CONNECTING WOMEN IN DIGITAL

# Educational Framework for Integrating Intersectionality into Digital Skills Education

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Funded by the European Union

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# 1. Executive Summary

This Educational Framework provides practical guidance for integrating intersectional approaches into digital skills education and training. It is intended for schools, higher education institutions, vocational education and training providers, non-formal learning organisations, digital skills academies, career development services, policymakers and employers cooperating with education providers.

The framework starts from a simple premise: girls and women are not a homogeneous group. Access to digital education, participation, belonging, completion, transition into employment and progression into leadership are shaped by interacting factors such as age, socioeconomic status, disability, migration background, ethnicity, race, geographical location, gender identity, sexual orientation, parental status and caring responsibilities.

A programme that is formally open to all women is not automatically inclusive. It may still exclude those who cannot afford equipment, cannot travel to the training location, lack prior exposure to digital tools, experience bias, have caring responsibilities, live in rural areas, have disabilities or hold qualifications that are not recognised. Inclusive digital education must therefore address access, belonging, progression and recognition, not only technical skills.

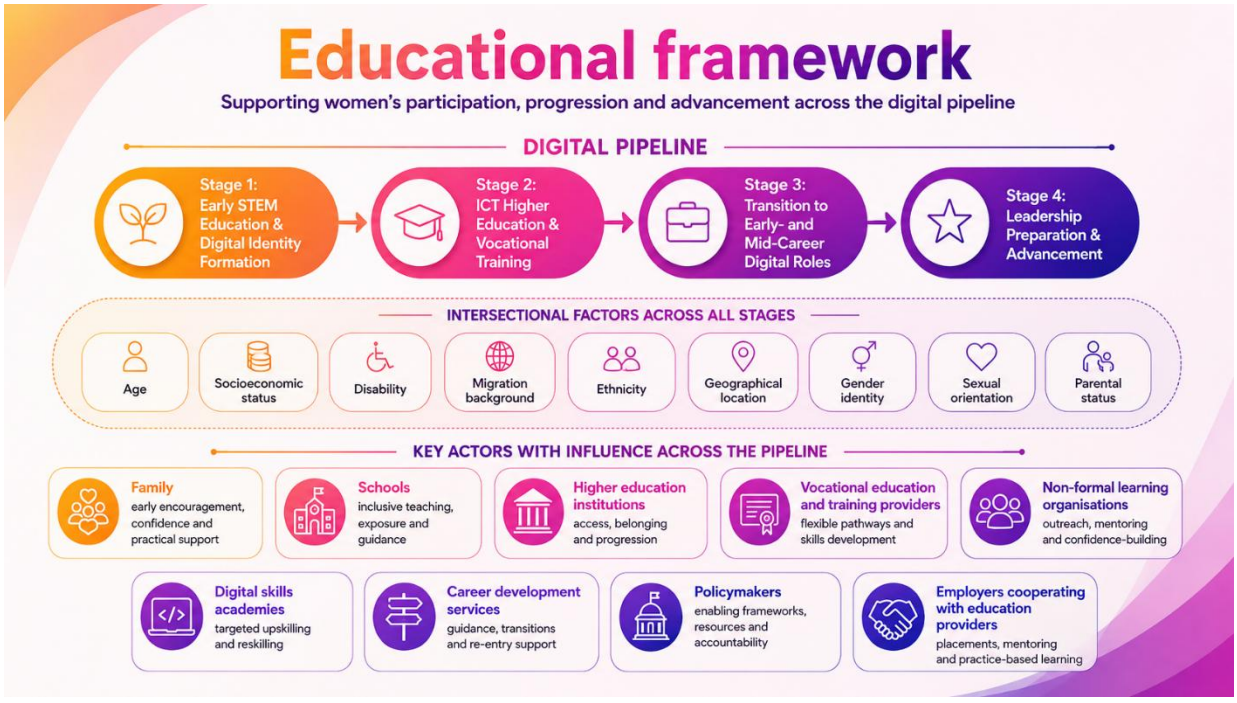
The framework follows four stages of the digital pipeline: early STEM education; ICT higher education and vocational training; transition to early- and mid-career digital roles; and leadership preparation and advancement. Across these stages, the framework uses a common logic: it identifies relevant intersectional factors or factor combinations, explains the mechanisms through which inequality operates, and proposes education-oriented actions.

