HER DIGITAL SKILLS

TOWARDS A
GENDER
TRANSFORMATIVE
APPROACH

EQUALS
GLOBAL PARTNERSHIP

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This is a publication of the EQUALS Her Digital Skills initiative, within the framework of the EQUALS Global Partnership to Bridge the Gender Digital Divide.

Given that Gender Transformative Digital Skills Education is a constantly evolving process, this document is a living resource to be updated as new information becomes available.

Comments and further contributions can be directed to the EQUALS Hub: equals@itu.int

Abbreviations and Acronyms

AI	Artificial Intelligence
ALiGN	Advancing Learning and Innovation on Gender Norms
BCS	British Computer Society, The Chartered Institute for IT
CITAD	Centre for Information Technology and Development
DigComp	European Digital Competence Framework for Citizens
DSA	Digital Services Act
EIF	Enhanced Integrated Framework
EU	European Union
EY	Ernst & Young
GIZ	German Agency for International Cooperation
GSMA	Global System for Mobile Association
GTDSEF	Gender Transformative Digital Skills Education Framework
ICDL	International Certification of Digital Literacy
ICT	Information & communication technologies
IGWG	Interagency Gender Working Group
IRH	Institute for Reproductive Health at Georgetown University
ILO	International Labour Organization
ITU	International Telecommunication Union
LCANC	The Learning Collaborative to Advance Normative Change
LMIC	low- and middle-income countries
LSE	London School of Economics
OECD	Organisation for Economic Co-operation and Development
SBCC	Social and Behaviour Change Communication
STEM	Science, Technology, Engineering and Mathematics
ToC	Theory of Change
TFGBV	Technology-Facilitated Gender-Based Violence
UN	United Nations
UNCTAD	United Nations Conference for Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEVOC	UNESCO International Centre for Technical and Vocational Education and Training
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
W4	Women's WorldWide Web
WHO	World Health Organization

Executive Summary

This framework and practitioners' guide were developed by the EQUALS Her Digital Skills initiative, which was co-founded by the International Telecommunication Union (ITU), Ernst & Young (EY), GSMA and the Women's WorldWide Web (W4), within the framework of the **EQUALS Global Partnership Skills Coalition**. The Her Digital Skills initiative aims to design and provide access to free, gender-transformative digital skills training, capacity-building and mentoring opportunities for one million women and girls by 2026. This framework and guide will inform the work of Her Digital Skills, including its workshops, digital skills qualification programme ("Her Digital Skills Badges"), e-mentoring programme, and webinars focused on providing career advice and support.

Across the globe, women and girls are benefiting less from digital transformation than men and boys. The gender digital divide is not only pervasive but multifaceted. It ranges from substantial disparities in Internet access, mobile phone ownership and digital literacy to the under-representation of women and girls in science, technology, engineering and mathematics (STEM) fields, including Artificial Intelligence (AI). Yet despite concerted efforts by the global community, governments, civil society organisations and the private sector, the divide persists.

Large-scale surveys of digital access, ownership, skills, and use, especially in low- and middle-income countries (LMICs), identify income and education as the most powerful determinants of digital adoption. In other words, better off, better educated people are much more likely to benefit from digital transformation. However, these surveys do not explain why poverty and a lack of education disproportionately constrain women's and girls' participation in the digital world. Evidence suggests that discriminatory social and gender norms are the culprit.

Social norms are the informal, mostly unwritten, rules that define acceptable and appropriate actions within a given group or community, thus guiding human behaviour. They encompass what we do, what we think others do, and what we think others believe that we should do (UNICEF, 2021(a)). Gender norms, a subset of social norms, describe how we are expected to behave as a result of the way we or others identify our gender (ALiGN, n.d.(a)).

A decade of research in both LMICs and high-income countries shows that regressive social and gender norms play a critical role in perpetuating the gender digital divide, in all its forms. Designers of digital skills programmes, therefore, must address normative barriers. A 'gender transformative' approach to digital skills education – where programmes seek to advance gender equality and/or women's empowerment by changing harmful gender norms, roles and power relations – is urgently required.

Objectives

This theoretical framework and practitioners' guide have been developed by the [EQUALS Global Partnership](#)'s Skills Coalition to introduce gender transformative approaches to digital skills education. Such approaches need to be tested and mainstreamed.

The framework and guide build on a [2021 report](#) by Plan International et al., which argues that Gender Transformative Education removes barriers to education and promotes social changes. These include reducing gender-based violence and early marriage, increasing women's participation in the labour market, promoting gender equality, and supporting women's and girls' leadership in decision-making roles ([Ibid.](#)). The report maintains that Gender Transformative Education would not just benefit students in all their diversity, but also communities and economies: "Educating girls to the same level as boys could benefit developing countries to the tune of at least $112 billion a year. As well as this, advancing gender equality could contribute $12 trillion to global growth."

The EQUALS Global Partnership Skills Coalition has applied Plan International et al.'s definition of Gender Transformative Education to digital skills education, arriving at the following definition:

Gender Transformative Digital Skills Education seeks to transform gender stereotypes, attitudes, norms and unequal power relations to bridge the gender digital divide and foster gender equity and equality.

This framework and guide recommend gender transformative approaches to the design of digital skills education programmes inside and outside the classroom. **They take an inclusive, contextualised, competency-based approach to learning strategies, curricula and content.** And they recommend how different stakeholders can intervene in the wider ecosystem, which is critical for change.

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Founded in 2016, EQUALS is a global network of more than 100 international organisations, private companies, governments, academic institutions, nonprofits, and civil society organisations committed to promoting gender equality in the digital age.

> **"**
> Educating girls to the same level as boys could benefit developing countries to the tune of at least $112 billion a year. As well as this, advancing gender equality could contribute $12 trillion to global growth. **"**
>
> [Plan International et al., 2021](#)

Intended users

The framework and guide are a resource for stakeholders working to increase the digital skills of women and girls around the world, including the Her Digital Skills initiative.

The intended users of the framework consist of three broad stakeholder groups:

- **Practitioners** in governments, educational institutions, civil society organisations and the private sector
- **Policy-makers and those involved in advocacy work** at the state, national, regional and international levels
- **Other stakeholders in the wider ecosystem**, including employers, mass media institutions and social media platform providers.

The framework and guide are primarily for practitioners. However, mainstreaming Gender Transformative Digital Skills Education will require intervention at multiple levels, because social norms, behaviour and material realities (UN Women, 2023) are affected by a range of social, political and economic factors (LCANC, 2017) including:

- **Institutional factors**, such as economic and educational policies and legislation, including legislation against Technology-Facilitated Gender-Based Violence (TFGBV), and policies relating to how women's and girls' use of technology is portrayed by the mass media and in social media.
- **Resource factors**, such as the accessibility, quality and flexibility of educational and livelihood opportunities for women and girls, as well as the cost of devices and connectivity, and the availability of mobile networks and electricity.
- **Social networks**, such as powerful people at home and in the community whose opinions matter to individual learners, and who approve or disapprove of their use of digital technologies, and/or their involvement in STEM fields.
- **The individual**, such as their personal attitudes and normative beliefs, and their level of self-confidence and agency, including women's and girls' control over digital devices and connectivity.

All these factors must be addressed to transform the regressive social and gender norms that perpetuate the gender digital divide. To quote UN Women (2023): "different levers are required to change different social norms. No single 'magic bullet' approach exists."

Participants

This framework and guide seek to inform the design of Gender Transformative Digital Skills Education for all – irrespective of genders. Women and girls have been an under-served population for so long that it is critical to focus on their needs (Bill & Melinda Gates Foundation, n.d.(a)) to shift the gender dynamics that drive gaps in their digital competence, participation in digital spaces, and involvement in STEM fields. However, gender is relational and structural. Therefore, to reduce the gender digital divide, stakeholders must work with people across the gender spectrum[1] because targeting women and girls alone will not necessarily change relationships or structures (Edström et al., 2015). "When it comes to teaching and learning positive gender norms, if we leave boys behind, then the problem becomes greater." (Plan International et al., 2021)

> " When it comes to teaching and learning positive gender norms, if we leave boys behind, then the problem becomes greater.
> Plan International et al., 2021

This framework and guide can also inform initiatives to build the gender transformative educational capabilities of educators who deliver digital skills training.

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1 We are aware of the imperative of responding to the diverse needs of sexual identities, orientations and genders.

How to use this framework and guide

This document aims to support the design of gender transformative digital skills programmes:

The framework concludes with a call to action for policy-makers, investors and practitioners, including in the private sector, and a glossary of gender and digital terms.

Introduction

Key Messages:

- It is estimated that 90% of future jobs will require digital skills (ITU, 2018(a)), yet 2.6 billion people are not online (ITU, n.d(a)).

- Mobile is the primary – sometimes the only – way most people in LMICs access the Internet, particularly women and those living in rural areas (ITU, 2022).

- Almost two-thirds of the 900 million women not using mobile Internet in LMICs live in South Asia and Sub-Saharan Africa, where mobile gender gaps are widest (GSMA, 2023(a)).

- Half of the 826 million students kept out of the classroom by the COVID-19 pandemic did not have access to a household computer and 43% (706 million) had no internet at home. In sub-Saharan Africa, 89% of learners did not have access to household computers and 82% lack internet access (UNESCO, 2023).

- In low-income countries, 90% of adolescent girls and young women aged 15–24 are offline (UNICEF, 2023).

- Women are still underrepresented, underpaid, and face discrimination in the tech industry (White, 2023), including in Artificial Intelligence (AI) fields (World Economic Forum, 2022(a)).

- Women account for 29.4% of entry-level workers in the tech workforce. Yet for high-level leadership roles such as Vice President and senior executives, representation drops to 17.8% and 12.4%, respectively (Ibid.).

- During the last 10 years, studies have repeatedly shown that harmful social and gender norms contribute significantly to the gender digital divide.

- A gender transformative approach, which seeks to change harmful gender norms, roles and power dynamics, is urgently required.

Why digital skills matter

"Information and communication technologies (ICTs) can help accelerate progress towards every single one of the 17 United Nations Sustainable Development Goals (SDGs)" (ITU, n.d.(c))

In today's world, digital skills are becoming indispensable for social, political and economic participation. In 2018, the International Telecommunication Union (ITU) estimated that 90 per cent of future jobs – globally – would require ICT skills (ITU, 2018(a)).

> Information and communication technologies (ICTs) can help accelerate progress towards every single one of the 17 United Nations Sustainable Development Goals (SDGs).
>
> ITU, n.d.(c)

In 2023, in the United States, an estimated 92 per cent of all jobs, in almost every occupation, already required digital skills, "dispelling misconceptions that demand exists primarily in the tech sector" (National Skills Coalition, 2023).

Yet, according to the ITU (ITU, n.d.(a)), an estimated 2.6 billion people are not online. Ninety-four per cent of the world's 'unconnected' population live in LMICs, and are more likely to be **poor, living in rural areas, and women** (GSMA, 2022(a)). Digital skills can be a powerful catalyst for women's and girls' economic, social and political empowerment and gender equality (SDG 5), and accelerate progress towards all the SDGs (ITU, n.d.(c)). But this will not happen without equitable, Gender Transformative Digital Skills Education – both inside and outside classrooms.

As nations strive to mitigate climate change by transitioning towards circular economies and integrating digital green strategies, the demand for a workforce with technical skills is escalating. However, a significant number of these countries are grappling with expensive skill supply-demand mismatches. Therefore, it becomes crucial to ensure that girls and women are not only equipped with the necessary skills for these burgeoning job opportunities, but also that they are active and equal contributors in propelling this green digital transition.

The gender digital divide

The gender digital divide is pervasive and multifaceted. Its characteristics may differ depending on a woman's or girl's background and context, but it is evident in most walks of life. The ITU identifies four different categories of the gender digital divide as outlined below:

The gap in Internet use

On a global scale, 69 per cent of men were using the Internet in 2022, as compared to 63 per cent of women, according to the ITU (n.d.(d)). This means there were 259 million more men than women using the Internet (Ibid.). According to the GSMA Mobile Gender Gap Report 2023, despite an increase in the total number of Internet users, the rate of women's Internet adoption across LMICs has slowed for the second consecutive year. Geographically, of the **900 million women who are still not using mobile Internet in LMICs, almost two-thirds live in South Asia and sub-Saharan Africa**, where mobile gender gaps are widest (GSMA, 2023(a)). According to UNICEF, in low-income countries, a staggering **90 per cent of adolescent girls and young women aged 15–24 were offline in 2023**, compared to 78 per cent of adolescent boys and young men of the same age. Among regions, the largest gap is observed in South Asia (UNICEF, 2023).

The gap in digital skills and use of digital tools

Women and girls have lower levels of the knowledge, skills and attitudes required to be digitally competent in domains including digital communication and collaboration, digital content creation, information and data literacy, digital safety and security, and hardware and software essentials. This contributes to overall lower levels of digital literacy. For example, women worldwide are less likely than men to know how to operate smartphones, navigate the Internet, use social media, and understand how to safeguard information in digital media (UNESCO, 2021). This lack of digital skills "is apparent from the lowest skill proficiency levels, such as using applications on mobile phones to the advanced skills such as coding computer software." (Ibid.) Moreover, women and girls are often less confident in performing new tasks on mobile phones compared to men and boys, and are also less likely to know how to learn new tasks. This has important implications for designing Gender Transformative Digital Skills Education programmes (BBC Media Action, 2021).
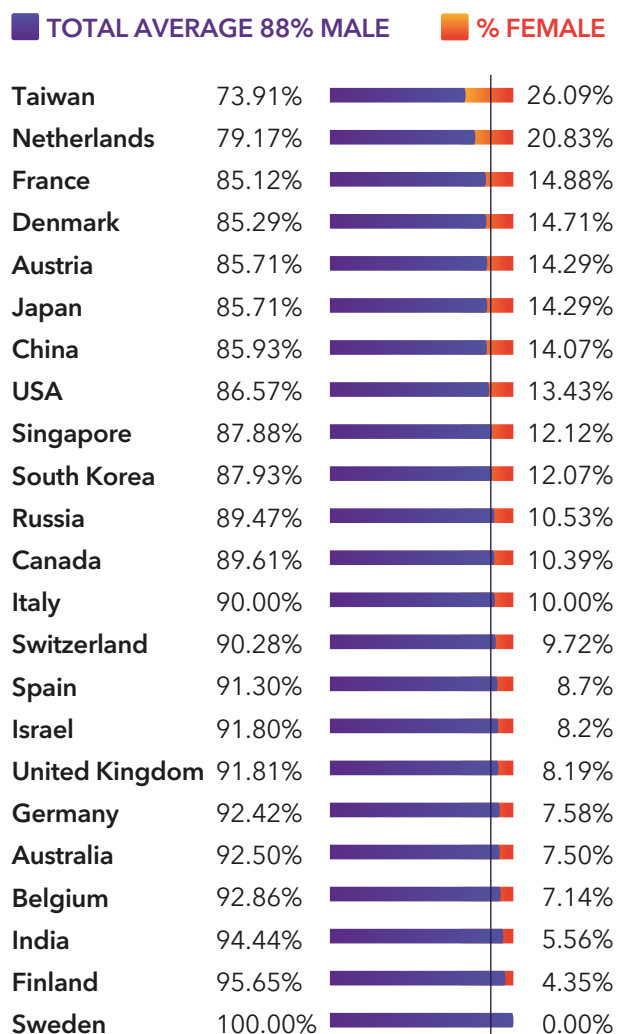
The gap in participation in STEM fields

Women are still "underrepresented, underpaid, and often discriminated against in the tech industry," (White, 2023) and are "being left behind at every step of the Artificial Intelligence (AI) life cycle" (World Economic Forum, 2022(a)).

A 2023 study by the Alan Turing Institute found "persistent disparities in jobs, qualifications, seniority, industry, attrition and even self-confidence" in the fields of Machine Learning and Artificial Intelligence" (Young et al., 2023) and "persistently high turnover (changing job roles) and attrition rates (leaving the industry altogether) among women as compared to men working in data science and AI in the technology industry." (Ibid.)

According to the World Economic Forum (2022(a)), the number of male graduates in ICT in 2022 was **400 per cent higher** than women graduates (8.2 per cent versus 1.7 per cent). According to Stanford University's 2023 Artificial Intelligence (AI) Index Report: "**New AI PhDs are still overwhelmingly male**:"[2] (Stanford University, 2023). That report also notes that the proportion of new female staff in Computer Science (CS), Computer Engineering (CE), and Information university faculties has increased from 24.9 per cent to 30.2 per cent, but adds "Still, most CS, CE, and Information faculty in North American universities are male." (Ibid.). In 2017, WIRED worked with Montreal startup Element AI to estimate the diversity of leading machine learning researchers, and found that only 12 per cent were women (Simonite, 2018); see **Figure 1** for a breakdown by country).[3]

The gender imbalance in AI research across 23 countries

	TOTAL AVERAGE 88% MALE		% FEMALE
Taiwan	73.91%		26.09%
Netherlands	79.17%		20.83%
France	85.12%		14.88%
Denmark	85.29%		14.71%
Austria	85.71%		14.29%
Japan	85.71%		14.29%
China	85.93%		14.07%
USA	86.57%		13.43%
Singapore	87.88%		12.12%
South Korea	87.93%		12.07%
Russia	89.47%		10.53%
Canada	89.61%		10.39%
Italy	90.00%		10.00%
Switzerland	90.28%		9.72%
Spain	91.30%		8.7%
Israel	91.80%		8.2%
United Kingdom	91.81%		8.19%
Germany	92.42%		7.58%
Australia	92.50%		7.50%
Belgium	92.86%		7.14%
India	94.44%		5.56%
Finland	95.65%		4.35%
Sweden	100.00%		0.00%

Source: Element AI (Mantha and Hudson, 2018)

2 In 2021, 78.7% of new AI PhDs were male, and only 21.3% were female, just a 3.2 percentage point increase from 2011.
3 Related research found that on average only 12% of authors who had contributed work to the leading three machine learning conferences (neural information processing systems, international conference on machine learning and international conference on learning representations) in 2017 were women (Young et al., 2023).

The gap in tech sector leadership and entrepreneurship

The tech workforce continues to be dominated by men, particularly in technical and leadership roles: "Women currently account for 29.4% of entry-level workers; yet for high-level leadership roles such as VP [Vice President] and C-suite [senior company executives], representation drops to 17.8% and 12.4%, respectively." (World Economic Forum, 2023) In 2019, just 2 per cent of venture capital was directed towards start-ups founded by women (World Economic Forum, 2022(a)).

Causes of the gender digital divide

Material barriers

In LMICs, research has identified several factors that determine digital access, ownership, skills and use. These include the socio-political context, market cost of devices and data, availability of electricity and mobile networks, the socio-demographic profile of a household, family structure, and an individual's socio-demographic profile and attributes (Scott et al., 2021). Of these factors, wealth and education have been identified as the most powerful,[4] with the GSMA reporting in 2023 that affordability – primarily of handsets, but also of data – remained the top barrier to mobile phone ownership for both women and men. Illiteracy and lack of digital skills were the second most reported barriers (GSMA, 2023(a)). However, such material barriers do not adequately explain why poverty and lack of education seem to disproportionately constrain women's and girls' digital skills development (BBC Media Action, 2021).

Normative barriers

"Without tackling biased gender social norms, we will not achieve gender equality, as reflected in the Sustainable Development Goals. Biased gender social norms – the undervaluation of women's capabilities and rights in society – constrain women's choices and opportunities by regulating behaviour." (Gender Social Norms Index UNDP, 2023)

For the last 10 years, studies have repeatedly found that social and gender norms play a significant role in perpetuating the gender digital divide (To name just a few: Antonio and Tuffley, 2014; UNCTAD, 2014; UNESCO, 2017; European Parliament, 2018; Barboni et al., 2018; Scott et al., 2021; GSMA, 2020; UNESCO, 2020; World Bank, 2020(a); World Bank, 2020(b); UNICEF, 2023).

For example, in 2020, the GSMA found that even when inequalities in literacy, education, income or employment were controlled for, women in LMICs were still 5 percentage points less likely than men to own a mobile phone, 6 percentage points less likely to use mobile Internet, and 4 percentage points less likely to own a smartphone (GSMA, 2020). The GSMA concluded that "this 'gender effect' could be attributed to hard-to-measure mechanisms such as discrimination and social norms." (Ibid.)

