital skills or girls/women the technology could enable digital skills development to take place in remote areas where there is not internet access.</p>	<p>UNICEF (2020) Reimagine Education: ICT & Innovation in Timor-Leste www.unicef.org/timorleste/media/3806/file/ICT%20in%20Education%20Conference%20%20Final%20Report.pdf</p>
Empowering women and girls through mobile technology	Myanmar	<p>Youth empowerment through digital skills development. This initiative provides online and face-to-face programs that target different age groups and competence levels with digital skill development programs, including programs designed to develop and attract talent into the ICT industry.</p> <p>Mobile technology supported the Empowering Women and Girls through Mobile Technology project in Myanmar. Part of the Connect to Learn project, it helped marginalized girls in rural schools develop English language skills and life skills as a means of empowerment and a pathway to increased secondary school retention (GEM Report SEA Tech 2023)</p> <p>Mobile learning has been used to supplement in-school instruction, mostly with private partners. In Myanmar, the Ministry of Education collaborated with Ericsson, UNESCO and other partners on the Connect to Learn project, which promoted mobile-based learning in 31 schools and to more than 33,000 students (Qualcomm, 2021) [in GEM Report SEA Tech 2023]</p>	<p>Global Education Monitoring Report Team. (2023) Global Education Monitoring Report 2023: Southeast Asia: Technology in education – A tool on whose terms. UNESCO, Paris. Available at: Global education monitoring report 2023, Southeast Asia: technology in education: a tool on whose terms? Summary - UNESCO Digital Library. (Accessed 28 February 2024)</p>

Programs that have supported advocacy and safety, but not explicit digital skills instruction focus.

Program	Country	Comment	Literature source
Safenet (Southeast Asia Freedom of Expression Network)'s "Awas KBGO!" (Beware of OGBV (Online Gender Based Violence)!) Campaign	Indonesia	<p>The Southeast Asia Freedom of Expression Network (SAFEnet) is a civil society organization that fights for digital rights, including the right to access the internet, rights for free expression, and the right to a sense of security in the digital realm.</p> <p>SAFEnet consistently advocates for victims of digital rights violations and engages in Internet policy advocacy to better use a human rights perspective. Since 2019, SAFEnet has provided holistic security training for vulnerable groups, in Indonesia and the Southeast Asian region, to build resilience from increasingly widespread digital repression.</p> <p>In an effort to fight for digital rights, SAFEnet implements four main programs, namely:</p> <ul style="list-style-type: none"> Advocating for policies to support the fulfillment of digital rights; Support victims of digital rights violations; Increase the capacity of civil society related to digital rights; Rally solidarity with civil society that fights for human rights in the digital realm. 	Ratnasari, E., Sumartias, S., & Romli, R. (2021). Social Media, Digital Activism, and Online Gender-Based Violence in Indonesia. <i>Nyimak: Journal of Communication</i> , 5(1), 97. Available at: https://doi.org/10.31000/nyimak.v5i1.3218 . (Accessed 28 February 2024)
Information and channels for girls to access services for violence or abuse	Philippines (Girls at risk of violence and abuse), Vietnam (aimed at teachers, school managers and staff)	<p>UNICEF is supporting the enhancement of a nationwide network of child protection units (One Stop Centers) to facilitate better access to multi- disciplinary telemedicine services for children survivors of abuse in the context of the COVID19 pandemic. UNICEF also led a multi-agency campaign to increase public awareness on the link of the pandemic to the increased vulnerabilities of girls and boys to online sexual exploitation. Better access to multi- disciplinary telemedicine services for children survivors of abuse in the context of the COVID19 pandemic.</p> <p>UNICEF supports the development and rollout of the "Opening Up Better Schools" initiative. A major component of this initiative focuses on the prevention of School Related Gender Based</p>	Sims, K., Thuo, S. (2020). Girls' education programmes in the ASEAN region. K4D Helpdesk Report 902. Brighton, UK: Institute of Development Studies

Program	Country	Comment	Literature source
		Violence (SRGBV) when children return to their classrooms. A teacher's manual and online training have been developed, addressing stigma and SRGBV.	
THRIVE (Train Her to Promote Resilient, Inclusive Value Chains and Economic Empowerment)	Viet Nam	Grow Asia and Corteva Agriscience™ have partnered to progress the economic empowerment of women farmers and agripreneurs in Southeast Asia. The joint initiative – called THRIVE (Train Her to Promote Resilient, Inclusive Value Chains and Economic Empowerment) – has two goals. The first is to help strengthen farm management, digital and business skills among women farmers. This will enable them to grow their productivity, incomes and ultimately resilience. The second goal is to directly support women farmers and agripreneurs through networking events and mentorship opportunities.	https://www.growasia.org/post/thrive-launches-in-viet-nam-to-empower-women-in-agriculture