The annexes provide design and review questions as well as a menu of adaptable interventions to support implementation.

At EU level, this framework is particularly relevant to the European Commission's Directorate-General for Education, Youth, Sport and Culture (DG EAC), Directorate-General for Communications Networks, Content and Technology (DG CNECT), and Directorate-General for Justice and Consumers (DG JUST), with the Directorate-General for Employment, Social Affairs and Inclusion (DG EMPL) as an additional stakeholder. Its recommendations on inclusive STEM education, teacher training and accessible ICT learning (Stages 1–2) could inform DG EAC initiatives, particularly the STEM Education Strategic Plan (2025) and the Digital Education Action Plan 2021–2027. Recommendations on equitable access to digital skills and women's progression into ICT careers (Stages 1–4) are relevant to DG CNECT's Digital Decade Policy Programme 2030. Measures addressing intersecting discrimination and structural inequalities across all four stages align with DG JUST's Gender Equality Strategy 2026–2030. Recommendations on flexible upskilling, career re-entry and leadership preparation (Stages 3–4) are relevant to DG EMPL's Union of Skills (2025).

## 2. Purpose, Scope and Target Users

The purpose of this framework is to support education and training providers in designing, reviewing and improving digital skills programmes through an intersectional lens. It can be used to develop new programmes, review existing curricula, improve inclusive outreach, admission and learner recruitment, strengthen learner support, plan staff training, build employer partnerships and monitor outcomes.




The framework covers four stages of the digital pipeline:

• Early STEM education, including early childhood, primary and secondary education.

• ICT higher education and vocational training, including universities, colleges, vocational schools and specialised ICT training providers.

• Transition to early- and mid-career digital roles, with attention to employability, reskilling, upskilling, career restart and non-linear pathways.

• Leadership preparation and advancement, with attention to leadership readiness, visibility, sponsorship and access to advanced digital roles.

The third and fourth stages are closely linked to the labour market. They are included because education and training providers shape confidence, professional identity, networks, career expectations and access to opportunities. However, the framework focuses on what education and training actors can do directly through curriculum, learner support, career preparation, alumni networks and employer partnerships, rather than replacing employer or labour-market responsibilities.

Target users include family and community actors, schools, higher education institutions, vocational education and training providers, non-formal learning organisations, digital skills academies, career development and student support services, NGOs and community organisations, quality assurance bodies, policymakers, and employers cooperating with education and training providers. Within these organisations, the framework is relevant to teachers, lecturers, trainers, programme directors, school leaders, student support staff, equality and diversity officers, career guidance professionals and institutional decision-makers.

The annexes are designed to support practical use of the framework. Annex 1 provides a set of design and review questions that institutions can use when planning, assessing or improving digital skills programmes through an intersectional lens. Annex 2 offers a menu of possible educational interventions that can be adapted to different stages of the digital pipeline, target groups and institutional contexts. The annexes are not intended as a fixed or exhaustive list of requirements; they are meant to support reflection, adaptation and implementation.

# 3. Conceptual Foundation: Intersectionality is not a checklist of identities

Intersectionality means recognising that people's experiences are shaped by the interaction of multiple social factors and systems of inequality. In digital education, gender does not operate alone. A girl's or woman's opportunity to access and benefit from digital learning may also be shaped by family income, disability, migration history, ethnicity, race, language, geographical location, age, sexual orientation, gender identity, parental status, childbearing or caring responsibilities.