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4 For example, a Johns Hopkins survey of 3,000 husbands of pregnant women with daytime mobile phone access in Madhya Pradesh, India, in 2019–2020 found that only 7% of the poorest and least educated husbands owned smartphones and only 3% had ever used WhatsApp (Scott et al., 2021).

A research study led by Johns Hopkins in India in 2019 found that patriarchal gender norms of domesticity, subservience, purity, and family relationship maintenance were driving women's low financial autonomy and unequal access to employment outside the home (Scott et al., 2021). The study found that consequently: "families view uninterrupted male access to a functional phone as essential, while women's phone use can occur sporadically on lower quality devices." (Ibid.) In 2018, a research study by the Harvard Kennedy School in India found that a woman's level of empowerment was as important a determinant of mobile use as her income, and that both normative and economic barriers were important drivers of the mobile gender gap.[5]

According to the World Bank, gender biases and stereotypes also influence gender gaps in STEM fields, especially in classrooms and educational materials in many countries: "Between 8 per cent and 20 per cent of mathematics teachers in Latin America reported that they believed mathematics is easier for boys. Such biases have been shown to result in lower self-confidence in STEM among girls and women." (World Bank, 2020(b))

Figure 2

STEM jobs are associated with more discrimination to the disadvantage of women

Source: Funk and Parker 2018, as depicted in the Equality Equation, World Bank, 2020

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5 "Women's mobile phone usage challenges traditional gender norms it can stir questions about girls' "purity" prior to marriage and worries that women will be subject to digital harassment as reported in the media. After marriage, norms dictate that a woman's primary responsibility is to take care of her family and household. This home-centric role leaves women with few opportunities to use the phone for socially acceptable, "productive" purposes." (Barboni et al., 2018)

Normative barriers are also prevalent in high-income countries. According to the World Bank (Ibid.), women in STEM jobs in the United States are "much more likely than men to report workplace discrimination by sex" (50 per cent and 19 per cent, respectively) (**Figure 2**). The 2020 State of Women in Tech and Startups survey found that 70 per cent of women working in tech feel they have been treated differently at work owing to their gender, while only 11 per cent of men in tech feel this way (EQUALS Global Partnership Skills Coalition, 2020).

According to the Alan Turing Institute, high attrition and turnover rates from engineering and technology firms among women and minorities are due to "**unwelcoming environments, workplace discrimination and microaggressions, gendered domestic commitments and cultural associations about who 'fits' in technology fields**." (Young et al., 2023) The World Bank concurs that: "In male-dominated STEM environments, biases in the workplace can send the message that women do not belong." (World Bank, 2020(b))

BOX 1: How TFGBV contributes to the gender digital divide

The United Nations Population Fund (UNFPA) defines technology-facilitated gender-based violence, or TFGBV, as "an act of violence perpetrated by one or more individuals that is committed, assisted, aggravated and amplified in part or fully by the use of information and communication technologies or digital media, against a person on the basis of their gender" (UNFPA, n.d.).

A 2021 study of women in 51 countries by the Economist Intelligence Unit found that 38 per cent of those with Internet access have personally experienced online gender-based violence, 63 per cent know someone who has been subjected to it and 85 per cent have witnessed online violence being perpetrated against another woman (Government of Canada, n.d.). A 2020 global study by Plan International in 32 countries found 58 per cent of adolescent girls had experienced harassment on social media platforms (Plan International, 2020). Women in public life, including journalists, activists and politicians, are especially likely to receive misogynistic and sexualised online abuse (European Parliament, 2021). Women who face multiple forms of discrimination, including women with disabilities, Black and indigenous women and other women of colour, migrant women and LGBTIQ+ people, are all disproportionately affected (UN Women, n.d.(a)).

TFGBV can have devastating consequences for women's and girls' safety, health and rights (IGWG, 2023). It has also proved a powerful deterrent to women and girls' use of the Internet. According to the ITU: "Safety and harassment fears and a generalised perception of threats pertaining to the Internet, are barriers that not only inhibit women from making the most of their experiences online, but can also deter them from even wanting to access the Internet." (ITU, 2020(a)) Research indicates that 28 per cent of women who had suffered ICT-based violence intentionally reduced their presence online (Pasricha, 2016).

Fears of TFGBV lead to families restricting women's and girls' access to the Internet (Centre for Information Technology and Development, 2017). According to the ITU (2020(a)): "The perception of women being more vulnerable to online threats can also result in women's Internet access being heavily policed by gatekeepers or entirely denied."

How social and gender norms limit the impact of digital skills programmes

Despite substantial evidence and consensus in the global community that social and gender norms constrain women's and girls' access to and use of digital technologies and participation in STEM fields, few digital skills programmes have addressed normative barriers (BBC Media Action, 2021). The following are examples of these gaps in programme design.

Interventions do not engage powerful people in women's and girls' social networks

Many women who are not online in LMICs believe that the Internet is not relevant to them. Many women and girls around the world question their aptitude for STEM. Such attitudes are often derived from powerful people in women's and girls' social networks, and have been internalised. These people range from educators who believe girls are not as good as boys at STEM subjects, and HR departments that discriminate against women applicants for technology jobs, to husbands who believe that their wives do not need smartphones, and parents who believe that, for girls, the risk of using the Internet outweighs the benefits (Ibid.). Yet very few digital skills education programmes engage with these powerful people.

The importance of intervening at multiple levels is not understood

Most digital skills programmes target women and girls as individual learners. Although they may offer quality digital learning content, they do not recognise the need to intervene at multiple levels to address material and normative barriers (See 'Determinants of Change'). To quote a working paper published by UNICEF / UCSD Center on Global Justice (2014): "If a harmful practice is social in nature, programs that concentrate on education of the individual, or increase in the availability of alternatives, or provide external incentives, may not be enough. In addition, a program may need to support the clarification, and sometimes the revision, of social expectations of people throughout the entire community of interest."

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>
> UNICEF / UCSD Center on Global Justice (2014)

The gap in access and use is not addressed

Many programmes that provide quality digital training to women and girls in countries where significant gender gaps in access exist, fail to consider how those learners will practise and consolidate their skills at home. Even if most men in some contexts own a smartphone or other device, regressive normative beliefs about women's and girls' use of devices and the Internet may mean that their wives, daughters and sisters are not allowed to use them. For example, studies have shown that among households that own computers, "women are significantly less likely to use a computer at home, which suggests that living in a household where a computer is available does not necessarily mean that women will use it; access does not translate to use in many cases." (Antonio and Tuffley, 2014) If women and girls are not allowed to use digital devices and connectivity at home, they will not have opportunities for hands-on exploration, and their digital skills are unlikely to increase (BBC Media Action, 2021).

> " Women are significantly less likely to use a computer at home, which suggests that living in a household where a computer is available does not necessarily mean that women will use it; access does not translate to use in many cases.
>
> (Antonio and Tuffley, 2014)

BOX 2: Does distributing free devices solve the access problem?

Some interventions have attempted to solve the access challenge by distributing free mobile phones to women, or launching inexpensive SIM plans specifically for women. The expectation was that this would result in greater digital use and skill among women. For instance, the Indian state of Chhattisgarh distributed free smartphones to women. Its goal was to have "a smartphone for one woman in every household." (CGAP, 2021)

Although the programme contributed to greater acceptability of young women using mobile phones, evidence suggests that overall usage of the phones was limited. "As a Harvard Evidence for Policy Design study notes, efforts to give mobile phones to women without considering the prevailing norms may have negative consequences at the household level or be rendered obsolete if other household members take the phones." (Ibid.)

Training is provided in male-dominated centres in public spaces

Many digital skills programmes provide training in public male-dominated centres, even in countries where gender norms restrict women's and girls' freedom of movement, access to public spaces and interaction with men outside the family (BBC Media Action, 2021). These programmes have not recognised that women are often reluctant, or not allowed, to visit "cyber cafes," public Internet centres, or community training centres that are often owned, or predominantly visited, by men (Chetty et al., 2018). The GSMA has also found evidence from research conducted in Rwanda that, without a network of women agents in Mobile Network Operator (MNO) top-up shops, women were often left out as they felt uncomfortable asking male agents or kiosk vendors questions. When MNOs sought to increase the number of women agents providing digital skills training, they reached a greater number of women (GSMA, 2017(a)).

There is no sustained engagement

Many digital skills programmes rely on one-off training, or training over a limited period. However, changing social and gender norms takes time, and requires sustained engagement and patient investment. As UN Women notes in its working paper on social and gender norm change, "The literature also points to increased effectiveness when complementary interventions are deployed simultaneously and over a sustained period." (UN Women, 2023)

> " The literature also points to increased effectiveness when complementary interventions are deployed simultaneously and over a sustained period. "
>
> (UN Women, 2023)

It is clear from the gaps discussed above that **if digital skills programmes do not address normative barriers, they will under-deliver.** A gender transformative approach is required to close the gender digital divide and promote gender equality.

PART I

THEORETICAL FRAMEWORK

(1) **Principles**

This section introduces the four guiding principles of the framework: that digital skills education should be gender transformative, inclusive, contextualised and competency-based.

Key Messages:

Digital skills education programmes must be:

- **Gender transformative**, to change the discriminatory social and gender norms and power dynamics that perpetuate the gender digital divide.

- **Inclusive**, so that digital skills programmes do not exclude disadvantaged populations, making existing inequalities worse.

- **Contextualised**, ensuring that learners' social, political and economic contexts are considered in programme design.

- **Competency-based,** to equip learners with the flexible, future-ready digital knowledge, skills and attitudes that they need for confident, critical, safe, and equal participation in a rapidly changing digital world.

1st Principle: Gender transformative

Gender Transformative Digital Skills Education is required to transform the gender stereotypes, attitudes, norms and unequal power relations that create the gender digital divide, to foster gender equity and equality.

A gender transformative approach

The British Columbia Centre of Excellence for Women's Health has identified a continuum of interventions ranging from gender unequal to gender transformative (CEWH, n.d.). We have applied this to digital skills education in **Figure 3**.

Figure 3

A Continuum of approaches:
From gender unequal to gender transformative

APPROACHES	Gender unequal	Gender blind	Gender sensitive	Gender specific	Gender transformative
FEATURES	Perpetuates gender inequalities	Ignores gender norms	Acknowledges but does not address gender inequalities	Acknowledges gender norms and considers women´s and men´s specific needs	Addresses the causes of gender-based digital inequalities and works to transform harmful gender roles, norms and relations

GENDER INEQUITY → EXPLOIT   ACCOMMODATE   TRANSFORM → GENDER EQUITY

Source: Adapted from "A Continuum of Approaches to Action on Gender and Health" (CEWH, n.d.)

Programmes that seek to advance gender equality and/or women's empowerment by changing harmful gender norms, roles and power relations are described as 'gender transformative' (UNFPA, 2023). It is important to note that **gender transformation is a 'relative concept' that seeks to shift gender roles and relations closer to gender equity in any given context**: "Since gender equity is never fully attained, gender transformation is an ongoing process and what is transformative in one context may not be transformative in another." (CEWH, n.d.)

BOX 3: What are social and gender norms?

Social norms are the implicit and informal rules that most people accept and follow. Gender norms are a subset of social norms:

"They describe how we are expected to behave as a result of the way we or others identify our gender. In most contexts, gender norms are framed in binary terms (female and male) and erase non-binary or gender-fluid identities." (ALiGN, n.d.(a))

The Learning Collaborative to Advance Normative Change (LCANC) provides a useful summary of social norm terms and definitions, which are used throughout this framework and guide (**Figure 4**) (LCANC, 2019(a)).

Figure 4

Summary of Social Norms Terms and Definitions

PRIMARILY INDIVIDUAL OR SOCIALLY DRIVEN	TERM		DEFINITION	EXAMPLE
Individually driven	Attitude		What I believe is good or bad and what ought to be	I value my education and want to stay in school
	Knowledge		What I believe is true	According to the law, I cannot get married until age 18
Socially driven	Social Norms	Descriptive (also known as empirical expectations)	What I believe others do	Most girls my age get married before finishing school
		Injunctive (also known as normative expectations)	What I believe others will approve/disapprove of me doing	My family expects me to wait to marry until I graduate
	Reference Group		People whose opinions matter to me (for a particular behavior or context)	My sisters all married before they finished secondary school and tell me I should also
			People who reward or punish me for my behavior	My mother would be disappointed in me if I leave school to marry
Individually and socially driven	Behavior		What I do	I am in love and am planning to marry now, although I am 15

Source: Learning Collaborative to Advance Normative Change, 2019

2nd Principle: Inclusive

Gender Transformative Digital Skills Education needs to be inclusive, or risks making existing inequalities worse (Milanovic et al., 2023).

It is key that designers of digital skills programmes intentionally consider how different identities and inequalities intersect with, and compound or mitigate, gender inequalities. Practitioners need to investigate whether and how the gender digital divide in a specific location intersects with additional inequalities, for example, those related to class, income, age, race, ethnicity, caste, sexual orientation, gender identity and expression, abilities, culture, religion, and urban or rural setting, and how these inequalities impact programme design.

There is **no 'one-size-fits-all' digital skills programme.** Learning opportunities need to be provided to those who are in school and out of school, and learning materials need to be made available using appropriate platforms and delivery channels, and accessible content formats. In places where only a minority of better educated, wealthier, urban households own computers or laptops,[6] a mobile-first approach to digital skills training, such as that taken by the GSMA's Mobile Internet Skills Training Toolkit (MISTT) (GSMA, 2021(a)), might be more relevant for the majority of adult women learning outside the classroom. And if the majority have never used the Internet, or do not have regular access to the Internet, then online learning must be complemented by face-to-face training.

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6 In 2019, around 23% of households in urban India had access to computers for distance learning, as compared to 4% of households in rural India. Overall, around 11% of households in India had access to computers during the same time period (Statista, 2023).

BOX 4: Inclusive STEM

Inclusive STEM education is a global initiative aimed at ensuring that STEM learning opportunities are accessible and empowering for all learners, irrespective of their gender, race, socio-economic background, or geographical location. It emphasises creating equitable educational environments that enable every student to reach their full potential. This approach not only enhances diversity in STEM fields but also fosters innovation by incorporating a wide range of perspectives and ideas (Milanovic et al., 2023)

3rd Principle: Contextualised

Gender Transformative Digital Skills Education must consider learners' different contexts.

If designers of digital skills programmes are to meet the specific needs of women and girls from different backgrounds, they need to recognise that learners are situated in different contexts. Programmatic strategies need to take into account the specific historical, political, religious, social, and economic factors that influence social and gender norms and power dynamics. This understanding is critical to the design of effective Gender Transformative Digital Skills Education programmes.

▶

4th Principle: Competency-based

Gender Transformative Digital Skills Education should be competency-based.

Competency-based learning or education emphasises the ability to integrate and apply knowledge, skills, and attitudes in real-world situations. This approach "places skill mastery and practical application at its core, equipping learners with the ability to excel in their chosen fields and adapt to the ever-changing demands of the real world." (Neelakandan, 2023) Competency-based education is underpinned by experiential learning, which is narrowly defined as "learning through reflection on doing" (Institute for Experiential Learning, n.d.). It is a hands-on approach that moves away from simply having the teacher at the front of the room imparting and transferring their knowledge to students (Ibid.).

> "Competency-based education places skill mastery and practical application at its core, equipping learners with the ability to excel in their chosen fields and adapt to the ever-changing demands of the real world.
>
> (Neelakandan, 2023)

▶

BOX 5: What is the difference between digital literacy and digital competence?

In 2006, the European Parliament and Council of the European Union recommended eight key competences for lifelong learning; one of these was '**digital competence**' (European Parliament and Council of the European Union, 2006; Mattar et al., 2022) The European Commission defines digital competence as: "The confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society." (EC JRC, 2013)

"

The European Commission defines digital competence as: "The confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society."

(EC JRC, 2013)

The terms 'digital literacy' and 'digital competence' are often used interchangeably. This is not surprising because the word 'competence' has long been associated with 'literacy,' which traditionally refers to the ability to read and write (EC JRC, 2011). In the past, 'ICT Literacy' and 'Computer Literacy' were narrowly understood as the ability to use computers and related software (Ibid.), but these narrow definitions have since been "criticised for being tool-oriented and reducing teaching to trivial software instruction" (Ibid.).

Definitions of digital literacy have evolved (EC JRC, 2012). The ITU, in its Digital Skills Assessment Guidebook, notes that "digital skills include not only technical skills but also cognitive skills as well as non-cognitive soft skills such as interpersonal skills and communication skills" (2020(b)). UNESCO now defines digital literacy as "the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship" (UNESCO, n.d.(a)) which is very similar to the European Commission's definition of digital competence.

The European Commission's Joint Research Centre (JRC) suggests that literacy should be viewed as a continuum, with basic abilities as the first step moving through increasing levels of competence in using literacy for tasks, learning and creating (EC JRC, 2011). **Digital competence can therefore be understood as a structured approach to developing and assessing the digital literacy of a specific target group** (Mattar et al., 2022). **In other words, by measuring an individual's proficiency in different digital competence domains, their level of digital literacy can be identified.**[7]

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7 For example, the Organisation for Economic Co-operation and Development (OECD) suggests that one model for understanding digital literacy is the European Digital Competence Framework (DigComp 2.0), which looks at five areas of digital competencies.

Digital competence frameworks

Many organisations and international agencies have **developed digital competence frameworks to guide the design and evaluation of curricula, syllabi and learning content** for students, teachers and institutions (ITU, 2018(b)). These frameworks "provide a means of categorizing and organizing the complexity and range of digital skill sets, create a common language, and sometimes prescribe proficiency levels or learning outcomes" (ITU, 2020(b)).

BOX 6: Digital competence domains

Systematic reviews of more than a hundred frameworks have identified the following common digital competence areas or 'domains'.

To be able to use digital technologies to:

- communicate and collaborate
- find, evaluate, and manage digital information and data
- create and edit digital content – including computer code
- protect one's privacy and data and safeguard against digital risks
- acquire technical skills, including hardware and software essentials
- solve problems, as a cross-cutting digital competence

Digital competence frameworks can broadly be categorised as either public sector frameworks or commercial frameworks.[8]

- **Public sector frameworks:**

  The **Digital Competence Framework for Citizens (DigComp)**, first published by the European Commission (EC) Joint Research Centre (JRC) in 2013, is the most significant public sector framework (EC JRC, 2013). The latest version, published in 2022 (DigComp 2.2, see **Figure 5**), provides examples of the knowledge, skills and attitudes that help citizens engage confidently, critically and safely with digital technologies, including with systems driven by AI (EC JRC, 2022(a)). Developed for and used mostly by Member States of the European Union (EU), DigComp has been used to help develop strategy, education programmes and assessment tools in over 20 countries (ITU, 2020(b)). For example, it is highlighted in the ITU's Digital Skills Toolkit (ITU, 2018(b)) and is the basis of UNESCO's **Digital Literacy Global Framework (DLGF)** (UNESCO Institute for Statistics, 2018).

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8 A digital competence framework is understood here, in a broad sense, as a structured conceptualization of intertwined competences and sub-competences aiming to develop and assess the digital literacy of a specific target group.

Figure 5

The DigComp 2.2 framework

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

COMMUNICATION AND COLLABORATION

2.1. Interacting through digital technologies
2.2. Sharing information and content 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

DIGITAL CONTENT CREATION

3.1. Developing digital content
3.2. Integrating and re-elaborating digital content
3.3. Copyright and licences
3.4. Programming

SAFETY

4.1. Protecting devices
4.2. Protecting personal data and privacy
4.3. Protecting health and well-being
4.4. Protecting the environment

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

Source: The DigComp 2.2 framework (EC JRC, 2022 (a))

UNESCO developed the **DLGF** to make DigComp more applicable to LMICs (ITU, 2020(b)). The goal of the DLGF was to create a framework to serve as the foundation for indicator 4.4.2 of UN SDG 4: "Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills" (UNESCO Institute for Statistics, 2018). The development of the framework included a technical review of more than 40 digital literacy frameworks from around the world, which were then mapped against DigComp. After the review, UNESCO concluded DigComp needed to include two additional competence domains: "career-related competences" and "devices and software operations" (ITU, 2020(b)). Device and software operations, particularly relating to mobile devices and software applications, is an important addition for the majority of women and girls in many LMICs, who do not have access to computers.

- **Commercial frameworks:**

  Most commercial frameworks consist of curricula, but map closely with the digital competencies identified above. Three commercial sets of curricula have been widely adopted: the International Certification of Digital Literacy (ICDL), adopted in 31 countries (BCS, n.d.); the Certiport Internet and Computing Core Certification (IC3) (Certiport, n.d.), adopted in 13 countries; and the Microsoft Digital Literacy Standard Curriculum (Microsoft, n.d.), adopted in 11 countries (ICDL, n.d.(a)). According to ICDL, UNESCO has described its curricula as "an exemplary implementation of the DigComp framework". (ICDL, n.d.(b)). ICDL also notes that UNICEF is considering using the DigComp framework to develop its own digital literacy strategy for children and intends to use ICDL curricula to develop a global digital competence framework for children (Ibid.).

To support better understanding of digital competence frameworks, and the specific digital competencies that they incorporate, we have compared four key digital competence frameworks in Annex 1.

Although the DigComp 2.2 framework covers most of the digital competencies women and girls around the world need for equal and equitable participation in the digital world, **we believe it could be further enhanced using a gender lens.**

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② Determinants of change

This section highlights factors that influence gender and social norms and power dynamics, underscoring why intervention is required at multiple levels to widen and deepen the impact of digital skills education programmes.

Key Messages:

- The factors that influence changes in norms and power dynamics must be understood in order to design impactful Gender Transformative Digital Skills Education programmes.

- Gender specialists have identified that institutional, resource, social and individual factors influence social and gender norms and power dynamics.

- Researchers have identified that contextual, household and individual factors, and social and gender norms, influence women's access to and use of digital technologies.

- UNESCO has identified that multiple factors influence learners' participation and achievement in STEM education at the level of society, schools, family, peers and the individual.

- All of these frameworks indicate the need to intervene at multiple levels to close the gender digital divide.

2.1 Socio-ecological frameworks

Several frameworks identify factors that influence norm change (LCANC, 2017), women's use of mobile phones (Scott et al., 2021), and women's and girls' participation in STEM education (UNESCO, 2017). All are socio-ecological frameworks, which bridge several fields of theory and research. They encourage practitioners and researchers to take an integrative, multilevel and multidimensional approach to understanding relationships between people and their environments.

In 2017, the LCANC developed an integrated, socio-ecological framework for normative influence and change (LCANC, 2017). It identifies the following factors that influence social and gender norms and power dynamics:

- **Institutional factors:** for example, policies and laws, the educational system, government structures, economic policies and religious institutions.
- **Resource factors:** for example, educational and livelihood opportunities, services and infrastructure.
- **Social factors:** for example, social and peer networks, family structure, social capital and support and positive deviants.
- **Individual factors:** for example, an individual's socio-demographic characteristics, knowledge, attitudes, skill, self-efficacy, aspirations and values.

In 2019, a team of researchers and digital specialists led by John Hopkins University developed a conceptual framework that presents determinants of women's mobile phone use in India (Scott et al., 2021). These include contextual factors, individual and household factors, and social and gender norms. The framework suggests that "addressing these determinants is vital to a shift from re-entrenching unequal gender relations to transforming them through digital technology" (Ibid.).

Two years earlier, UNESCO applied similar thinking to STEM education in 'Cracking the Code' (UNESCO, 2017), arguing that there is no single factor that influences girls' and women's participation, achievement and progression in STEM education. **UNESCO identifies influential factors at the level of the learner, family and peers, school and society,** including social norms in society, parental beliefs and expectations, peer relationships and an individual learner's level of self-efficacy. It recommends intervening at multiple levels to accelerate change.

2.2 Spheres of influence: Enhancing UNESCO's 'Cracking the Code' framework

The EQUALS Global Partnership Skills Coalition has built on the conceptual frameworks described above, enhancing UNESCO's Cracking the Code framework to highlight in **Figure 6** multiple factors that could constrain or accelerate increases in women's and girls' digital competence.

Figure 6

Spheres of Influence: Factors that influence the gender digital divide

Source: Chamberlain, S., EQUALS, Global Partnership Skills Coalition, 2023

Key factors at the institutional and resources levels

As depicted in **Figure 6**, multiple factors at the institutional and resources levels influence social and gender norms, roles and power dynamics, and the gender digital divide. These include:

- **Women's labour force participation**

  The global labour force participation rate for women is just over 50 per cent compared to 80 per cent for men (Kamberidou and Pascall, 2020). On average, women in LMICs are more likely to be unemployed, have fewer employment opportunities, and to work in the informal sector (Amber and Chichaibelu, 2023). In South Asia, the Middle East and North Africa, no more than a quarter of women (aged 15–64) participate in the labour market (World Bank, 2022(a)). According to the 2022 Global Gender Gap Report (World Economic Forum, 2022(b)), it will take 151 years to close economic gender gaps. **There is a negative, cyclical relationship between women's low labour force participation and the gender digital divide.**

  Studies repeatedly argue that women's economic empowerment is necessary to achieve gender equality in digital use (Kamberidou and Pascall, 2020). If more women were paid for work, the value of developing their digital skills would be greater; both in their eyes, and in the eyes of low-income families hesitant of investing scarce resources in devices and data for women and girls (BBC Media Action, 2021). Research indicates that, whether Internet access is available or not, women are less likely to use ICTs if they perceive the benefits of doing so to be low (Antonio and Tuffley, 2014). Research has identified using digital technologies for economic purposes as a critical motivator for women's digital adoption (GSMA, 2023(b)), not least because of their potential to increase women's income. This increases their ability to afford technology and, in turn, improves their ability to access better paid work (Antonio and Tuffley, 2014).

- **Education of women and girls**

  Education has been identified as one of the most important drivers of women's and girls' use of technology. Yet, despite a steady rise in literacy rates over the past 50 years, there are still 773 million illiterate adults around the world, most of whom are women (UNESCO, n.d.(b)). In sub-Saharan Africa in 2022, for example, more than a quarter of young women were illiterate (UNESCO, 2022). Places with high rates of illiteracy among women and low levels of secondary school completion are indicative of regressive social and gender norms, for example, early marriage (Ibid.). Illiteracy has been identified as a critical barrier to women's and girls' digital adoption (GSMA, 2023(a)).

- **Technology facilitated gender-based violence (TFGBV)**

  As discussed in the Introduction, TFGBV is a powerful deterrent to women's and girls' use of digital technologies. Countries that have not adopted and/or implemented effective legislation against TFGBV will struggle to close the gender digital divide.

- **Mass media portrayal of women's and girls' use of technology**

  UNESCO's 'Cracking the Code' framework emphasises the role of mass media in shaping women's and girls' participation in STEM education and fields. "Mass media play an important role in the socialisation process, influencing opinions, interests and behaviours. Gender stereotypes portrayed in the media are internalised by children and adults and affect the way they see themselves and others." (Browne et al., 2023)

  ▶ See PART II, p. 41, for Promising Intervention Strategies for media campaigns to support norm change.

Key social factors

As depicted in **Figure 6**, multiple factors at the 'social' level influence women's and girls' digital skills development, including the attitudes and normative beliefs of powerful people in their social networks. These are the people whose opinions matter to them, and who might punish or reward them if they use digital technologies. In many women's and girls' social networks, these people are predominantly male. They may include husbands, fathers, brothers and sons; male educators and co-workers; and male community leaders and religious leaders. However, in countries where substantial gender digital divides persist, the regressive attitudes and beliefs of powerful women in the family, such as mothers-in-law in joint families, also need to be considered.

  ▶ See PART II, p. 47, for Promising Intervention Strategies for engaging powerful people in women's and girls' social networks, including positive community role models.

Key factors at the level of individuals

Women's and girls' digital knowledge and skills are affected by various contextual factors, including social and gender norms, as **Figure 6** shows. These factors influence their control over resources (agency), such as digital devices and connectivity. They also shape their own attitudes and normative beliefs, for example what they believe is good or bad about digital technologies, and whether they believe women and girls ought to be using digital technologies. As social and gender norms are highly contextual, they are likely to vary from place to place (BBC Media Action, 2021).

  ▶ See PART II, p.50, for Promising Intervention Strategies for engaging women and girls in digital skills education.

③ **Learning outcomes**

This section sets out gender transformative learning outcomes, discussing how these go beyond digital skills.

Key Messages

Digital competence outcomes

- Commercial curricula usually define learning outcomes in terms of knowledge and skill, but digital competence frameworks such as DigComp 2.2 go further, also defining attitude-related outcomes.

- Just as learners are diverse, learning outcomes may vary depending on an individual's characteristics and context.

Gender transformative outcomes

- The primary outcome of any Gender Transformative Digital Skills Education programme is women's and girls' empowerment and/or gender equality.

- Secondary outcomes for interventions at the institutional, resources, social and individual levels also need to be defined, as part of a holistic approach to investing in ecosystem change.

- At the social and individual levels, gender transformative approaches should define outcomes related to positive changes in attitudes and normative beliefs, and women's and girls' control over devices and connectivity.

3.1 Digital competence outcomes

Most syllabi developed by key players such as ICDL and Microsoft define learning outcomes in terms of the **knowledge and skills** that learners will gain from a particular module or course. **Competence-based educational frameworks**, such as DigComp 2.2 ([EC JRC, 2022(a)](#)), go further, recognizing the importance of attitude-related outcomes.

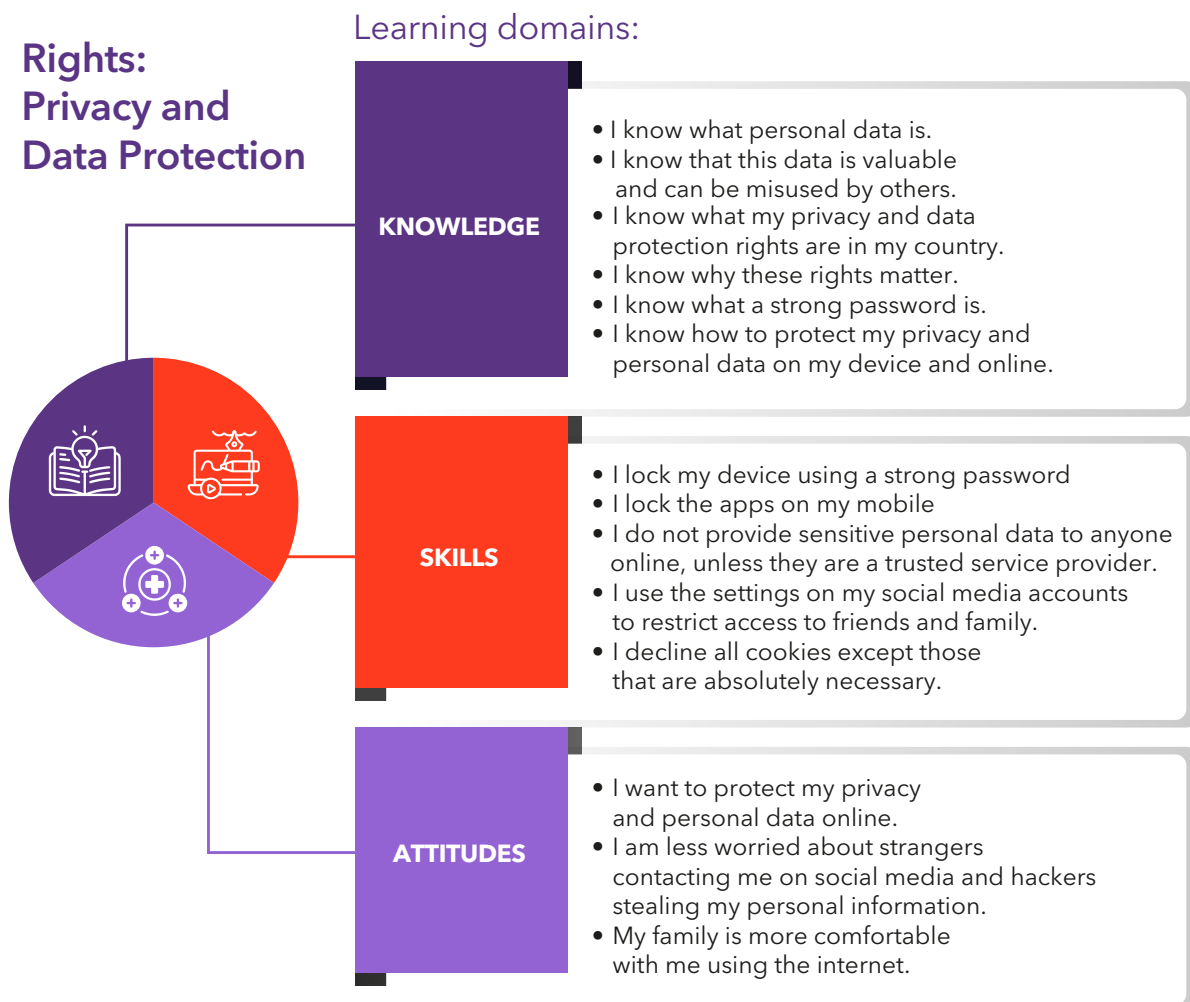**DigComp 2.2 defines learning outcomes in three areas:**

- **Knowledge:** The theoretical understanding and information that a person has about a particular subject or field.
- **Skills:** The practical abilities and techniques that a person has developed through training and practice.
- **Attitudes:** The values, beliefs, and dispositions that a person has towards their work and their interactions with others.

If we take digital privacy as an example (see **Figure 7**), an individual's **knowledge** might include their understanding of what constitutes personal data, what cookies are, and what their rights are under privacy and data protection legislation in their country. Their **skills** might include being able to lock their devices and applications, use strong passwords, reject non-essential cookies, and restrict access to their social media content. If individuals have a high level of proficiency in this domain, their **attitudes** might include feeling confident about their ability to protect their personal data to the extent possible under current legislation in their country.

Figure 7

Protecting privacy and personal data: knowledge, skills and attitudes

Rights: Privacy and Data Protection

Learning domains:

KNOWLEDGE
- I know what personal data is.
- I know that this data is valuable and can be misused by others.
- I know what my privacy and data protection rights are in my country.
- I know why these rights matter.
- I know what a strong password is.
- I know how to protect my privacy and personal data on my device and online.

SKILLS
- I lock my device using a strong password
- I lock the apps on my mobile
- I do not provide sensitive personal data to anyone online, unless they are a trusted service provider.
- I use the settings on my social media accounts to restrict access to friends and family.
- I decline all cookies except those that are absolutely necessary.

ATTITUDES
- I want to protect my privacy and personal data online.
- I am less worried about strangers contacting me on social media and hackers stealing my personal information.
- My family is more comfortable with me using the internet.

Source: Chamberlain, S., EQUALS Global Partnership Skills Coalition, 2023

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Digital knowledge, skill and attitude-related outcomes will differ according to the learner's proficiency. The DigComp 2.2 framework identifies four levels of digital proficiency: foundational, intermediate, advanced and highly specialised. The ITU Digital Skills Toolkit (ITU, 2018(b)) defines three levels: basic, intermediate and advanced.

As discussed in the Principles section, Gender Transformative Digital Skills Education programmes need to be inclusive and contextualised. Therefore, digital competence outcomes need to be defined in recognition of learners' social, economic and political contexts, their family configuration and household assets, their individual characteristics and personal attitudes and normative beliefs, and their degree of access to and control over different devices and connectivity.

3.2 Gender transformative outcomes

Advancing gender equality and/or women's and/or girls' empowerment is the main outcome of any gender transformative programme (Bill & Melinda Gates Foundation, n.d.(b)). **Therefore, Gender Transformative Digital Skills Education programmes need to define not only digital competence outcomes but also – critically – gender equality and/or women's and/or girls' empowerment as a primary outcome.** For example, the primary outcome of a Gender Transformative Digital Skills Education programme might be that participants get better jobs and are paid more, or have used their new digital competencies to expand their businesses and incomes, and now have a greater say in household financial decision-making.

As noted in the Determinants of Change section and the Promising Intervention Strategies section, digital equality will not be achieved without intervention at multiple levels. Therefore, as part of holistic investment in ecosystem change, secondary outcomes will also need to be defined. These could include:

- changes in educational and economic policies to promote women's economic inclusion and gender equality and equity in education, the adoption of more effective legislation against TFGBV, and changes in how women's and girls' use of technology is portrayed by the mass media
- changes in digital skills education programmes inside and outside the classroom, including the redesign of implementation strategies, curricula and content using gender transformative approaches to address barriers at multiple levels
- changes in attitudes and normative beliefs about women's and girls' use of technology among individual learners and powerful people in their social networks, and improvements in women's and girls' control over devices and connectivity.

Figure 8 provides an example of what gender transformative outcomes at the **individual and social levels** might look like, in the digital competence domain of communication and collaboration.

Figure 8

Women and girls safely and independently use digital technologies to communicate and collaborate

KNOWLEDGE	ATTITUDES	SKILLS	NORMATIVE BELIEFS	AGENCY
Individuals know about different types of digital peer-to-peer communication and collaboration tools and formats, and can decide which methods are most effective for their goals. **Individuals** in different contexts are aware of **relevant and compelling reasons** for women and girls to use digital technologies for communication and collaboration. Individuals understand **netiquette** – i.e. a **code of good behaviour** on the Internet, including on email, social media, chat apps. **Individuals understand** what constitutes **Technology-Facilitated Gender-Based Violence.**	**Individuals** exhibit initiative and positive attitudes towards technology use, which enable and support collaboration and productivity. **Women and girls** believe that there are relevant and compelling reasons for using digital technologies to communicate and collaborate. **Men and boys** believe that there are relevant and compelling reasons for women and girls to use digital technologies to communicate and collaborate.	**Women and girls can use digital technologies to interact:** • Read, write, receive and send chat app messages (WhatsApp, Signal, Telegram, FB Messenger etc.). • Listen to, record and send chat app voice messages. • Read, write and send emails. • Respond to content on social media platforms, such as LinkedIn. **Women and girls can use digital technologies to share content:** • Share photos via chat apps. • Attach photos to emails. • Post on social media platforms such as LinkedIn. **Women and girls can use digital technologies to collaborate:** • Set up and use chat app groups. • Use online meeting tools such as Google Meet, Zoom, Teams, Skype. **All genders practice netiquette** -i.e. **a code of good behavior** on the Internet.	**Women and girls** think that powerful people in their social network – husbands, parents, brothers, in-laws – will approve of their use of technology for communication and collaboration. **Women and girls** think that other women and girls in their community are using digital technologies for communication and collaboration. **Men and boys** approve of women and girls using technology for communication and collaboration. **Men and boys** think that other women and girls in their community are using digital technologies for communication and collaboration.	**Women and girls** have control over the digital devices and connectivity they need for digital communication and collaboration. **Women and girls** decide when, where, for what purposes, and for how long they use technologies to digitally communicate and collaborate. **Women** are able to pay for their own devices and connectivity for communication and collaboration. **Women register SIMs** in their own names.

Source: Chamberlain, S., EQUALS Global Partnership Skills Coalition 2023

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PART II

GUIDE FOR PRACTITIONERS

(4) Programme design

This section provides a step-by-step guide to the design of Gender Transformative Digital Skills Education programmes.

Key Messages:

- Gender analysis is key to designing an impactful GTDSE programme. It involves:
  - understanding the problem
  - identifying who is most affected by the problem
  - understanding the context of the problem
  - identifying key gaps and barriers related to the problem

    (Bill & Melinda Gates Foundation, n.d.(b))

- Once gender analysis is complete, practitioners need to articulate a Theory of Change for their programme to increase its impact and support evaluation.

4.1 Start with gender analysis

Designing a gender transformative programme begins with an analysis of gender equality and inclusion. The Bill and Melinda Gates Foundation defines gender analysis as: "**A critical and systematic examination of differences in the constraints and opportunities available to an individual or group of individuals based on their sex and gender identity.**" (Bill & Melinda Gates Foundation, 2021) The Foundation's **Gender Equality Toolbox** (n.d.(b)) provides a helpful, step-by-step guide to gender analysis. This can be applied to the design of digital skills programmes as follows.