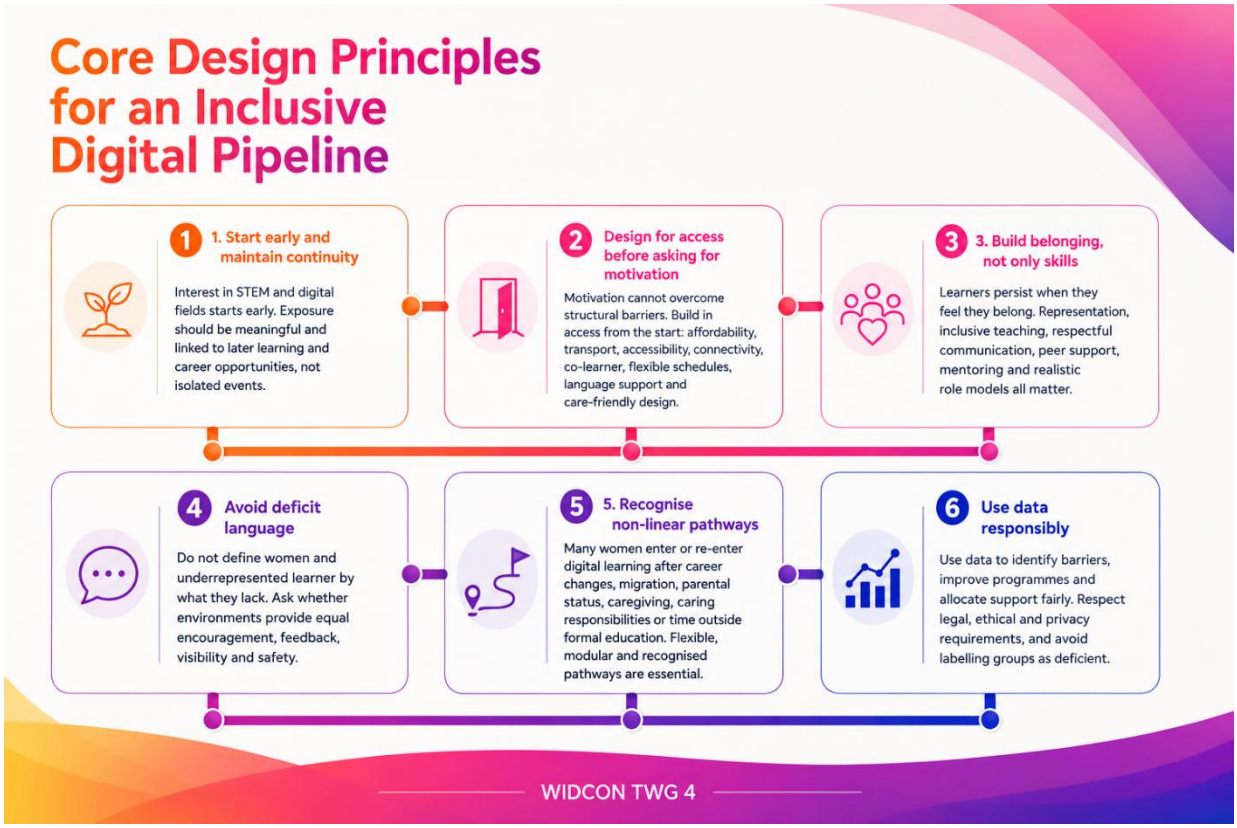
The key question is not only whether a programme includes women, but which women are able to access, remain in and benefit from the programme, and which women are still left out. An intersectional approach does not require a separate programme for every possible group. It requires programmes that are flexible, accessible and responsive to different starting points and life situations.

Many barriers faced by girls and women are often described as individual problems: lack of confidence, lack of motivation, lack of ambition or lack of skills. These explanations are incomplete. Confidence and skills matter, but they are shaped by learning environments, expectations, resources, representation, recognition and previous opportunities.

An intersectional educational approach therefore shifts the focus from fixing individuals to improving systems. The central task is not to ask girls and women to adapt to narrow digital learning environments, but to redesign those environments so that more people can participate, succeed and progress.

# 4. Core Design Principles

The following principles apply across all stages of the digital pipeline. Detailed actions are presented in Section 5 and practical tools in the annexes.




## 4.1. Start early and maintain continuity

Interest in STEM and digital fields begins to form long before young people choose higher education programmes or careers. Early exposure must be meaningful and connected to later opportunities. Isolated events, competitions or campaigns are useful only when they form part of a visible pathway.

## 4.2. Design for access before asking for motivation

Motivation cannot compensate for unaffordable fees, lack of transport, inaccessible buildings, poor internet connection, lack of equipment, rigid timetables, language barriers or caring responsibilities. Accessibility must be designed into programmes from the beginning.

## 4.3. Build belonging, not only skills

Learners are more likely to continue when they see themselves as legitimate participants in digital fields. Belonging is created through representation, inclusive teaching, respectful communication, peer relationships, mentoring and realistic role models.

## 4.4. Avoid deficit language

Institutions should avoid framing women and underrepresented learners primarily in terms of what they lack. Instead of saying that women lack confidence, the framework should ask whether learning environments provide equal encouragement, feedback, visibility and safety.