STEP 1: Identify the problem

A secondary analysis of existing research will broadly indicate the gender digital divide in a specific location. However, practitioners should also conduct primary research to collect more detailed data. This could include measuring levels of digital knowledge, skills and attitudes in different digital competence domains, as well as exploring normative beliefs and access to, and control over, digital devices and connectivity. UNICEF notes that: "Girls often have more gatekeepers than boys when it comes to accessing mobile phones and digital technology. Understanding their environment and influencers is crucial. Engage with girls to map key influencers in their lives, and then spend time with these influencers and close social circles to understand their views of the issues." (UNICEF, 2021(c))

STEP 2: Identify who is most affected by the problem

Research results then need to be analysed to identify who is most affected by the gender digital divide and/or who will most benefit from a digital skills education/training programme. To enable this, research data needs to be disaggregated by sex, and by household and individual characteristics such as economic status, level of education, age, race, caste, ethnicity, religion, ability, gender and sexual identity and language/s spoken. This will help identify the specific digital learning needs of different segments of the population, providing valuable insights into how the gender digital divide intersects with additional inequalities. Critically, it will enable practitioners to identify those women and girls who are most affected by the gender digital divide, and to tailor programmes to meet their needs.

STEP 3: Understand the context in which the problem exists

As highlighted in <u>Determinants of Change</u>, various factors can constrain or accelerate the development of women's and girls' digital competence. Practitioners therefore need to identify barriers and opportunities at multiple levels. Specifically, they need to explore and understand:

- factors that might inhibit or accelerate women's and girls' digital skills development at the **institutional level**, such as economic and educational policies and laws
- factors at the **resources level**, such as the accessibility and quality of livelihood opportunities for women, and whether digital skills education programmes (inside and outside the classroom) have been designed and implemented with women's and girls' needs in mind
- the attitudes and normative beliefs of powerful people in women's and girls' **social networks**, including those who may reward or punish their use of digital technologies
- and at the level of **individual learners**, explore and understand women's and girls' own attitudes and normative beliefs about digital technologies, their level of control over digital devices and connectivity, and their confidence in learning new digital skills.

This research should help practitioners identify not just barriers, but above all opportunities, including **digital use cases that women and girls, and power-holders at home and in the community, think are relevant, relatable, and compelling.**

BOX 7: Understanding factors that influence norms

The Learning Collaborative to Advance Normative Change suggests a series of questions that practitioners can ask to better understand the factors that influence social and gender norms in a specific location (LCANC, 2019(a)).

Ten assessment questions for norm-shifting programmes:

- Who has a strong economic interest in changing certain norms, or upholding them?

- Whose power is directly threatened by changing certain norms?

- Does a single factor or do multiple factors underpin the norm?

- Are behaviours or norms linked (or perceived to be linked) to a religious mandate?

- Has a critical mass of people already changed their behaviour, or only a small group?

- Do role models and opinion leaders promote a different norm, or the status quo?

- Do changes in social structures (economy, politics, educational system) provide opportunities for different practices, or is this environment resistant to change?

- Are programmes or policies to shift norms under way? Are people able to safely try new behaviours?

- Is change viewed as an opportunity, or experienced as a loss of power or tradition?

- Is change happening in the wider society, or is this change isolated?

STEP 4: Identify gaps and barriers related to the problem

Through this contextual analysis, practitioners should be able to identify the gaps and barriers that women and girls in different segments of the population face in building their digital competencies.

▶

BOX 8: Exploring social norms

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Often people are unaware that they behave as they do because of the influence of others. When asked about the reasons (the whys) they do something, not many would admit (or even realize) that they are under the influence of norms. That obviously has major implications for social norms measurement and diagnosis. "

(LCANC, 2017)

Although social norms are challenging to measure (see Evaluation), the Institute for Reproductive Health (IRH) at Georgetown University, with support from USAID and the Bill & Melinda Gates Foundation, has created the **Social Norms Exploration Toolkit** which outlines a rapid, participatory approach to understanding social norms.

4.2 Develop a Theory of Change

Once gender analysis is complete, practitioners can use the findings to develop a 'Theory of Change' (ToC). Research indicates that very few digital skills programmes have documented ToCs (BBC Media Action, 2021), even though articulating one can help an organization better understand how change happens, and lead to better planning (LCANC, 2019(a)). Developing a ToC also leads to better evaluation, and fundamentally, when based on careful gender analysis, is likely to increase programmatic impact (Ibid.).

BOX 9: What is a Theory of Change?

A Theory of Change (ToC) is a comprehensive description (usually illustrated by a diagram) of how and why a desired change is expected to happen in a particular context (Center for Theory of Change, n.d.). It maps out what has been described as the "missing middle" between what a programme does (its activities and outputs) and how these lead to desired goals being achieved (Ibid.). To quote UNICEF, 2020(a): "A basic theory of change is a roadmap of where we want to go (desired results), how we are going to get there (the inputs, activities and outputs

"

A basic theory of change is a roadmap of where we want to go, how we are going to get there, and those things we have to account for during the journey. "

UNICEF, 2020(a)

directly associated with activities), and those things we have to account for during the journey (assumptions and external factors)." According to the LCANC, creating a ToC provides new programmes with "an opportunity to examine data, program elements, staff skills, organizational capacity, and desired outcomes. For ongoing programs, it allows for review of implementation, identification of assumptions, and understanding of program elements." (LCANC, 2019(a))

⑤ Promising intervention strategies

This section highlights intervention strategies that show promise at multiple levels.

As discussed in Determinants of Change in PART I, intervention is required at multiple levels to close the gender digital divide. This is beyond the scope of any one project. What is needed to effect change is investment in a holistic portfolio of interventions at the institutional, resources, social and individual levels. Following is a discussion of some approaches that show promise.

5.1. At the institutional level

Key Messages

At the institutional level, it is recommended that governments and policy-makers:

- legislate for women's economic inclusion
- close the gender and equity gaps in primary and secondary school education
- invest in inclusive, Gender Transformative Digital Skills Education using a competency-based approach
- adopt and implement more effective legislation against TFGBV, which is deterring women's and girls' use of the Internet
- invest in media campaigns to counter harmful normative beliefs about women's and girls' use of technology.

Legislate for women's economic inclusion

Encouraging women's equal labour force participation, including gender parity in the tech sector, could be the single most important factor in reducing the gender digital divide. To quote UN Women: "Women's economic empowerment is central to realizing women's rights and gender equality" (UN Women, n.d.(b)).

> " Women's economic empowerment is central to realizing women's rights and gender equality. "
>
> UN Women, n.d.(b)

As discussed in Determinants of Change in PART I, there is a negative, cyclical relationship between women's low labour force participation and the gender digital divide. **Gender disparities in the workforce are indicative of gender biases in economic systems**, for example, unequal pay, limited access to credit, underrepresentation in senior positions, and overrepresentation in low-paying jobs (Our World in Data, 2019; International Labour Organization (ILO), 2013).

Policy-makers seeking to reduce the gender digital divide should focus on achieving greater legal equality. As a World Bank report, "Women, Business and the Law", indicates, "greater legal equality is associated with a larger supply of female labour, a smaller gender wage gap, higher levels of female entrepreneurship, and a greater number of women in managerial positions" (World Bank, 2022(b)). The report identifies where and which laws and regulations restrict women's economic inclusion, "providing an important resource for achieving their full and equal participation" (Ibid.). See **Figure 9.**

Figure 9

Eight *women, business and the law* indicators measure legal differences between men and women at different stages of their working life

Mobility
Examines constraints on freedom of movement

Pay
Measures laws and regulations affecting women's pay

Parenthood
Examines laws affecting women's work after having children

Assets
Considers gender differences in property and inheritance

Workplace
Analyses laws affecting women's decisions to work

Marriage
Assesses legal constraints related to marriage

Entrepreneurship
Analyzes constraints on women's starting and running businesses

Pension
Assesses laws affecting the size of a woman's pension

Source: World Bank, 2022(b).

Yet, the World Bank notes that "laws do not achieve their intended effect if they are in strong conflict with prevailing social norms, and social norms change slowly." Numerous studies have identified the role of discriminatory social norms and gender stereotypes in limiting women's labour force participation (ILO, 2020). It is no accident that these are often the same norms that prevent digital adoption among women. However, the World Bank also notes that "legal reforms can exert a "magnet effect", drawing social norms in the same direction as legal reforms over time." (World Bank, 2022(b))

Close the gender and equity gaps in education

As discussed in Determinants of Change in PART I, education is one of the most important factors influencing women's and girls' use of digital technologies. To ensure inclusive, equitable and quality education, and to promote lifelong learning opportunities for all (SDG 4) (The Global Goals, n.d.), "leaders need to put gender equality at the heart of education sector plans, budgets and policies," write Plan International, Transform Education, UNGEI and UNICEF (Plan International et al., 2021). "**This could**

> Leaders need to put gender equality at the heart of education sector plans, budgets and policies.
>
> Plan International et al., 2021

start with allocating public education budgets to benefit the most marginalized children and prioritizing the areas in the country with the largest gender gaps from pre-primary to secondary, with low numbers of female teachers and high prevalence of gender-based violence in communities." (Ibid.)

Invest in inclusive, Gender Transformative Digital Skills Education

To close the gender digital divide, governments need to mainstream gender transformative approaches to digital skills education for all genders. Investment needs to be made to assess whether the implementation strategies of existing digital skills programmes address material and normative barriers, and provide equitable access to learning, including to disadvantaged women and girls. If existing programmes are not fit for purpose, it is important to invest in redesigning them (see promising approaches 'At the resources level').

Invest in media campaigns to counter harmful social and gender norms

Evidence suggests that the media can help counter discriminatory social norms (Chetty et al., 2018; UN Women, 2023).[9] Media campaigns can include examples of positive deviants among power-holders, highlighting positive beliefs about the benefits of women's and girls' use of technology. They can also promote positive role models – i.e. relatable women who are using digital technologies to improve their lives, and the lives of their families. Mass media campaigns can be complemented by social media campaigns to engage younger men and boys (women's and girls' use of social media is strikingly low in many LMICs).

BOX 10: Tech4Families

In Nigeria, 55 per cent of the female population cannot access the Internet (London School of Economics, 2023). Research in Nigeria has shown that deeply entrenched social, gender and cultural norms present a significant barrier to women's and girls' access to, and use of, technology there (CITAD, 2017). The Tech4Families programme, developed by WomenConnect Challenge grantee Equal Access International in 2018–2020, aimed to change widely held beliefs that women's use of digital technologies is immoral, inappropriate or unnecessary (USAID, n.d.).

Tech4Families produced a 12-episode show for a popular Nigerian radio station to help break down gender stereotypes, challenge cultural taboos, and promote digital skills and opportunities for women and girls. After each episode, Tech4Families facilitators led discussions with families, underscoring key messaging and helping to dispel harmful misperceptions about women's Internet and smartphone use (Ibid.).

The programme saw significant shifts in attitudes among both female and male participants, with new norms adopted and promoted that encourage and inspire women's and girls' equitable use of technology (Equal Access International, 2020).

Adopt and implement more effective legislation against TFGBV

As noted in the Introduction and Determinants of Change sections, Technology-Facilitated Gender-Based Violence (TFGBV) is a driver of the gender digital divide (CITAD, 2017). UN Women argues that enhanced cooperation is required between Member States, the tech sector, women's rights organizations, civil society, and national human rights institutions to strengthen policies and measures addressing TFGBV (UN Women, n.d.(a)).

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9 For example, in contexts where there is a significant gender digital divide, serials and public sector advertising campaigns on television and radio, as well as outdoor billboard advertising, could target power holders at home and in the community who are not on social media, or have negative attitudes about social media. Air time and outdoor advertising space could be covered from governments' communication budgets.

UN Women also advocates for:

- the **development and implementation of laws and regulatory mechanisms** informed by an intersectional, human rights-based, survivor-centred approach (Ibid.)
- the **development of regulations and standards of accountability** for Internet intermediaries (very large platform providers, for example) and the tech sector to enhance transparency and accountability on TFGBV (Ibid.).

To quote the Mozilla Foundation: **"In order to structurally improve the health of the Internet ecosystem, we need laws that compel platforms to meaningfully assess and mitigate the systemic risks stemming from the design and operation of their services."** (Mozilla, 2021)

BOX 11: The Digital Services Act

The EU's Digital Services Act (DSA), which came into effect on 25 August 2023, aims to better protect consumers and their fundamental rights online, including the right to freedom from violence and harassment (Allen, 2022). The DSA establishes an accountability framework for online platforms (European Commission (EC), n.d.(a)). The obligations of different online players match their role, size and impact in the online ecosystem (Ibid.). Very Large Online Platforms (45 million users or more across the EU) are required to conduct an annual risk-assessment report, reviewed by an outside auditor, with a summary of the findings made public (Mozilla, 2023). They have a legal responsibility to take action against illegal content, including content that constitutes online gender-based violence (Allen, 2022).

" The obligations for Very Large Online Platforms to conduct comprehensive assessments of systemic risks to fundamental rights from their services, to develop and implement mitigation measures, and to be subjected to independent audits to assess their efforts, if implemented appropriately, may set a global precedent for striking this balance. "

UNICEF, 2020(a)

According to Asha Allen, Advocacy Director for Europe, Online Expression & Civic Space at the Center for Democracy and Technology: "Striking the balance between the protection of free expression, addressing illegal content and creating a safe online environment will be challenging." But, she argues: "The obligations for Very Large Online Platforms to conduct comprehensive assessments of systemic risks to fundamental rights from their services, to develop and implement mitigation measures, and to be subjected to independent audits to assess their efforts, if implemented appropriately, may set a global precedent for striking this balance." (Allen, 2022)

Although the DSA has only been passed in the EU, it applies to all digital services that connect consumers to goods, services or content in the EU. There may therefore be far-reaching global effects as companies adjust their policies to comply (Roth, 2023).

5.2 AT THE RESOURCES LEVEL

Key Messages

At the resources level, it is recommended that practitioners:

- Embed digital competence training in livelihood programmes to empower women economically

- Integrate gender transformative approaches into classrooms and out-of-school digital skills training programmes, including by:
  - building educators' capacity to deliver Gender Transformative Digital Skills Education
  - hiring female educators
  - creating mentorship programmes
  - creating pathways to trainee opportunities, internships and jobs.

- Partner with savings and loans groups to provide disadvantaged women in LMICs with access to credit for devices, and opportunities to practise on leaders' devices during regular group meetings.

Embed digital competency training in livelihood programmes to economically empower women

Partnering with initiatives to economically empower women can help in changing the harmful norms, roles and relations that prevent women and girls from benefiting from digital transformation (UN Women, n.d.(b)). Such initiatives include efforts to create new economic opportunities for women in collectives (including self-help groups, social enterprises and cooperatives), and support to both women micro-entrepreneurs in building their businesses, and marginalised women farmers in increasing their agricultural yields and income.

Critically, if efforts to economically empower women are gender transformative (Ibid.), improving their digital competence could support empowerment outcomes over time (Rice at al., 2023). These outcomes could include improving women's access to decent work, increasing their incomes and control over expenditure, strengthening their ability to participate equally in existing markets, and increasing their voice, agency and meaningful participation in economic decision-making (Amber and Chichaibelu, 2023).
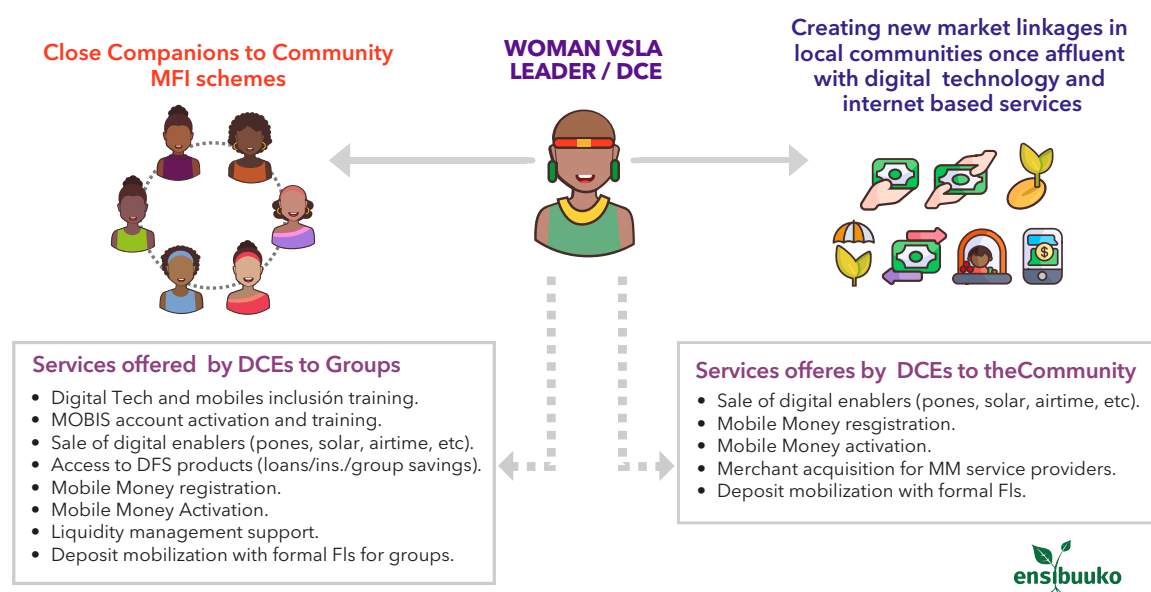
BOX 12: Digital skills training in savings and loans groups in Uganda

There are an estimated 33,000 Savings and Credit Cooperative Organisations in Uganda (New Vision, 2023). Ensibuuko has been offering paperless banking services to women's savings and loans groups in the country since 2014. However, the success of its program was limited by members' low levels of digital skill, and lack of knowledge of relevant mobile products. To address these challenges, Ensibuuko developed a localised version of the GSMA Mobile Internet Skills Training Toolkit (MISTT) for its rural customers, with support from the GSMA Innovation Fund for Mobile Internet Adoption and Digital Inclusion. The modules provided an introduction to smartphones, the Internet, mobile money, social media, digital safety and security, and Google tools. Group members had access to printed materials and also, via a mobile app, to digital skills learning content.

Digital Community Entrepreneurs (DCEs) used the training materials, including the app, to lead training sessions in groups. DCEs are women from the community, and often the leaders of the savings and loans groups. They were trained using a training-of-trainers model, and also offered a range of mobile banking and mobile money services to group members (see **Figure 10**). The programme delivered training and access to affordable mobile products and services to over 1,727 savings groups in rural Uganda in partnership with MTN and Airtel. As a result, Ensibuuko improved the uptake for its own digital app for over 1000 village savings groups comprising over 55,190 members (GSMA, 2022(b)).

Figure 10

Digital Community Entrepreneurs (DCE) as core trainers of the tools

Close Companions to Community MFI schemes

WOMAN VSLA LEADER / DCE

Creating new market linkages in local communities once affluent with digital technology and internet based services

Services offered by DCEs to Groups
- Digital Tech and mobiles inclusión training.
- MOBIS account activation and training.
- Sale of digital enablers (pones, solar, airtime, etc).
- Access to DFS products (loans/ins./group savings).
- Mobile Money registration.
- Mobile Money Activation.
- Liquidity management support.
- Deposit mobilization with formal Fls for groups.

Services offeres by DCEs to theCommunity
- Sale of digital enablers (pones, solar, airtime, etc).
- Mobile Money resgistration.
- Mobile Money activation.
- Merchant acquisition for MM service providers.
- Deposit mobilization with formal Fls.

ensibuuko

Source: GSMA, 2022(b)

Mainstream gender transformative approaches in classrooms and out-of-school digital skills training programmes

To quote Plan International et al. (2021): "Some of the most important influences on children and young people are in educational spaces. It is where children learn about the world, their interests, and their capabilities. Education can reinforce existing norms or challenge and transform them, not just for children, but for their parents, communities, and nations." In addition to placing gender at the heart of educational policies and investment, practitioners need to:

> ❝
> Education can reinforce existing norms or challenge and transform them, not just for children, but for their parents, communities, and nations.
>
> Plan International et al., 2021
> ❞

- **(Re)design digital skills training programmes, adopting a gender-transformative approach**

  Digital skills education programmes need implementation strategies, curricula and content that are inclusive and gender transformative by design. Implementation strategies need to address gender biases in educational institutions, and the normative barriers that women and girls face in attending out-of-school training programmes and in consolidating their skills at home. Curricula need to be competency-based, focusing on digital knowledge, skills and attitudes that are relevant to women's and girls' lives in specific contexts. Content should be free of unconscious bias and gender stereotypes, and adopt a Social and Behaviour Change Communication (SBCC) approach to change attitudes and support normative change.