## 4.5. Recognise non-linear pathways

Many women enter digital learning after career changes, migration, childbearing, parenthood, caring responsibilities or periods outside formal education. Flexible, modular and recognised pathways are essential for inclusion.

## 4.6. Use data responsibly

Data should be used to identify barriers, improve programmes and allocate support fairly. Data collection must respect legal, ethical and privacy requirements, and should not label groups as deficient. Where individual-level data on sensitive factors cannot or should not be

collected, institutions should use aggregated data, anonymous feedback, qualitative evidence and learner consultation to identify barriers.

# 5. Framework by Pipeline Stage

This section is the core of the framework. Each stage is presented through three elements: the relevant intersectional factor or factor combination, the mechanism through which inequality operates, and recommended actions for education and training institutions. Factors are grouped differently across stages where this better reflects the evidence and avoids treating intersectionality as a fixed checklist of identities.

## 5.1. Stage 1: Early STEM Education and Digital Identity Formation

This stage focuses on how girls' interest, confidence and sense of belonging in STEM and digital fields begin to form from early childhood through school years. The table highlights how gender stereotypes interact with socioeconomic status, migration background, ethnicity, disability, geographical location and other factors, shaping who is exposed to STEM, encouraged to continue and able to imagine themselves in digital futures.

*Table 1 Early STEM Education and Digital Identity Formation*

| Intersectional factors | Intersectional mechanism | Recommended actions |
|---|---|---|
| Age and early exposure | STEM identity starts forming before formal subject choices. When STEM begins late, is treated as too difficult for young children, or is offered only through temporary | • Integrate age-appropriate STEM, digital, data and basic AI literacy from early childhood to lower-secondary education as normal learning, not enrichment. |

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| | projects, girls have already absorbed gendered messages from toys, stories, family expectations and early school practice. This is intensified by low income, migration background or rural schooling. | • Use play, stories and real-world problems, but keep STEM visible and meaningful.<br>• Train kindergarten and primary teachers, counsellors, parents and older siblings to recognise early bias. |
| Gender, gender identity, gender expression and sexual orientation | Technology is still framed as masculine, 'nerdy' or not compatible with femininity. Girls, trans, non-binary and LGBTQ+ learners may experience exclusion, misgendering, invisibility or pressure to adapt to dominant norms. This weakens confidence and belonging before actual ability becomes the issue. | • Review learning materials, books, images, examples and STEM clubs for gendered assumptions.<br>• Use inclusive language, diverse role models and non-stereotypical career stories.<br>• Ensure STEM activities explicitly include girls, trans and non-binary learners, and apply clear anti-bullying and safe-participation rules. |
| Socioeconomic status | Access to STEM depends on family resources: devices, internet, tutoring, paid clubs, transport, school trips, quiet study space and parental knowledge of pathways. Low-income girls may have less informal digital exposure at home, | • Provide free school-based coding, robotics, science and digital activities.<br>• Cover devices, software, connectivity, materials, transport and participation costs. |

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| | while "Bring Your Own Device" BYOD models or expensive extracurricular activities reproduce class differences. | • Avoid unequal BYOD practices or regulate them for equity.<br>• Use school/community STEM hubs so access does not depend on family income. |
| Race and ethnicity | Racialised and ethnic minority girls may face low expectations, discriminatory comments, lack of role models and culturally narrow views of who belongs in STEM. Ethnicity can also intersect with family expectations, school segregation, language, poverty or negative prior experiences with education systems. | • Train teachers and guidance staff in anti-racist and culturally responsive STEM pedagogy.<br>• Use role models from racialised, ethnic minority, and underrepresented communities.<br>• Work with community organisations and families, and monitor subject guidance, grouping and participation for unequal patterns. |
| Migration background and language | Migrant or first-generation girls may lack knowledge of national STEM pathways, subject choices and career options. Language barriers can be misread as low ability, leading to lower expectations or inappropriate tracking. At the same time, different educational experiences can bring valuable problem-solving | • Provide multilingual guidance for families on STEM pathways, subject choices and careers.<br>• Offer STEM vocabulary and bridging support without lowering academic expectations.<br>• Use mentoring for migrant girls, cooperative learning, virtual exchanges and activities that |