- **Build the capacity of educators**

  Educators need training to deliver Gender Transformative Digital Skills Education to all genders. This should include raising educators' awareness of the normative barriers that prevent women and girls from increasing their digital knowledge and skill, and guidance on how to avoid reproducing gender stereotypes inside classrooms and in out-of-school digital skills training programmes. Additionally, training on digital safety, security and well-being would help educators to consider the risks associated with digital use, and create a safe and supportive learning environment.

- **Hire women educators**

  In some contexts, it is critical that more women educators are hired to teach digital competencies inside and outside classrooms, and STEM subjects in schools (UNESCO and EQUALS Skills Coalition, 2019). According to the EQUALS Global Partnership Skills Coalition: "Even in cultures where mixed-gender education is common and accepted, researchers have found that women tend to ask more questions and discuss problems and concerns more readily in secure, moderated, women-only environments" (Ibid.). According to a World Bank report, multiple studies indicate that female students are more likely to apply for and graduate in a STEM subject at university level if they had female mathematics and science teachers at secondary school (World Bank, 2020(b)).By having more women in STEM teaching positions – inside and outside classrooms – programmes can also help provide women and girls with positive role models.

> ❝
> Even in cultures where mixed-gender education is common and accepted, researchers have found that women tend to ask more questions and discuss problems and concerns more readily in secure, moderated, women-only environments.
>
> UNESCO and EQUALS Skills Coalition, 2019
> ❞

- **Link training programmes and schools with mentors and jobs**

Creating pathways for women and girls to jobs where they can apply their digital knowledge and skill, including in STEM fields, is also key. "Decades of research have been stressing the need to reshape STEM education to include the gender dimension: promote school collaborations with employers, industry and firms to engage in initiatives that attract more girls: i.e. shadowing events, mentors, role models, science projects." (Kamberidou and Pascall, 2020) The World Bank notes that the private sector can play an important role in these initiatives, by "bringing financial support to initiatives, facilitating exposure to female role models, and offering internship opportunities targeting secondary school girls." (World Bank, 2020(b))

> "
> Decades of research have been stressing the need to reshape STEM education to include the gender dimension: promote school collaborations with employers, industry and firms to engage in initiatives that attract more girls: i.e. shadowing events, mentors, role models, science projects.
>
> Kamberidou and Pascall, 2020
> "

BOX 13: EQUALS Her Digital Skills e-Mentorship programme

The EQUALS Her Digital Skills e-Mentorship programme offers participants and alumni of EQUALS Her Digital Skills workshops and other activities (mainly girls and women aged 16–25) the opportunity to be matched with mentors who contribute to their professional and personal development. The mentoring takes the form of an innovative eight-week soft skills online programme, which is free to join.

Connecting young women with established companies from among the tech and mobile industries, the programme also aims to increase interest, involvement and awareness of the overall role of industry in bridging the gender gap in leadership. It is part of the Her Digital Skills Initiative powered by the EQUALS Global Partnership for Gender Equality in the Digital Age, and is being conducted by its co-founders GSMA, EY, ITU and W4 in partnership with GIZ and Verizon (EQUALS Global Partnership, n.d.).

Through hands-on digital skills training, career advice webinars and its e-mentoring programme, EQUALS Her Digital Skills has, to date, positively impacted the lives of thousands of girls and young women in more than 40 countries across four continents. Over 90 per cent of mentees who have completed the Her Digital Skills e-mentoring programme report having significantly improved their knowledge, skills and abilities across a range of soft skills, including leadership. Over 90 per cent of mentees also report that, thanks to their participation in the e-mentoring programme, they feel significantly more confident in pursuing further studies or a career in tech.

> "
> The e-Mentoring programme has been immensely valuable, providing me with guidance and support, boosting my confidence, and helping me navigate challenges on my career journey.
>
> – An EQUALS Her Digital Skills Mentee from South Africa
> "

Partner with savings and loans groups to overcome access challenges

Although distributing free smartphones to women at scale does not seem to significantly increase their use or skill (see the Introduction section), working with Self-Help Groups (SHGs) to provide loans to women for smartphones may be a more sustainable approach. Another option is to make the most of the smartphones that many leaders in women's groups already own, by encouraging members to practise on these devices during group meetings.

BOX 14: Solving the access problem in Self-Help Groups in India

Launched in 2017, the Smart Snehidi programme sought to improve access to smartphones and digital skills among low- and middle-income female micro-entrepreneurs. The programme was led by the non-profit organisation Hand in Hand, in collaboration with Vodafone. Hand in Hand has mobilised millions of women in India to form self-help groups (SHGs), where they pool savings, access loans, and receive training in how to build micro-enterprises. As a partner in Smart Snehidi, Hand in Hand facilitated microfinance loans for smartphone purchase among members of its SHGs and trained women to use these devices in their businesses. The pilot enabled 2,000 women to acquire smartphones in three districts across Tamil Nadu, India (GSMA, 2017(b)).

5.3 AT THE SOCIAL LEVEL

Key Message

At the level of social networks, it is recommended that practitioners:

- identify and incentivise digital champions in the community to act as local peer change agents, role models and mentors

- engage power holders at home and in the community in conversations about women's and girls' use of technology and their concerns

- prioritise group-based learning in trusted social networks

- create opportunities for networking and establish connections between women and girls from different backgrounds.

As noted in **Determinants of Change** in PART I, power-holders in women's and girls' social networks, particularly those who may reward or punish their use of digital technologies, can limit or increase the rate at which women and girls develop digital competencies.

Peer change agents

Interventions seeking to change harmful attitudes and beliefs "can be more effective when members of the community are used to help implement the diffusion of the intervention." (Pickering et al., 2022) Numerous studies underscore the advantages of working with 'peer change agents'[10] in interventions that seek to change behaviour (Hawkins et al., 2021). For example, in the context of health, peer-led interventions in social networks have been used to reduce HIV risk behaviours, cigarette smoking, and risk factors for suicidal behaviours among adolescents and young adults (Pickering et al., 2022). "The effectiveness of this approach stems from peer leaders/educators being seen as more credible than adults at delivering intervention messaging, being role models who persist in the community after the intervention has ended, and having access to informal routes of communication which can be essential to reaching less-engaged students at school." (Ibid.)

> " The effectiveness of this approach stems from peer leaders/educators being seen as more credible than adults at delivering intervention messaging, being role models who persist in the community after the intervention has ended, and having access to informal routes of communication. "
>
> Pickering et al., 2022

In contexts where a significant gender digital divide persists, and where beliefs that digital technologies are harmful, shameful or unnecessary for women and girls are widely held, digitally literate women and girls from the community can act as peer change agents. They are often more trusted than trainers from outside the community, and by acting as relatable role models, can help change the attitudes and beliefs of their peers over time (GSMA, 2023(b)). However, programmatic experiences indicate that unless peer change agents are paid for their time, they are unlikely to be able to prioritise this work for more than a short period of time.

Relatable role models

Numerous studies have identified the importance of role models in helping women and girls to overcome normative barriers, not just in low-income, low-literate contexts, but also in STEM fields (ITU, 2021; World Bank, 2021; González-Pérez et al., 2020). Relatable role models from the community can provide examples of the kind of success that one may achieve ("I can be like her"), and often "supply a template of the behaviours necessary for success" (World Bank, 2020(b)).

Mentors in the community

Peer change agents in the community can also act as mentors, helping to build women's and girls' confidence, and providing sustained, hands-on support over time. This approach differs from bringing in mentors from outside the community, which is also beneficial, but can be more challenging to sustain and scale.

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10 A person who encourages their peers to change their behaviour or opinions.

BOX 15: Peer change agents urge women to 'pick up the phone' in India

In 2022, BBC Media Action, with the support of the Bill & Melinda Gates Foundation, designed and tested approaches to accelerating women's digital adoption in India with Self-Help Group (SHG) federations and community partners, Chaitanya WISE and PRADAN. With more than 82 million members, SHGs in India provide a significant opportunity to engage women at scale (GSMA, 2023(b)).

Called Phone *Toh Uthao!* ('Pick up the phone'), the 12-month Human Centred Design project created WhatsApp chatbot and IVR job aids in collaboration with peer change agents in SHGs. These agents used the job aids to play Social and Behaviour Change Communication content about the benefits of mobile phone use to women in structured learning sessions during group meetings. The content acted as a trigger for discussion, demonstration of digital skills and group practice in meetings.

Agents were recruited by the SHG federations from among early-adopters of digital technologies in the SHGs. As women from the community, they were relatable role models, able to provide relevant, accessible guidance and support, building SHG members' confidence in their ability to learn new digital skills. They were also able to translate the content in Hindi into local dialects when required, contextualising it for diverse communities. They were paid in line with the government's well-established 'Community Resource Person' model.

A dipstick survey indicated promising results, including greater knowledge about the benefits of mobile phone use and additional digital skills among those who were exposed to the programme (GSMA and BBC Media Action, 2022).

Engage men and boys at home and in the community

Working with men and boys is largely recognised as critical to transforming regressive social and gender norms (UN Women, 2023). However, research indicates that one-way communication is relatively ineffective: "men and boys need to be involved in dialogue and the construction of new norms, rather than simply lectured to," writes UN Women in a 2023 working paper (Ibid.). The paper adds: "whether the intervention is media-related, or involves group communication, the involvement of influential actors, such as faith leaders and community leaders can be important" (Ibid.).

> "
> Men and boys need to be involved in dialogue and the construction of new norms, rather than simply lectured to.
> UN Women, 2023
> "

Although there are very few examples of digital skills programmes that engage with men and boys to change attitudes, normative beliefs and behaviour **(see Tech4Families section)**, practitioners can learn from many examples in other sectors. For example, UNICEF highlights Parivartan in India for its work with boys in the informal settlements of Mumbai to eliminate

sexual violence (UNICEF, 2020(b)). Launched in early 2019, the programme trained cricket coaches on gender norms, how to teach the boys and influence their attitudes, and how to reduce harmful behaviours among team members. The coaches taught cricket and integrated Parivartan messages and activities within their regular coaching sessions, using materials created by Parivartan (Ibid.). A social marketing campaign ran alongside the coaching. It included mobile van activism, radio messages, street theatre, billboards and posters. The programme led to positive changes in the boys' behaviour, including less aggression, as reported by both coaches and parents (Ibid.).

Prioritise group-based learning in trusted social networks

As evidenced by examples such as Ensibuuko's work in Uganda and Phone Toh Uthao in India, one of the most promising approaches to increasing women's digital competence is to situate learning in the trusted social networks of women's collectives. This is because such networks already provide the social support and social capital that women and girls need to overcome their fears and build their confidence in learning new things (BBC Media Action, 2021). These trusted networks are well placed to expose women and girls to new ideas and ways of doing things (Rice et al., 2023). Moreover, they provide opportunities for group discussion, which has proved fundamental to changing attitudes and supporting changes in norms.

The World Bank also notes the importance of peer networks in supporting women in STEM education in tertiary education: "University and professional associations are key forms of support in university and during professional life. These organizations provide access to mentors, networks, and a range of other services." (World Bank, 2020(b)) Online communities also show promise in creating networking opportunities for more digitally advantaged women and girls.

5.4 AT THE INDIVIDUAL LEVEL

Key messages

This guide includes sections on designing gender transformative curricula and content for individual learners of all genders. Here, we recommend two learning strategies for engaging women and girls in particular:

- Provide bite-sized learning, in recognition of women's and girls' time constraints.

- Locate training in socially acceptable spaces, where women and girls feel safe and comfortable.

Provide bite-sized learning, in recognition of women's and girls' time constraints

Research shows that women have higher time poverty rates[11] than men in most cases (Rodgers, forthcoming, 2023), and women's lack of time to learn has been identified as an important barrier to efforts to increase their digital skills in LMICs such as Ghana and India (GSMA, 2021(b)). Evidence suggests that digital skills programmes are therefore more successful if they deliver bite-sized learning (BBC Media Action, 2021).

Bite-sized learning is a method that breaks down complex or lengthy topics into smaller, manageable chunks that can be consumed in a few minutes (LinkedIn, n.d.). In fact, according to LinkedIn, bite-sized learning is also more effective in general when training 'modern learners': "By presenting information in bite-sized chunks, we can avoid cognitive overload and enhance recall and comprehension. Bite-sized learning also caters to the preferences and needs of modern learners, who are busy, distracted, and used to accessing information on demand and on the go." (Ibid.)

> " By presenting information in bite-sized chunks, we can avoid cognitive overload and enhance recall and comprehension. Bite-sized learning also caters to the preferences and needs of modern learners, who are busy, distracted, and used to accessing information on demand and on the go. "
>
> LinkedIn, n.d.

Locate training in socially acceptable spaces, where women and girls feel comfortable

As noted in the Introduction, in some contexts there may be few spaces where women and girls can come together to learn new digital skills with the approval of their families. They may live in places where regressive social and gender norms limit their mobility, and/ or where women and girls experience sexual harassment in public spaces and on public transport. In these contexts, approaches that show promise include situating training in women's and girls' homes, and in the homes of other women in their social networks, such as those of Self-Help Group leaders. Although these approaches accommodate, rather than transform, gender norms, they are likely to be required until women and girls have more freedom of movement, and their safety is better protected in public spaces.

Distance learning through digital channels can also help overcome mobility challenges. For example, the ITU Academy offers a large selection of online courses on all aspects of ICT. Courses are offered at basic, intermediate and advanced levels, and cover topics ranging from basic digital skills to e-commerce and AI (ITU Academy, n.d.). However, for women in LMICs who are not online, and for girls at schools where there is a lack of computer equipment or where there is limited electricity and erratic Internet connectivity, face-to-face learning remains critical. As reported by UNESCO in 2023: "**In sub-Saharan Africa, 89 per cent of learners [students] do not have access to household computers and 82% lack Internet access.**" (UNESCO, 2023) UNESCO adds that while mobile phones can enable learners access to information, connect with their teachers and with one another, about **56 million learners live in locations not served by mobile networks, almost half in sub-Saharan Africa**." (UNESCO, 2023) This underlines the importance of formulating appropriate implementation strategies for women and girls in different contexts.
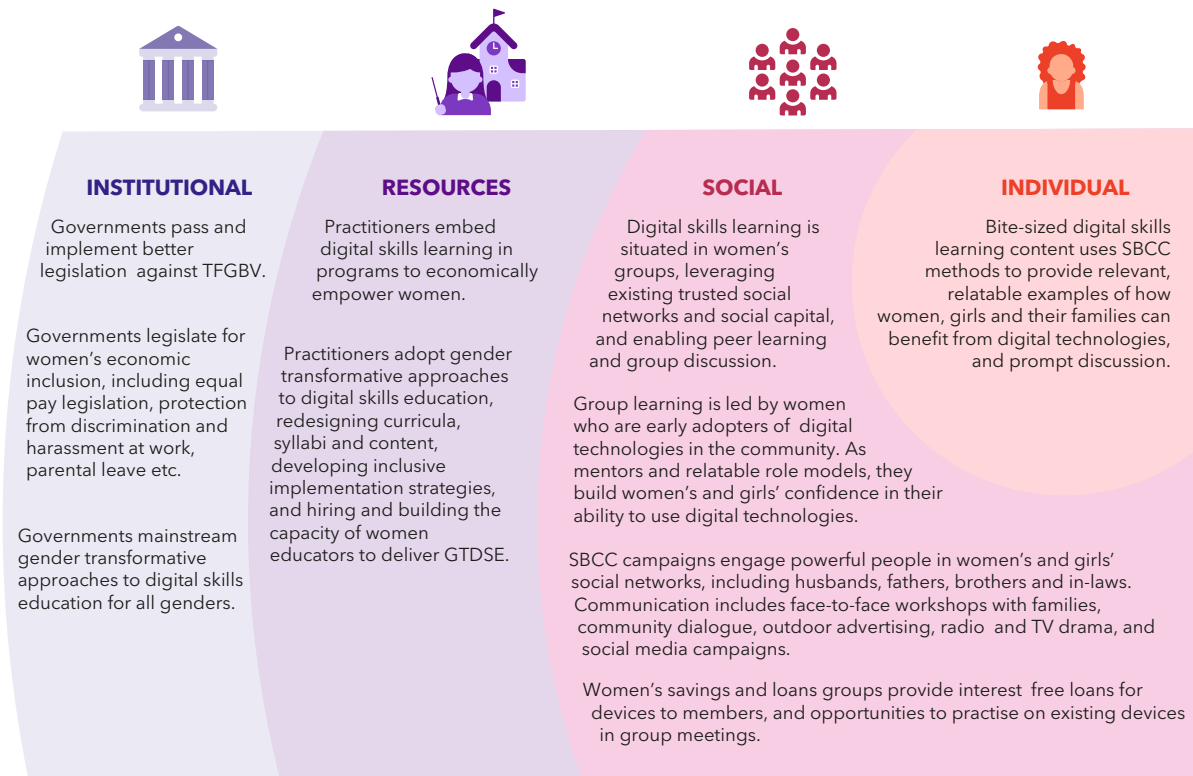
---

11 Time poverty is the concept that individuals do not have enough discretionary time – the time available after engaging in necessary activities like sleep and in the committed activities of paid and unpaid work – to engage in activities that build their social and human capital (Kalenkoski, C.M., Hamrick, K.S., 2014).

Bringing it all together

Figure 11, building on Phone Toh Uthao! in India, and Tech4Families in Nigeria, provides an example of how a gender transformative digital skills programme can intervene at multiple levels.

Figure 11

Bringing it all together

INSTITUTIONAL

Governments pass and implement better legislation against TFGBV.

Governments legislate for women's economic inclusion, including equal pay legislation, protection from discrimination and harassment at work, parental leave etc.

Governments mainstream gender transformative approaches to digital skills education for all genders.

RESOURCES

Practitioners embed digital skills learning in programs to economically empower women.

Practitioners adopt gender transformative approaches to digital skills education, redesigning curricula, syllabi and content, developing inclusive implementation strategies, and hiring and building the capacity of women educators to deliver GTDSE.

SOCIAL

Digital skills learning is situated in women's groups, leveraging existing trusted social networks and social capital, and enabling peer learning and group discussion.

Group learning is led by women who are early adopters of digital technologies in the community. As mentors and relatable role models, they build women's and girls' confidence in their ability to use digital technologies.

SBCC campaigns engage powerful people in women's and girls' social networks, including husbands, fathers, brothers and in-laws. Communication includes face-to-face workshops with families, community dialogue, outdoor advertising, radio and TV drama, and social media campaigns.

Women's savings and loans groups provide interest free loans for devices to members, and opportunities to practise on existing devices in group meetings.

INDIVIDUAL

Bite-sized digital skills learning content uses SBCC methods to provide relevant, relatable examples of how women, girls and their families can benefit from digital technologies, and prompt discussion.

Source: Chamberlain, S., EQUALS Global Partnership Skills Coalition, 2023

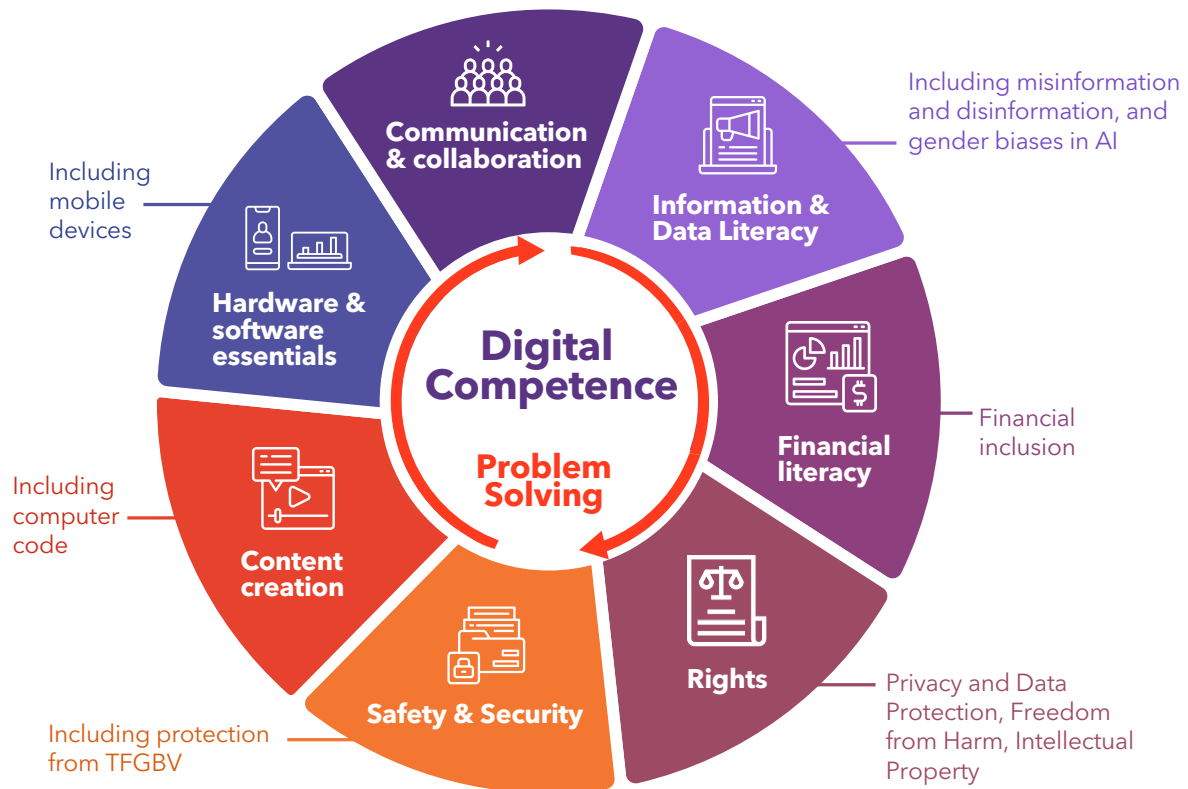# 6 Curriculum design: a gender transformative approach

Key messages:

- Practitioners can use our enhanced version of the DigComp 2.2 framework to guide the design of their GTDSE curricula and syllabi (see **Figure 12** below).

- This includes an additional focus on:
    - digital rights, including the right to privacy and data protection, the right to freedom from harm, the right to anonymity and to be forgotten, and intellectual property rights
    - the knowledge, attitudes and skills required to not just mitigate the risk of TFGBV, but to reduce the number of perpetrators of TFGBV
    - AI risks, including gender biases
    - the digital financial skills and computational skills that women and girls need to participate in the digital economy
    - the importance of a mobile-first approach in regions where the prevalence of computer ownership within households is minimal.

- No single curriculum or syllabus will meet the diverse needs of learners from different backgrounds in different contexts. A tailored approach is required to maximise inclusivity and impact.

- Many syllabi already exist, and most are free to download.

- However, there is a lack of mobile skills curricula, and existing syllabi may need to be substantially modified to meet the learning needs of unconnected women and girls in LMICs.

- There are also gender gaps in existing syllabi, including a lack of syllabi on TFGBV, and gender biases in AI.

- A review of syllabi offered by major players from a gender and equity perspective would be a valuable exercise.

6.1 Select a digital competence framework

Many organisations and international agencies have developed digital competence frameworks **to guide the design and evaluation of curricula, syllabi and learning content for students, teachers and institutions**. As discussed in the Principles section, the EU's DigComp 2.2 framework (EC JRC, 2022(a)) covers most of the digital competence domains and digital competencies that women and girls need for equal participation in the digital world. It is a valuable resource for the designers of Gender Transformative Digital Skills Education programmes, providing a wealth of detail on the digital knowledge, skills and attitudes required at different levels of proficiency.

Using a gender equity lens to enhance DigComp 2.2

Source: Chamberlain, S., EQUALS Global Partnership Skills Coalition, 2023

We believe a gender lens could enhance the DigComp 2.2 framework (**Figure 12** above), to emphasise the following areas:

- **Rights,** including the right to privacy and data protection, the right to freedom from harm, the right to anonymity and to be forgotten, and intellectual property rights.[12] To safeguard digital rights, we believe it is critical to enhance citizens' knowledge of their rights, and their skills in protecting them. This approach aligns with calls for a Universal Declaration of Digital Human Rights (ITU, 2023), including the UN Secretary General's 'Our Common Agenda', which advocates for the enforcement of human rights online (UN, 2021). To quote the UN Office of the Secretary-General's Envoy on Technology: "Digital technologies provide new means to exercise human rights, but they are too often also used to violate them. Data protection and privacy issues, digital identity, the use of surveillance technologies, online violence and harassment, are of particular concern." (UN, n.d.)

> Digital technologies provide new means to exercise human rights, but they are too often also used to violate them. Data protection and privacy issues, digital identity, the use of surveillance technologies, online violence and harassment, are of particular concern.
>
> UN, n.d.

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12 It is worth noting that ICDL emphasizes digital rights in its curricula, providing modules that cover the rights of data subjects under privacy and data protection legislation, and intellectual property rights.

- **Digital financial literacy.** The DigComp 2.2 framework does not include digital financial literacy as a competence domain. Given the importance of digital financial skills for participation in the digital economy, we believe this addition is of critical importance. Skills include use of payment applications, online banking systems, and e-commerce platforms to buy and sell products and services. Several frameworks that outline the digital competencies required for financial literacy have been developed, which could serve as a guide to the development of curricula, including the European Commission's Digital Competence Framework for Consumers (Brečko, B., Ferrari, A., 2016). Training curriculums should be designed with economic inclusion in mind, so that digital knowledge, attitudes and skills are relevant to the livelihoods of women from different backgrounds and in different contexts.

- **The importance of understanding AI risks, including gender biases in AI, and the spread of misinformation and disinformation.** Given gender biases in AI (Stanford University, 2023), and the potential for AI to amplify and accelerate the spread of misinformation and disinformation, we believe these risks should be highlighted in digital competence education for all genders. AI curricula, syllabi and content based on DigComp 2.2., including modules focused on **computational thinking and coding**, should also work particularly hard to engage women and girls, given the World Economic Forum's 2023 report about women being left behind at every stage of the AI life cycle (World Economic Forum, 2023).

- **The criticality of educating all genders about TFGBV**. Digital safety pertains to the responsible use of digital technology, which includes safeguarding oneself and others from online risks. In addition to highlighting freedom from harm online as a human right, it is vital that the 'Safety' domain in DigComp 2.2 is expanded to include a specific focus on TFGBV. This should detail not just the knowledge and skills required to mitigate the risk of TFGBV, but the knowledge and attitudes that men and boys need to stop perpetrating TFGBV.

- **The importance of hardware and software essentials as a separate competence domain, with a focus on mobile devices**: UNESCO, in its Digital Literacy Global Framework (DLGF), added hardware and software essentials to DigComp 2.1. In our enhancement of DigComp 2.2, we include this addition, and stress the importance of mobile hardware and software skills for women and girls in countries where most people first experience the Internet on a mobile phone. To quote the ITU: "as increasing numbers of people move from feature phones to smartphones, and as the next billion comes online, many will skip the stage of using personal computers (PCs) and feature phones entirely, moving directly to powerful handheld computers, i.e. smartphones. There is a critical need to bridge the gap between using a phone for basic functions and using sophisticated smartphones."

> " As increasing numbers of people move from feature phones to smartphones, and as the next billion comes online, many will skip the stage of using personal computers (PCs) and feature phones entirely, moving directly to powerful handheld computers, i.e. smartphones. "
>
> ITU, 2023

- Finally, as both DigComp 2.2 and UNESCO's DLGF regard **problem-solving as a cross-cutting competence,** we have located it at the heart of the framework, as it is critical in all the digital competence domains.

Although learners' needs will vary greatly depending on their characteristics (education, age etc.) and contexts, these device-agnostic digital competencies are relevant to both computers and mobile phones, and serve as a useful guide for the design of Gender Transformative Digital Skill Education for all learners, in all contexts.

6.2 Based on learners' needs, decide what level of training is required

When using a digital competence framework to design a curriculum, practitioners need to decide which device/s (feature phone, smartphone, computer) to focus on, and what level of knowledge and skills to cover. During gender analysis (see Programme design), practitioners will have measured women's and girls' control over devices and connectivity, gaps in their digital knowledge and skills in different digital competence domains, and explored attitudes and normative beliefs. This analysis will help practitioners identify proficiency levels among target learners, which in turn will help them design a curriculum at the appropriate level.

It is key to note that target learners may have a relatively high level of knowledge and skill in one digital competence domain and very little proficiency (and regressive beliefs) in another, and that a single group of learners is likely to encompass varying levels of proficiency. For example, a microentrepreneur might confidently use WhatsApp to communicate to clients about her business, but may fear making digital payments, which she leaves to her husband.

6.3 Select a curriculum and syllabi

Once a practitioner has assessed the digital proficiency of target learners, they can select an appropriate curriculum and syllabi from the numerous options available online. **Figure 13** below builds on the DigComp 2.2 framework (EC JRC, 2022(a)), to show how a practitioner might map a digital competence domain with specific digital competencies to a curriculum and syllabus (from ICDL).

Figure 13

Mapping digital competencies to a curriculum and syllabus

CONTENT CREATION COMPETENCIES ▶

Developing digital content
To create and edit digital content in different formats, to express oneself through digital means.

Integrating and re-elaborating digital content
To modify, refine and integrate new information and content into an existing body of knowledge and resources to create new, original and relevant content and knowledge.

Programming
To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or to perform a specific task.

CONTENT CREATION CURRICULUM

MAPPED BY ICDL TO DIGCOMP 2.2

- Presentations
- Spreadsheets
- Documents
- **Image editing** ▶
- Web editing
- 2D design
- 3D design
- Coding principles
- Computational thinking
- Data analytics

IMAGE EDITING SYLLABUS

Category	Skill set
Imaging concepts	• Digital images • Colour concepts • Graphic formats
Image capture	• Capturing images
Using the application	• Image creation • Enhancing productivity • Settings
Working with images	• Selection • Image manipulation • Layers • Text • Effects and filters
Drawing and painting	• Drawing tools • Painting tools

Source: Chamberlain, S. EQUALS Global Partnership Skills Coalition, 2024, building on DigComp 2.2 and an ICDL syllabus

There are already a substantial number of syllabi for teaching digital knowledge and skills in different digital competence domains at different proficiency levels, and most are free to download.

BOX 16: ICDL syllabi

ICDL offers syllabi in most of the competence domains in the DigComp 2.2 framework, which are downloadable from its website:

- ICDL's 'Online Essentials' syllabus
- ICDL's 'Smart Digital' syllabus
- ICDL's Workforce Computer Essentials syllabus
- ICDL's standard IT security syllabus
- ICDL's 1.0 'Information Literacy' syllabus
- ICDL's Digital Marketing syllabus

Equity gaps in syllabi

Despite the number of syllabi available, most may not be appropriate for unconnected women and girls in LMICs with low levels of literacy. As discussed in our enhanced version of the DigComp 2.2 framework above, this is particularly the case in contexts where ownership of computers and laptops is minimal. To quote the ITU (2018(b)): "The development of a mobile literacy curriculum is still in its infancy… persistent gender, age, and other divides around ICT usage have led to fewer opportunities for women, persons with disabilities, the elderly, and other marginalised populations. Most digital skills training programmes are not tailored to the needs of these groups."

The ITU (2018(b)) recommends that: **"Whether curricula are adopted from an existing source or created in-house, training material must be critically assessed to ensure it covers needed and appropriate skills, competencies, and tasks – required not only for now but further into the future."** If practitioners use syllabi that are too advanced for learners, or are focused on devices to which learners do not have access, programmatic impact is likely to be limited and existing gender inequalities may worsen.

> "
> Persistent gender, age, and other divides around ICT usage have led to fewer opportunities for women, persons with disabilities, the elderly, and other marginalised populations. Most digital skills training programmes are not tailored to the needs of these groups.
> "
> ITU, 2018(b)

BOX 17: The GSMA Mobile Internet Skills Training Toolkit (MISTT)

The GSMA Mobile Internet Skills Training Toolkit (MISTT) is a set of free resources aimed at teaching people the basic skills they need to access and use **mobile Internet**. It uses a 'train-the-trainer' approach and consists of bite-sized and in-depth versions of text-based lessons, as well as short videos, in multiple languages that can be easily adapted to local needs (GSMA, 2021(a)).

Topics covered include an introduction to the Internet, online safety, mobile money, an introduction to mobile apps and how to download them onto a phone, and how to avoid online scams. There is also training content on how to use WhatsApp, YouTube, Google, Android, Facebook, KaiOS, ayoba and Wikipedia. Furthermore, MISTT has modules that focus on compelling digital use cases, for example, building skills to boost your business and staying connected with family.

Drawing on its experience **supporting the training of over 65 million people** with materials from the Toolkit, GSMA can support practitioners' digital skills efforts in a variety of ways. These include advising on strategy and best practices for reaching women, supporting monitoring and evaluation analysis, troubleshooting during a campaign and providing Training of Trainers sessions.

Gender gaps in syllabi

Gender gaps in digital competence frameworks are reflected in existing syllabi, including the following examples.

- **Technology-Facilitated Gender-Based Violence (TFGBV)**
  There appears to be a lack of dedicated syllabi on TFGBV. ICDL does offer an extensive syllabus on cyber security, which covers: "potential dangers when using social networking sites like: cyber bullying, grooming, malicious disclosure of personal content, false identities, fraudulent or malicious links, content, messages" (ICDL Foundation, 2019). However, it does not appear to explicitly address TFGBV, for example: how it is defined and what activities constitute TFGBV. As discussed above, syllabi need to adopt a rights-based approach, helping learners to understand that TFGBV infringes on the rights of individuals to live free from violence and discrimination. Syllabi must be designed to educate people of all genders and ages about this right.

- **Misinformation and disinformation**
  Another example of a gender gap in syllabi is misinformation and disinformation. ICDL does offer a syllabus on information literacy, which includes knowledge and skills related to critically evaluating information online, but does not appear to cover misinformation and disinformation explicitly. UNESCO has developed a training module on misinformation and disinformation, which can be downloaded for free from its website (UNESCO, 2018).[13] It also appears that ICDL is part of a working group established by the European Commission to define learning requirements around misinformation and disinformation. Gaining the knowledge, attitudes and skills required to identify misinformation and disinformation online is critical for learners of all genders.

- **Additional gaps**
  There are also likely to be other gender gaps in available syllabi, for example, a lack of syllabi that cover gender biases in AI.

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13 https://en.unesco.org/sites/default/files/module_4.pdf

(7) Content design: a gender transformative approach

Key Messages:

- Numerous studies have documented gender bias in STEM learning materials (UNICEF, 2021(b)), including in text, imagery, videos and case studies.

- Gender biases in STEM materials often intersect with additional biases, featuring predominantly white, middle class, urban, westernised people.

- These biases and stereotypes must be removed to accelerate development of women's and girls' digital competence.

- Gender reviews of existing digital skills learning materials are urgently required.

- There is a need to create new content for Gender Transformative Digital Skills Education, which explicitly fosters positive attitudes and normative beliefs about women's and girls' use of digital technology.

- A Social and Behaviour Change Communication (SBCC) approach to content design should be adopted and tested.

- Content creation must be participatory and iterative, involving key stakeholder groups and gender intentional human-centred design methods.

7.1 Gender biases in existing digital learning content

According to Plan International et al., "Education systems themselves can often reflect and perpetuate prevailing harmful gender norms and power relations in teaching practices, curricula, and textbooks." (Plan International et al. 2021) Numerous studies have documented gender bias in STEM learning materials (World Bank, 2020(b)). For example, a World Bank-sponsored study in Nigeria explored the level of gender bias in images and language in the most frequently used STEM textbooks recommended by the Nigerian Education Ministry (Dele-Ajayi et al., 2020). It found that men were significantly more represented in these resources than women, and that "men were more likely to be depicted as professionals in science (whether by name or as an illustration), while women were more likely to be depicted as teachers." (World Bank, 2020(b)) Although this study took place in Nigeria, the authors note similar challenges in other jurisdictions (Dele-Ajayi et al., 2020). Gender biases are not restricted to STEM textbooks in schools. Many online digital skills learning modules primarily feature photographs and illustrations of men and boys, and online video tutorials and Massive Open Online Courses (MOOCs) on digital topics are predominantly delivered by male educators.

> " Education systems themselves can often reflect and perpetuate prevailing harmful gender norms and power relations in teaching practices, curricula, and textbooks. "
>
> Plan International et al. 2021

Gender biases in digital skills learning content also intersect with biases related to race, ethnicity and class. Much digital skills learning content features not just men, but predominantly white men. Even when content does feature women and girls, and women and girls of colour, they tend to be middle class, urban and westernised. It is vital that digital learning content is inclusive. Learners need to recognise themselves in the content – not be alienated by it. A more equitable and considered approach to using imagery is required.

7.2 Content to support changes in social and gender norms

Most digital skills education content in circulation today is only informational. It does not explicitly support efforts to change regressive attitudes and beliefs about women's and girls' use of digital technologies. Evidence from public health research suggests that informational communication that simply increases knowledge and awareness rarely leads to sustained behaviour change (USAID / SPRING Project, n.d.). There is, however, a substantial body of evidence from sectors such as public health, water, sanitation, disaster prevention, as well as education, that **social and behaviour change communication** (SBCC) can increase the impact of interventions (USAID / SPRING Project, 2014). For example, an evaluative study published in 2020 found that **school-based** SBCC in Ethiopia was an effective strategy for malaria prevention and control: it achieved this by training teachers in primary schools, facilitating students' peer education, and ultimately reaching out to their families and neighbours with messages (Kebede et al., 2020).
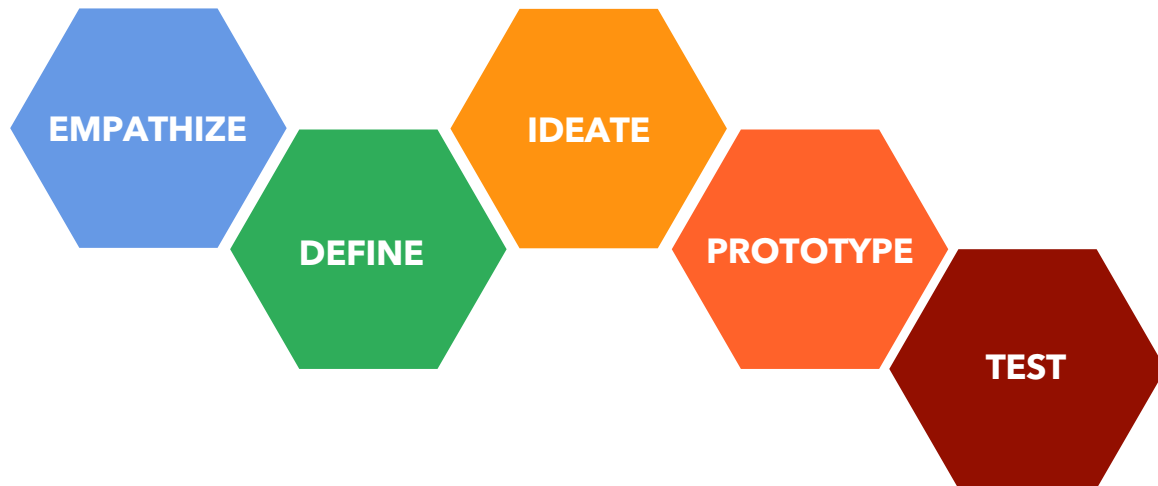
SBCC is the strategic use of communication approaches to positively influence knowledge, attitudes, social norms and behaviours among individuals, institutions and communities (Johns Hopkins, n.d.). Like the frameworks discussed under Determinants of Change and Promising Intervention Strategies, SBCC engages communities and decision-makers at multiple levels (UNICEF, 2018). Therefore, content is required not just to support communication with individuals, but to communicate with powerful people in their social networks, as well as to support advocacy at the levels of policy and resources (Johns Hopkins University, n.d.).