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| | approaches. These barriers intersect with race and ethnicity. | value different methods of solving problems. |
| Disability and neurodiversity | Girls with disabilities or neurodivergence may face inaccessible labs, digital tools, assessment formats and group-work practices. Low expectations can push them toward 'safe' or low-profile pathways rather than ambitious STEM options. Girls may also be under-identified or avoid disclosure due to stigma. | • Make accessibility a condition of STEM provision: accessible labs, assistive technologies, compatible digital materials and alternative assessment formats.<br>• Train teachers in disability-inclusive and neurodiversity-aware STEM pedagogy.<br>• Include disabled and neurodivergent women as visible STEM role models and co-design activities with learners. |
| Geographical location | Rural, peripheral, island or smaller-school contexts may offer fewer STEM subjects, specialist teachers, labs, employer links and competitions. Distance and transport costs reduce participation, especially where families cannot compensate with private activities or digital resources. | • Guarantee access to enabling STEM subjects across school types and regions.<br>• Develop regional STEM hubs, mobile laboratories, shared specialist teachers, virtual mentoring and online labs.<br>• Fund transport and participation for rural learners and connect schools with local industry, |

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| | | universities and community spaces. |
| Family and community expectations | Family expectations shape what girls perceive as possible. Some families may lack STEM knowledge, see digital careers as unsuitable, too risky, too long, or less compatible with future family roles. These expectations intersect with socioeconomic status, migration background, ethnicity and local labour-market experience. | • Organise family STEM days, parent workshops and community outreach in trusted and multilingual formats.<br>• Explain critical subject choices, scholarships, digital career pathways and future labour-market opportunities.<br>• Present STEM as creative, socially useful and compatible with different life paths, not only as a technical male domain. |

## 5.2. Stage 2: ICT Higher Education and Vocational Training

Stage 2 focuses on the transition into ICT higher education and vocational training, where earlier interests and aspirations are tested against institutional entry requirements, financial realities, accessibility conditions and social expectations. At this stage, intersectional inequalities become visible not only in who enters ICT programmes, but also in who receives adequate support to persist, feel legitimate, access networks and progress towards digital careers.

*Table 2 ICT Higher Education and Vocational Training*

| Intersectional factors | Intersectional mechanism | Recommended actions |
|---|---|---|
| Age | ICT higher education often assumes that all adults already have basic digital, cybersecurity and data-safety skills. Women entering through non-linear routes — reskilling, migration, career breaks or later-life learning — may be treated as "behind". For some, intensive studies, PhDs or bootcamps also coincide with reproductive-age pressures and health-related changes associated with the menstrual cycle or menopause, which may affect energy, concentration and participation. | • Introduce ICT self-assessment at entry;<br>• offer short bridging modules, peer learning and booked ICT support;<br>• expand modular courses, micro-credentials and flexible study paths;<br>• make study planning compatible with caring, health and life-course pressures, including menstrual and menopausal health needs. |
| Gender, gender identity, gender expression and sexual orientation | ICT environments often reward masculine-coded appearance, behaviour and confidence. Women, LGBTQ+ learners and gender-diverse students may feel that they must adapt to existing male- | • Use inclusive codes of conduct, mentoring and confidential counselling;<br>• train staff on bias, harassment and inclusive communication; |

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| | dominated norms in order to be heard, accepted or taken seriously. | • show diverse ICT role models, not only "exceptional" women;<br>• include LGBTQ+ and gender-diverse students in campaigns, student networks and feedback mechanisms. |
| Socioeconomic status | Higher education raises the cost of participation: tuition or fees, devices, software, internet, transport, housing and unpaid study time. Women from lower-income backgrounds may be pushed towards faster, "safer" options rather than longer or more demanding ICT pathways. | • Provide scholarships, device-loan schemes, connectivity support and paid traineeships;<br>• treat digital access as essential learning infrastructure;<br>• offer flexible timetables and part-time routes;<br>• inform families early about the long-term value of ICT education. |
| Race and ethnicity | Racialised and ethnic stereotypes shape who is seen as "naturally" suited to technology. Some students face under-expectation, while others face over-expectation based on ethnic stereotypes. Both reduce recognition of individual competence and belonging. | • Train teachers and staff in anti-bias practice;<br>• use individual competence-based assessment;<br>• build diverse mentoring and role-model networks;<br>• work with communities rather than only marketing to them; |