In the digital skills domain, two noteworthy projects have used SBCC content to address limiting attitudes and regressive beliefs about women's and girls' use of technology. The USAID-funded Tech4Families project in Nigeria, and the Phone Toh Uthao! project in India, funded by the Bill & Melinda Gates Foundation, both showed promising results. However, the digital skills community still has much to learn from successful SBCC approaches in other sectors.

7.3 Designing SBCC content for GTDSE programmes

Stanford University's 5-Step Design Thinking Model

Creators of SBCC content often use the Human Centred Design process depicted in **Figure 14**. According to UNICEF, an effective SBCC approach is "based on a comprehensive understanding of the target audiences and the factors that influence specific behaviours – considering barriers and enablers of behaviour change – and using this understanding in the design of SBCC messages, materials and activities" (UNICEF / Ministry of Health, Maldives 2021). In other words, effective SBCC content design is based on **gender analysis** (see Programme design). This can help avoid a common pitfall of Human Centred Design, where designers only focus on 'beneficiaries', rather than addressing the factors that influence 'problems' at multiple levels (see Determinants of Change in Part I).

STEP 1: EMPATHY

Designers of SBCC content for Gender Transformative Digital Skills Education should begin by immersing themselves in the results of gender analysis to understand the factors that influence women's and girls' digital competence, and control over devices and connectivity (see Determinants of Change in PART I), and who is most excluded from digital technology and why. Empathy is most powerfully created if designers can observe or even participate in the primary research, to observe first-hand the differing attitudes and normative beliefs of diverse learners and powerful people in their social networks.

STEP 2: DEFINE

The results of the 'Empathy' stage are then mined for insights – to define both 'the problem' (e.g. barriers to change), as well as potential triggers of change for learners and powerful people in their social networks. These insights feed into the creation of a Theory of Change for the SBCC content (see Develop a Theory of Change). These insights can be used to create 'user profiles', also called 'personas' or 'pen portraits'. These profiles help make socio-demographic and psychographic information about learners and powerful people in their social networks more tangible for content creators.

STEP 3: IDEATE

At this stage, representatives of key stakeholders (e.g. learners, their families, community and religious leaders, teachers, co-workers, employers) come together to brainstorm ideas for 'solving the problem'. UNICEF (Ibid.) notes that: "In many contexts, girls and boys may not speak freely if members of the opposite sex are present, especially when discussing sensitive topics such as puberty, reproductive or mental health, or violence. In these cases, separate design sessions with just girls and just boys may be best." The same holds true for women in many contexts. When designing SBCC content, the Ideate stage includes articulating key messages to address identified barriers, stimulate discussion and trigger change. According to FHI 360 (FHI 360 / USAID Wildlife Asia, 2020), a key message usually contains:

> " In many contexts, girls and boys may not speak freely if members of the opposite sex are present, especially when discussing sensitive topics such as puberty, reproductive or mental health, or violence. In these cases, separate design sessions with just girls and just boys may be best. "
>
> UNICEF / Ministry of Health, Maldives 2021

- **a Reason** why a specific stakeholder needs to perform the desired behaviour, i.e. a motivating factor
- **a 'Call to Action':** what action is needed and where/when that action can be taken.

Reasons women and girls might want to increase their digital knowledge and skills might include: access to more, better paid employment opportunities; advancement in their existing careers; expansion of their businesses to reach new clients; saving time and effort, and being able to communicate more easily with loved ones. Reasons why their husbands and fathers might approve of their wives and daughters learning new digital skills might include increased household income, or a more secure, comfortable future for their daughters. The benefits for local leaders might be a more resilient community that is better equipped to reap the rewards of digital transformation. Calls to Action might include encouraging conversation between spouses, or between children and parents, about these benefits.

STEP 4: PROTOTYPE

After key messages have been articulated, creative briefs are written to inform the content creation process. These typically cover: the goal and target audience; changes, barriers and communication objectives; key messages; mood/tone of the creative materials; and how the materials or activities fit into the mix of media used by the project (FHI 360 / USAID Wildlife Asia, 2020). Once the creative briefs are complete, the team responsible for creating the content can begin work. **The content creation process must be iterative and participatory.** To enable this, the creative team will need to design sample content (prototypes) for testing. Ideally these will encompass several different options, including different approaches to the brand, illustrative and photographic styles, representations of narrators/presenters/role models, and of course, sample content (text, audio, video).

STEP 5: TEST

Once sample content has been created, it needs to be tested with representatives of key stakeholder groups, i.e. the personas created during the "Define" phase. There is much evidence to indicate that just asking respondents what they think of sample content will result in a positive response, regardless of what they really think, due to social desirability biases. This is particularly true if foreign researchers are in the interview room. A much more effective approach is to conduct A/B testing,[14] and testing is much more effective if conducted by experienced women researchers who speak the local language and dialect. Content-testing will provide valuable insights about comprehension, accessibility, engagement, relevance, credibility and so forth. It is very unlikely that practitioners will get it right the first time :). Iterative rounds of content-testing, where content is modified based on test results, is invariably required to create impactful SBCC content, and the budget should allow for this.

> ## BOX 18: SBCC and Human-Centred Design resources
>
> - FHI 360 / USAID Wildlife Asia: Social and Behaviour Change Communication (SBCC) demand reduction guidebook
> - UNICEF: RESONATING CHANGE: Transforming Systems and Communities Through Development Communications
> - UNICEF: How to Co-Create Digital Solutions with Girls
> - UNICEF: GenderTech Toolkit: Building digital solutions for, with, and by girls
> - SBCC Implementation Kits: Social and Behaviour Change Communication Implementation Kits
> - Stanford University: An Introduction to Design Thinking: PROCESS GUIDE
> - Ideo: Design Kit

7.4 Promising content approaches

A number of digital skills interventions have identified promising approaches to designing digital skills content. The following approaches are among them.

- **Make it relatable**

  Digital skills learning content needs to be relatable, i.e. the 'reasons' or benefits included in key messaging need to be relevant and compelling to women and girls, and to power holders in their families and the community. Learners need to believe that they, too, could achieve what role models have achieved, and recognise a version of themselves in imagery. For example, digital learning content that features westernised, middle-class adolescents using expensive devices for luxury entertainment in urban environments may be aspirational to adolescent girls from low-literate, low-income rural communities, but it may also make them feel that technology is beyond their reach. This kind of imagery may also alienate their parents.

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14 A/B testing involves asking research respondents which approach they prefer from a number of options, and can involve ranking options in order of preference. Ranking can then be probed to understand why a respondent prefers one option over another.

- **Create local content and use accessible language**

    The language used in digital learning content, including metaphors and analogies, needs to be relevant to the context. This is why it is so important to work with local writers to author original content in relevant languages, rather than just translating English content into other languages (MIT Press, n.d.). Translators in LMICs often come from academic backgrounds and use complex language that is rarely used by disadvantaged communities. Additionally, in some languages there may be no easy translation; digital vocabulary overwhelmingly originates in English, and therefore disadvantages non-English speakers.[15]

- **Keep it short**

    As noted under Promising intervention strategies, women's and girls' lack of time is an important barrier for digital skills programs in LMICs. Offering bite-sized content may best meet the needs of those who are time-poor. For example, the GSMA MISTT training materials include short videos as well as printed materials for providing face-to-face training. These are typically offered by a mobile telecommunications agent in a retail outlet or, in dense locations like markets or village centres, by roaming agents who engage people who are working or on-the-go. Similarly, BBC Media Action videos created for the Phone Toh Uthao! project in India are approximately three minutes long, while training sessions – where peer change agents play these videos in Self-Help Group meetings and then lead discussion and practice sessions – lasted 15–30 minutes.

- **Lead with the need, not the technology**

    As noted in the section above on SBCC content design, key messages need to establish how stakeholders will benefit from a particular practice; in this case, the increased digital competence of women and girls. Content should lead with reasons or benefits, rather than generic introductions to particular software applications or digital platforms. Both the GSMA and BBC Media Action have identified economic use cases as among the most compelling for low-income communities, particularly in rural and peri-urban settings (GSMA, 2023(c)).

BOX 19: Economic use cases

GSMA research among micro-entrepreneurs in 10 countries in 2022 revealed 12 common business needs, and how mobile phones are being used by micro-entrepreneurs to meet these needs (**Figure 15**) (GSMA, 2023(c)). This research provides a useful indication of the kind of digital skills training that might be relevant to women in LMICs.

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15 Forthcoming publication, Arjun Khanna et al.

Figure 15

Examples of activities performed using a mobile phone that meet business needs

	Communicate, coordinate and align with customers and employees	Communicate with suppliers and obtain supplies	Market or showcase products	Record commercial information	Transport goods or people
Buy and sell	- Communicate with clients (e.g, orders, pick-up times)	- Check prices with suppliers - Purchase goods online	- Market and sell goods and services via online platforms - Offer deals and promotions	- Record appointments, customer details, stock levels - Record sales information (e.g. kilograms sold and price information)	- Deliver goods to customers - Travel to sales premises or customer
Knowledge	**Develop skills and find inspiration** - Learn about new trends and innovations (e.g. hair designs) - Learn and develop new skills		**Find information and support** - Gather functional information (e.g weather information) or information about competitors - Search for help or support		
Money	**Make and receive payments** - Receive client payments - Pay suppliers and employees	**Manage and save money** - Save money - Track past and upcoming payments, profit and loss	**Obtain and repay funding/ Insurance** - Seek and repay money for new business activities - Insure business assets and operations	**Define pricing** - Calculate pricing strategy or adjust pricing	
Compliance	**Engage with government and taxes** - Register the business - Register and pay tax				

Source: GSMA, 2023(c)

- **Feature relatable role models**

  Content, in addition to implementation strategies, should feature relatable role models, i.e. women and/or girls from similar backgrounds, who have achieved different levels of digital competence and benefited as a result. Role models might range from marginalised women who used their digital skills to increase their farming income and are now the leaders of women's collectives, to young women who graduated from tertiary STEM education, and are now on a leadership track in a STEM career.

- **Use language, imagery and narratives that counter gender stereotypes**

  To change harmful attitudes and normative beliefs, digital learning content needs to address harmful stereotypes about femininity. For example, it should model indicators of women's empowerment, such as mobility, control over resources, financial decision-making, participation in public life and political participation. It should also model positive masculinity, for example: husbands who share the burden of household chores and child-caring responsibilities, and who support their wives' working outside the home; and fathers who encourage their daughters to pursue further education and careers, including in STEM fields.

- **Design content for use in groups**

  Content should be specifically designed for use in group contexts. As noted on the Introduction, digital skills programmes that only engage learners as individuals are unlikely to succeed, because peer learning and discussion in groups is so key to changing attitudes and supporting norm change.

- **Design content to trigger discussion**

  As noted above, content should act as a stimulus **for group discussion**. It can do this by including questions and discussion prompts in the content (the Call to Action mentioned above), and by training educators how to use the content to lead discussion in groups. The content should also aim to trigger discussion between women and girls and power holders in their social networks, for example with husbands and parents.

8 Evaluation

Despite significant investment in digital skills programmes for women and girls, evidence of their impact is limited ([UNICEF, 2021(c)](#)). According to a review of 13 digital literacy initiatives in India, for example, few results were publicly available ([BBC Media Action, 2021](#)). Where results were in the public domain, the impact was often less than anticipated, particularly among less educated, low-income women and girls. A number of reasons for this evidence gap were identified ([Ibid.](#)):

- There appeared to be low investment in evaluating digital skills programmes, with very few robust, independent evaluations being funded.

- Where evaluative studies were conducted, they were usually commissioned by the implementing organisations, and the results were not published in peer-reviewed journals.

- Few digital skills programmes had documented ToCs, so assessing progress towards outcomes might have been challenging.

8.1 Methods for measuring digital knowledge and skills

There are various approaches to measuring digital knowledge and skills, each of which has its own strengths and weaknesses. The ITU's Digital Skills Assessment Guidebook describes three methods:

- **Self-assessment:** measures digital skills by asking participants to rate their own (self-reported) level of knowledge, ability, confidence or usage ([ITU, 2020(b)](#))

Questions tend to use predefined scales such as Likert (e.g. scale 1 – 5), multiple choice, or true or false ([Ibid.](#)). The ITU indicates that although self-assessment is the easiest and least expensive type of assessment to create, conduct and score, it has serious disadvantages: "People often find it hard to assess their own skills and abilities with any degree of accuracy. Demographic factors such as gender, income and prevailing social groups also skew the way a person assesses his or her skills." ([Ibid.](#)) This 'skew' is likely to result in respondents reporting higher levels of digital knowledge and skill. Self-Assessment is the method most used to measure digital skill levels in populations in LMICs ([ITU, 2020(b)](#)).

> " People often find it hard to assess their own skills and abilities with any degree of accuracy. Demographic factors such as gender, income and prevailing social groups also skew the way a person assesses his or her skills. "
>
> ITU, 2020(b)

- **Knowledge assessment:** tests skills using questions about factual or procedural knowledge (Ibid.)

  Results are usually presented as a set of responses to multiple-choice questions, and may produce a more accurate picture of abilities than self-assessments. However, these knowledge assessment tools have primarily been designed for use in high-income countries, and focus on computers rather than mobile devices. As the ITU notes: "Most assessments focus on desktop or laptop skills, but some of the skills could transfer to mobile devices and need to be conducted in a controlled environment for the highest degree of accuracy." (Ibid.)

- **Performance-based assessment:** measures actual performance of digital skills in realistic scenarios (Ibid.)

  Observation of performance of skills is the most accurate measurement method. However, as the ITU notes, although "performance assessments are the most valid method of measuring digital skills, they are also the most expensive to conduct and most time-intensive for users, which makes large-scale implementation difficult." (ITU, 2020(b))

> "
> Most assessments focus on desktop or laptop skills, but some of the skills could transfer to mobile devices and need to be conducted in a controlled environment for the highest degree of accuracy.
> ITU, 2020(b)
> "

> "
> Performance assessments are the most valid method of measuring digital skills, they are also the most expensive to conduct and most time-intensive for users, which makes large-scale implementation difficult.
> ITU, 2020(b)
> "

8.2 Metrics for measuring digital skills

Most efforts to measure digital knowledge and skills have focused on computer-based knowledge and skills, including professional certification in specific occupational fields (UNESCO-UIS, 2019).

The Digital Skills Indicator 2.0 – measuring digital skills in Europe

The Digital Skills Indicator (DSI) (EC JRC, 2022(b)) was first published in 2015. Today it is used to measure progress towards the EU's policy target of a minimum of 80 per cent of the population having at least basic digital skills by 2030. Measurement results feed into the Digital Economy and Society Index (DESI) report published by the European Commission (EC, n.d.(b)), which monitors the progress of EU Member States on their digital development. Between 2019 and 2022, Eurostat's (EU's statistical office) Information Society Working Group updated and adapted the DSI to align it with the European Commission's digital competence framework (DigComp 2.0, see Principle 4), and to keep pace with technological developments (EC JRC, 2022(b)). The DSI focuses on activities that individuals carry out using digital technologies, as a proxy for digital skills. It assumes that individuals who have performed certain activities have the corresponding skills. It does not measure the knowledge and attitudes required for proficiency in different digital competence domains.[16]

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16 For example, the activities that the DSI uses to calculate skills for the digital competence domain of communication and collaboration are: Sending/receiving emails; Telephoning/video calls over the Internet; Instant messaging; Participating in social networks; Expressing opinions on civic or political issues on websites or in social media; Taking part in online consultations or voting to define civic or political issues (EC JRC 2022(b)).

Gaps in metrics for measuring digital literacy worldwide

Although DSI is a powerful indicator for measuring digital skills in Europe, it has gaps when it comes to measuring digital literacy (or digital competence) in countries with substantial gender digital divides, where a significant percentage of women may struggle even to dial mobile numbers ([Bashingwa et al., 2023](#)). In 2019, UNESCO conducted a literature review of 44 digital literacy assessment instruments and found that none of them had been specifically designed to collect reliable and valid data for the SDG digital literacy target (Indicator 4.4.2) ([UNESCO-UIS, 2019](#)). "Although many countries have been collecting statistical data on the digital skills or ICT literacy of their citizens for various purposes, there is no common agreement on what constitutes a "minimum or basic level" of proficiency in digital literacy that would allow the aggregation of national data on the global level." ([Ibid.](#))

> " Although many countries have been collecting statistical data on the digital skills or ICT literacy of their citizens for various purposes, there is no common agreement on what constitutes a "minimum or basic level" of proficiency in digital literacy that would allow the aggregation of national data on the global level. "
>
> [UNESCO-UIS, 2019](#)

Developing international definitions, standards and methodologies

A key focus of the ITU's statistical work is to harmonise telecommunication/ICT data, and develop international definitions, standards and methodologies ([ITU, n.d.(b)](#)). The ITU works closely with other regional and international organisations and bodies to achieve this, including the UN, EuroStat, OECD, experts from other countries, and the Partnership on Measuring ICT for Development ([Ibid.](#)). The Partnership on Measuring ICT for Development has succeeded in identifying a core list of indicators, which includes access to and use of ICT by households and individuals. The list was agreed through a consultation process involving governments and international organisations ([Ibid.](#)).

The 2022 version of this indicator list ([Partnership on Measuring ICT for Development, 2022](#)) includes a range of indicators that are key to assessing progress towards closing the gender digital divide in LMICs.[17] To aid measurement of this core list of indicators, the ITU has published a Digital Skills Assessment Guidebook [(ITU, 2020(b))](#) and a Manual for Measuring ICT Access and Use by Households and Individuals ([ITU, 2020(c)](#)) to support countries in collecting high quality and internationally comparable data. The ITU has made samples of its 2022 ICT access and use questionnaires for households and individuals available online ([ITU, n.d.(e)](#)).

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17 For example: the proportion of households with a telephone; the proportion of individuals using a mobile phone; the proportion of individuals owning a mobile phone; the type of device used to access the Internet (mobile phone, tablet, portable computer, other device); barriers to household Internet access; reasons for individuals not accessing the Internet.

BOX 20: Inclusive measurement

The University of Cape Town's School of Public Health, with support from the Bill & Melinda Gates Foundation, is working with partners to enhance survey questions for measuring digital access and use, particularly for women in low-income, low-literate contexts. Through a combination of methods, including literature reviews, expert consultations, and primary qualitative and quantitative data collection, questions are being developed and cognitively tested in India, Kenya and Nigeria to measure a range of constructs. These include physical and financial ownership and access to technology, digital skills, agency, harms, data privacy and protection, and engagement with the digital economy. The project aims to enhance both the content and number of questions included within large global surveys, and generate an open access database of questions for broader use.

8.3 Evaluating gender transformative outcomes:

As discussed under Learning outcomes in PART I, evaluating GTDSE programmes goes beyond measuring changes in learners' digital competence. Fundamentally, evaluators need to assess whether programmes have contributed to women's and girls' empowerment outcomes and/or gender equality as a primary outcome. See the Resources box for a link to an online database that aggregates more than 300 empowerment indicators.

Evaluators also need to assess progress towards secondary outcomes, including changes in the personal attitudes and normative beliefs of learners and of powerful people in their social networks. However, one of the challenges of evaluating gender transformative programmes is that changes in social and gender norms are difficult to measure (UN Women, 2023). According to UN Women (Ibid.), "There is currently no global standard for identifying and measuring social norms change, despite the significant investments in getting this right among academics, and development and global health practitioners." Yet to quote Melinda Gates: "We will not use the complexity of resolving gender inequality as an excuse for failing to think and act more intentionally about putting women and girls at the center of what we do." (Gates, M.F., 2014)

Indicators

UN Women and LCANC highlight that **approaches to measuring social norms change that focus on a narrow set of individual level indicators, such as attitudes and behaviours, are inadequate**. This is because behaviours can be influenced by factors other than norms, and a community cannot be understood as an aggregation of individual attitudes (UN Women, 2023; LCANC, 2017). However, UN Women and LCANC agree that measuring not only individual attitudes, but also what individuals believe others typically do in a situation, and what actions they believe other people would approve and disapprove of in a particular situation, is "a significant move towards locating social norms in the interactions between individuals and their social world," (UN Women, 2023) and "might bear more helpful insights." (LCANC, 2017)

Methods

In a 2023 paper discussing societal and gender norms, UN Women states that the inflexibility of the RCT model fails to take into account the communities where individuals live, the institutions they engage with, and their real-life experiences within these contexts. It does not place them within the social, political, economic, and environmental ecosystems they inhabit. (UN Women, 2023) However, UN Women acknowledges that there is substantial evidence supporting the need for mixed-methods approaches. These approaches, which combine both quantitative and qualitative methods, can effectively capture perceptions and reality, intensity and scope, as well as complexity and nuance. Such approaches are essential for understanding causation in intricate systems and provide us with more rigorous and actionable information. (Ibid.)