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| | | • monitor participation, progression and completion by intersectional indicators. |
| Migration background and language | Migrant and refugee women may face language barriers, lack of system knowledge, non-recognition of previous education, weak local networks and limited understanding of the host country's ICT ecosystem. The "clash of clocks" may be stronger when migration also requires learning a new language, culture and rules. | • Provide multilingual orientation, cultural mediation and personalised study guidance from arrival;<br>• accelerate recognition of prior learning and qualifications;<br>• combine language support, ICT training and mentoring;<br>• offer clear information on study, work, parental and health-related support. |
| Disability and neurodiversity | ICT programmes may be physically accessible but still digitally inaccessible: platforms, coding tools, keyboards, mice, assessment formats and UX may not fit diverse needs. Disability support is often generic and does not address women's intersectional barriers in ICT. | • Apply accessibility-by-design to all digital platforms and learning tools;<br>• ask about access needs before training starts;<br>• train ICT lecturers and trainers in inclusive pedagogy;<br>• develop targeted support, mentoring and role-model visibility for women with |

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| | | disabilities and neurodivergent learners. |
| Geographical location | Learners outside major cities have weaker access to specialised ICT programmes, labs, mentors, companies, internships and professional networks. Rural or island contexts multiply socioeconomic barriers through transport costs, poor connectivity and limited local options. | • Develop hybrid ICT programmes, regional digital hubs and mobile/visiting training models;<br>• support travel to labs, companies and events;<br>• create virtual mentoring and industry links;<br>• ensure each region has at least one visible ICT pathway for women. |
| Family and parental status | Families and communities may encourage "safe", familiar or quick educational choices, especially where higher education systems are hard to understand or where women are expected to prioritise income, care, marriage or motherhood. These pressures intersect with migration, ethnicity and socioeconomic status. | • Involve families through multilingual information sessions, community-based orientation and ICT discovery activities;<br>• communicate career pathways clearly;<br>• use role models from similar backgrounds;<br>• provide guidance that addresses both study choices and life-course constraints without deficit language. |

## 5.3. Stage 3: Transition to Early- and Mid-Career Digital Roles

The transition from education and training into early- and mid-career digital roles is a critical stage where formal qualifications, practical readiness, professional networks and confidence begin to shape career trajectories. For women facing intersecting barriers, this transition may be affected by non-linear pathways, limited access to mentoring, unrecognised prior experience, costly certification requirements, caring responsibilities, geographical distance, disability-related access needs, or weak links between training and employment opportunities. Education and training providers can play an important bridging role by designing flexible, accessible and career-oriented learning routes that support diverse learners not only to enter digital roles, but also to continue progressing within them.

*Table 3 Transition to Early- and Mid-Career Digital Roles*

| Intersectional factors | Intersectional mechanism | Recommended actions |
|---|---|---|
| Age | Women entering or changing digital careers later may be treated as less adaptable or less "naturally" technical, while younger women may lack networks, confidence and career-navigation skills. Interrupted or non-linear pathways can be misread as lower competence. | • Offer flexible reskilling and upskilling pathways for different career stages, including evening/online formats, return-to-learning routes and recognition of prior professional experience.<br>• Include career-readiness support: CVs, interviews, negotiation, |

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| | | workplace communication and mentoring. |
| Gender identity and sexual orientation | LGBTQ+ and gender-diverse women may self-censor or avoid visible technical pathways if learning environments lack psychological safety, representation or clear anti-discrimination norms. | • Create inclusive learning and career-support environments: respectful name/pronoun practices, anti-harassment rules, safe peer spaces, visible role models and inclusive examples in digital career guidance. |
| Race, ethnicity and migration background | Racialised, ethnic minority and migrant women may have weaker access to local professional networks, face stereotypes, language or accent bias, and encounter difficulties with recognition of previous qualifications or experience. | • Provide bridge programmes into digital roles combining technical refreshers, language-sensitive career guidance, mentoring and support with qualification / skills recognition.<br>• Use diverse role models and targeted outreach to minority and migrant communities. |
| Socioeconomic status and geographical location | Costly certifications, unpaid internships, relocation, commuting and concentration of opportunities in large cities restrict access. These barriers are stronger for women with | • Provide free or subsidised short courses, micro-credentials and certification preparation.<br>• Avoid unpaid learning placements. |