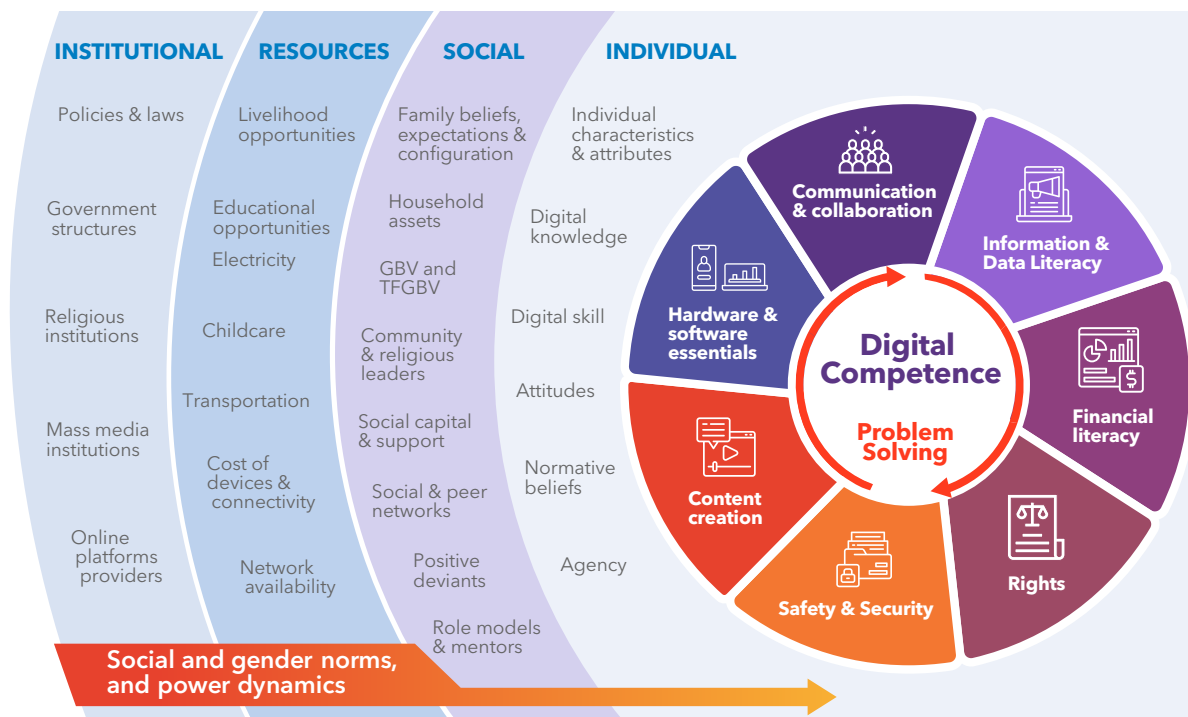## BOX 21: Resources for measuring empowerment

- EMERGE has compiled 300+ survey measures on gender equality and empowerment for researchers and implementers, with measures crossing health, education, economics, politics and other social spheres. They are available via a searchable online database.

- A number of guides have been developed for measuring social and gender norms:
    - MONITORING SHIFTS IN SOCIAL NORMS: A Guidance Note for Program Implementers (LCANC,2021)
    - Data, tools and measurement: Guide to recent resources, (ALiGN, 2021)
    - Quantitative measurement of gendered social norms, (ALiGN, 2019)
    - Measuring Gender and Social Norms: RECOMMENDED MEASURES FOR USE IN SURVEY RESEARCH (EMERGE, n.d.)
    - Man Enough? Measuring Masculine Norms to Promote Women's Empowerment (OECD, n.d.)

- The World Values Survey (WVS) is the largest non-commercial, cross-national, time series investigation of human beliefs and values ever executed, currently including interviews with almost 400,000 respondents. It is conducted by a global network of social scientists studying changing values and their impact on social and political life (UN Women, 2023). Questionnaires from the 2022 WVS are available here.

Call to action

Gender norms are embedded in a system of structural drivers that intersect with and sustain behaviour

Norms are almost always embedded in a system of structural drivers that intersect with and sustain behavior*

Source: Chamberlain, S., EQUALS Skills Coalition, 2024. This framework builds on Johns Hopkins' "Freedom within a cage", the Learning Collaborative's "Flower of Sustainer Health", and UNESCO's Cracking the Code.
* Cislaghi B, Heise L. Using social norms theory for health promotion in low-income countries. Health Promot Int. 2019 Jun 1;34(3):616-623. doi: 10.1093/heapro/day017

Closing the gender digital divide, and ensuring gender equality and equity in digital transformation, will require sustained effort by many stakeholders (see **Figure 16** above). We call on:

Policy-makers to:

- **Legislate for women's economic inclusion**
  There needs to be a concerted effort to develop and implement laws that support women's economic inclusion, and investment in creating more, better paid, flexible livelihood opportunities for women.

- **Mainstream gender in digital skills education**
  Smart educational policies should be implemented to mainstream gender transformative approaches in digital skills education – for all genders. They need to be backed up with investments and clear metrics to track progress.

- **Legislate more effectively against TFGBV**
  Policy makers need to develop and implement more effective legislation against Technology-Facilitated Gender-Based Violence (TFGBV), for example by making Very Large Online Platforms responsible for illegal content on their platforms – as the Digital Services Act (DSA) in the EU has done.

- **Invest in changing public opinion about women's and girls' use of technology**
  Public service advertising campaigns need to be designed and implemented to help change the regressive normative beliefs that are preventing women and girls from realising the benefits of digital transformation.

Investors and practitioners

(including governments, donors, the private sector and civil society organisations) **to:**

- Design and implement Gender Transformative Digital Skills Education (GTDSE) inside and outside classrooms.

- Build the capacity of educators to deliver GTDSE to reduce gender biases in digital skills education inside and outside classrooms, and to safeguard learners.

- Bring together experts on social and gender norms change and designers of digital skills education programmes to co-create Theories of Change.

- Use a gender equity lens to review the implementation strategies, curricula, syllabi and content of existing digital skills education programmes and content creators.

- Feed learning from reviews into the design of gender transformative implementation strategies, curricula, syllabi and content, building on the expertise of global players such as ICDL and the GSMA.

- Bring together those at the forefront of social and gender norm measurement and digital skills assessment to co-develop and agree on robust approaches to evaluating GTDSE programs.

- Invest in robust, independent evaluations of digital skills programmes to build the evidence base.

- Patient, long-term investment is required to change social and gender norms (UN Women, 2023).

Ⓐ Glossary

Competencies: "The abilities of a person to integrate knowledge, skills and attitudes in their performance of tasks in a given context. Competencies are durable, trainable and, through the expression of behaviours, measurable." (World Health Organization (WHO), 2022)

Competency-based education (CBE): An approach to learning that focuses on the ability to integrate and apply knowledge, skills and attitudes in real-world situations.

Digital competence: The confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society (European Commission).

Digital competence frameworks: Tools that outline the knowledge, skills and attitudes that learners need to achieve at different levels of complexity (usually described as proficiency).

Digital literacy: involves the confident and critical use of a full range of digital technologies for information, communication and basic problem-solving in all aspects of life (UNESCO-UIS, n.d.). Although the terms 'digital literacy' and 'digital competence' are often used interchangeably, literature reviews suggest that digital competence should be understood as a structured approach to "developing and assessing the digital literacy of a specific target group." (Mattar et al., 2022)

Educational competency frameworks: Tools that outline the knowledge, skills, and abilities that learners need to achieve at different levels of complexity (usually described as proficiency). These frameworks can help ensure the quality of curricula and training, guide the awarding of credentials, and serve as a basis for designing learning experiences (Strategy Labs, n.d.).

Experiential learning: The process of learning through experience. It is a hands-on approach to learning that moves away from the classroom and a teacher imparting and transferring their knowledge to students, and strives to bring a more involved way of learning.

Gender: The socially and culturally constructed ideas of what it is to be male or female in a specific context (Bill & Melinda Gates Foundation, 2021). Gender is evident in the roles, responsibilities, attitudes and behaviours that a society expects and considers appropriate for males and females, independent of an individual's own identity or expression. Societal and individual expectations about gender are learned, and changeable over time. They can be different within and among cultures, and often intersect with other factors such as race, class, age and sexual orientation (Ibid.).

Gender analysis: A critical and systematic examination of differences in the constraints and opportunities available to an individual or group of individuals based on their sex and gender identity (Ibid.).

Gender-based violence: Violence directed at an individual based on their biological sex, gender identity, gender expression or failure to adhere to socially defined norms of masculinity and femininity. It includes physical, sexual and psychological abuse; threats; coercion; arbitrary deprivation of liberty; and economic deprivation. It can occur in public or private life (Ibid.).

Gender bias: Prejudiced actions or thoughts that affect a person or a group of people based on their perceived gender. It can lead to unequal and/or unfair treatment, such as gender-based discrimination in the workplace or gender stereotyping in the media, and unequal and/or unfair access to resources, including income, food, health care, land ownership, and education (Bill & Melinda Gates Foundation, 2021).

Gender-blind programmes: Programmes that do not take into account gender norms, roles and relationships, which can lead to reinforcing gender-based discrimination and stereotypes.

Gender data: Factual information about people based on their gender. Gender data include quantitative or qualitative data collected and presented by sex; data that reflect the diversity of people's identities; and data that reflect issues related to gender inequality (Ibid.).

Gender discrimination: Any distinction, exclusion or restriction made on the basis of a person's sex and/or gender identity, rather than on a person's skill or merit (Ibid.).

Gender equality: The state of being equal in status, rights and opportunities, and of being valued equally, regardless of sex or gender identity and/or expression. In a state of gender equality, people are free to develop their personal abilities and make choices without the limitations set by stereotypes, gender norms or prejudices. Gender equality is widely recognised as a fundamental human rights concern and a precondition for advancing development, reducing poverty and promoting sustainable development (Ibid.).

Gender gap: A disparity between women's and men's and boys' and girls' condition or position in society based on gendered norms and expectations. Gender gaps reflect the unequal distribution of opportunities, resources or outcomes, and are usually revealed through the analysis of gender data that illustrate the extent of inequalities (Ibid.).

Gender identity and/or expression: A person's own sense of being male, female, or another identity beyond this binary, and how they choose to manifest this externally (Ibid.).

Gender norms: A subset of social norms. They describe how we are expected to behave as a result of the way we or others identify our gender. In most contexts, gender norms are framed in binary terms (female and male) and erase non-binary or gender-fluid identities. [18]

Gender lens: A perspective that pays particular attention to how gender differences and relations are relevant for interventions.

Gender mainstreaming: The process of integrating a gender lens into all aspects of an organisation's strategies and initiatives, and into its culture, systems and operations. It is a strategy for making the needs and interests of all genders an integral part of the design, implementation, monitoring and evaluation of programmes, policies and organisational processes, so that everyone has the opportunity to benefit equally, and inequality is not perpetuated. Gender mainstreaming requires building relevant capacity and accountability across an organisation. The goal of gender mainstreaming is to achieve gender equality for all (Bill & Melinda Gates Foundation, 2021).

Gender relations: Socially constructed power relations between people based on their gender identity and/or expression. Understanding the social relations of gender involves looking at how an individual's access to resources, opportunities and rights are shaped by how they are valued, their social position, and their power relative to others in society (Ibid.).

Gender sensitive programmes: Programmes that acknowledge and consider gender norms, roles and inequalities but do not necessarily involve action to address them.

Gender transformative programmes: Programmes that actively strive to examine, question and transform harmful gender norms, roles and relations in order to promote gender equality and redistribute power, resources and services more equally (UNFPA, n.d.).

Gender unequal programmes: Programmes that can make gender inequalities worse by supporting unfair gender norms, roles and relationships.

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18 Led by the ODI, Align is a digital platform and programme of work that is creating a global community of researchers, practitioners and thought leaders, all committed to gender justice and equality (ALiGN, n.d.(a)).

Intersectionality: Rather than defining men and women as homogenous groups, an intersectional approach acknowledges and works to understand the differences within and among groups of men and women and gender non-conforming individuals, and how these differences create unequal opportunities and access to resources. These differences include (but are not limited to) differences related to age, race, class, caste, religion, ability, sexual orientation, gender identity and expression, and sex characteristics (Bill & Melinda Gates Foundation, 2021).

Men's and boys' engagement: An approach that works with men and boys in the context of gender equality programming. The effective inclusion of men and boys in gender equality programming can support them in transforming dominant, often non-equitable and violent, definitions of masculinity and in adopting and promoting attitudes and behaviours that are consistent with gender equality. It can also support women's and girls' empowerment. Men and boys are engaged as beneficiaries, partners and as agents of change in their position as relatives and peers, in positions of authority, or as mentors and role models for each other (Ibid.).

Netiquette: The set of rules about behaviour that is acceptable when communicating with people over the Internet (Cambridge Dictionary). It is a combination of the words "network" and "etiquette".

Pedagogy: The theory and practice of learning, and how this process influences, and is influenced by, the social, political and psychological development of learners. It is the study of how knowledge and skills are imparted in an educational context, and it considers the interactions that take place during learning.

Peer Change Agent: A person who encourages their peers to change their behaviour or opinions.

Positive deviance: Refers to a behavioural and social change approach that is premised on the observation that in any context, certain individuals confronting similar challenges, constraints and resource deprivations to their peers, will nonetheless employ uncommon but successful behaviours or strategies that enable them to find better solutions (Better Evaluation, n.d.).

Self-efficacy: People's belief in their ability to control their lives, and the events that affect their lives. One's sense of self-efficacy can provide the foundation for motivation, well-being and personal accomplishment.

Sex: The biological categorisation of a person as male, female or intersex. Sex is assigned at birth based on biological indicators, including hormones, sex chromosomes, internal reproductive organs and external genitalia. Sex and gender are commonly conflated, which contributes to widespread erroneous beliefs that cultural practices, roles and norms around gender are biologically determined and therefore cannot be changed (Bill & Melinda Gates Foundation, 2021).

Sexual orientation: A person's emotional, romantic, physical and/or sexual attraction to others. Among other orientations, a person might identify as heterosexual, lesbian, gay or bisexual based on whether their attraction(s) is/are to persons of a different sex and/or gender identity, the same sex and/or gender identity, or someone of more than one sex and/or gender identity (Bill & Melinda Gates Foundation, 2021).

Social norms: A social norm is constructed by one's beliefs about what others do, and by one's beliefs about what others think one should do. It is maintained by 'social influence', i.e. the approval or disapproval of people whose opinions one cares about (UNICEF / USCD Centre for Global Justice, 2014).

Social and Behaviour Change Communication (SBCC): The strategic use of communication approaches to positively influence knowledge, attitudes, social norms and behaviours among individuals, institutions and communities (Johns Hopkins University, n.d.).

Social Desirability Bias: A type of response bias where respondents give answers to questions that they believe will make them look good to others, often concealing their true opinions or experiences. This bias often affects studies that focus on sensitive or personal topics, such as politics, drug use or sexual behaviour (Nikolopoulou, 2022).

Technology-Facilitated Gender-Based Violence (TFGBV): Any act that is committed or amplified using digital tools or technologies causing physical, sexual, psychological, social, political or economic harm to women and girls because of their gender.

Theory of Change: A tool for programme planning and evaluation that outlines how an intervention will produce intended outcomes, including necessary pre-conditions (LCANC, 2019(a)). It is useful for programmes aiming to shift norms, as it clarifies how activities shift norms and influence programme goals.

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A Comparison of Digital Competence Frameworks and Curricula

Competency Domain	DigComp 2.2	DLGF	Microsoft Digital Literacy Standard Curriculum	ICDL curricula
Communication and collaboration	To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship. To manage one's digital presence, identify and reputation.	Interacting through digital technologies. Sharing through digital technologies. Engaging in citizenship through digital technologies. Collaborating through digital technologies. Netiquette. Managing digital identity.	Communication, Collaboration and Participation, including: Methods of communicating online. Communicating safely online. Treat others respectfully online. Working and collaborating online.	Communication concepts. Using communication tools. Online communities. Presentations. Email concepts and using email. Calendars. Collaboration concepts and using online collaboration tools. Mobile collaboration. Team work. Digital marketing.
Content Creation	To create and edit digital content. To improve and integrate information and content into an existing body of knowledge while understanding how the copyright and licenses are to be applied. To know to how to give understandable instructions for a computer system (computational thinking).	Developing digital content. Integrating and re-elaborating digital content. Copyright and licenses. Programming.	Creation, innovation and scholarship. Create digital content such as videos, images, and websites. Creating content in Microsoft Office.	Presentations. Spreadsheets. Documents. Image editing. Web editing. 2D and 3D design. Coding principles, including Computational thinking. Data analytics etc.
Information and data Literacy	To articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage and organise digital data, information and content.	Browsing, searching and filtering data, information and digital content. Evaluating data, information and digital content. Managing data, information and digital content.	Information, media and data literacies, including: Access, evaluate, use, and communicate information ethically and effectively. Understand data literacy: Find, evaluate, clean, organize, visualize, and communicate data effectively.	Information literacy: covers the main concepts and skills relating to identifying, searching, evaluating, organising, and communicating online information. Understanding and working with databases. Datareporting, exporting and printing. Working with spreadsheets. What is AI, how does it work, common examples, challenges and opportunities.
Security	Covered in the 'Safety' domain below.	Covered in the 'Safety' domain below.	Understand online security threats. Protect devices and data using security measures such as strong passwords and up to date software.	Security concepts. Malware. Network security. Secure web use. Secure Communication. Secure data management.

Competency Domain	DigComp 2.2	DLGF	Microsoft Digital Literacy Standard Curriculum	ICDL curricula
Safety	To protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health and to be aware of digital technologies for social well being and social inclusion. To be aware of the environmental impact of digital technologies and their use.	Protecting devices. Prote cting personal data and privacy. Protecting health and well being. Protecting the environment.	Online Safety, including: Understanding online safety. Protecting personal information. Avoiding scams and fraud. Staying safe on social media. Dealing with cyberbullying. Protecting children online.	Online safety, including: Understanding encryption. Digital certificates. Secure websites. Privacy and data protection including concept of personal data and protecting personal data. E-commerce.
Rights				GDPR overview, principals, data subject's rights, implementation, compliance. Copyright and intellectual property rights.
Citizenship	Covered under communication and collaboration above.	Covered under communication and collaboration above.	Digital Citizenship: Use digital technologies responsibly and ethically in all aspects of life.	ICDL Digital Citizen is specially developed to cater for those with no experience whatsoever of computers and the Internet. ICDL Digital Citizen helps to remove the fear of using a computer for complete novices by using a simple, non - threatening approach to educating individuals in the basic skills of using a computer, email and the Internet. [i]
Problem solving	Solving problems using digital technologies; Computing Concepts.	Solving technical problems. Identifying needs and technological responses. Creatively using digital technologies. Identifying digital competence gaps.	N/A	Covered in other competence domains above - includes: Computational thinking and methods.[ii] Artificial Intelligence, including: What is AI, how does it work, common examples, challenges and potential.
Digital Ethics	Understanding the impact of digital technologies on society.		Digital Ethics.	
Technical		Hardware and software essentials, including: Basic knowledge of hardware such as turning on/off and charging, locking devices. Basic knowledge of software such as user account and password management and login, how to do privacy settings etc.	Technical proficiency, including: Computer and device basics. Working with operating systems. Working with applications. Getting online.	Computers, Online, and Application Essentials. Also 'Smart Digital. – Starting, Building, Sharing.

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i https://icdl.org/icdl-programmes/
ii Computational thinking is a problem-solving process that involves formulating problems in a way that a computer can solve them, using techniques such as abstraction, decomposition, pattern recognition, and algorithm design.