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| | care responsibilities or limited financial reserves. | • Expand online and regional delivery, local workshops, digital hubs and partnerships with regional colleges or community organisations. |
| Disability and neurodiversity | Training platforms, learning environments and digital tools may not be accessible. Learners may also avoid digital career pathways if they expect that workplaces will not accommodate their needs. | • Ensure accessible learning platforms, assistive technologies, captioning, flexible assessment and remote participation options.<br>• Include accessibility-by-design and inclusive technology topics in digital curricula. |
| Parental status | Childbearing and care responsibilities affect time, mobility and ability to attend intensive training or networking. Women without children may also face normative assumptions about what a "proper" life course should look like. | • Design flexible learning routes that do not penalise interrupted participation: modular courses, asynchronous options, re-entry points after breaks and career guidance that treats parenting, non-parenting and career change as legitimate pathways. |

## 5.4. Stage 4: Leadership Preparation and Advancement

Leadership preparation and advancement represent the stage at which earlier inequalities in access, participation and career development become most visible in decision-making roles. For education and training institutions, this stage is relevant because leadership pathways are not shaped only in workplaces, but also through lifelong learning, professional networks, mentoring, role models and opportunities to develop confidence, strategic skills and visibility. An intersectional approach helps ensure that women from diverse backgrounds are recognised and supported as future digital leaders.

*Table 4 Leadership Preparation and Advancement*

| Intersectional factors | Intersectional mechanism | Recommended actions |
|---|---|---|
| Age | Leadership potential is read through age-based stereotypes: younger women may be seen as insufficiently experienced, while older women may be assumed to be less adaptable to digital change. Women may also reach leadership pathways later because career progression intersects with family timing. | • Offer age-inclusive leadership preparation in ICT and digital programmes;<br>• use intergenerational and reverse mentoring;<br>• include role models of women leaders at different career stages;<br>• make leadership upskilling available as lifelong learning, not only early-career training. |

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| Gender identity and sexual orientation | LGBTQ+, trans and non-binary women may face low visibility, pressure to conceal identity, lack of safe spaces and leadership stereotypes based on binary gender norms. "Diversity" can remain declarative if not reflected in learning environments. | • Embed gender-sensitive and LGBTQ+ inclusive content in leadership education;<br>• use inclusive language and examples in teaching materials;<br>• ensure safe reporting and participation mechanisms;<br>• invite diverse role models and speakers;<br>• make respect for names, pronouns and identity part of programme culture. |
| Race, ethnicity and migration background | Leadership is often associated with dominant cultural norms: how a leader "should" look, speak, behave or where they should come from. Migrant and minority women may also lack recognised credentials, language confidence, networks and visible role models. | • Include inclusive leadership, bias awareness and intercultural communication in digital leadership curricula;<br>• create mentoring and alumni networks for migrant and minority women;<br>• recognise international experience through portfolios and prior learning;<br>• provide language and career-navigation support where needed. |

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| Socioeconomic status and geographical location | Access to leadership preparation depends on social capital, elite educational pathways, informal networks and mobility. Women from lower-income or peripheral regions may have fewer opportunities to join advanced training, networking events, internships or innovation ecosystems. | • Provide scholarships or fee waivers for digital leadership and upskilling programmes;<br>• use hybrid, online and regional delivery formats;<br>• open alumni, industry and mentoring networks to students without privileged contacts;<br>• use transparent and, where possible, school-blind or portfolio-based selection for advanced opportunities. |
| Disability and neurodiversity | Leadership potential may be underestimated because of ableist assumptions. Inaccessible digital tools, learning platforms, dashboards, meetings and leadership simulations can reduce participation and visibility. Neurodivergent women may be excluded by narrow norms of communication and leadership behaviour. | • Design leadership programmes, digital tools and learning environments according to accessibility-by-design principles;<br>• provide assistive technologies, captions, accessible materials and flexible participation formats;<br>• include leaders with disabilities and neurodivergent professionals as role models;<br>• train staff to recognise diverse leadership styles. |

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| Parental status | Motherhood, caregiving and career breaks can be interpreted as reduced commitment. At the same time, women without children may be expected to be constantly available. Leadership is therefore framed around 24/7 availability rather than quality, outcomes and sustainable responsibility. | • Design leadership learning in modular, flexible and hybrid formats;<br>• support return-to-learning and re-entry pathways after care breaks;<br>• support part-time models / sharing leadership positions;<br>• provide childcare-sensitive scheduling for workshops and networking events;<br>• teach leadership models based on outcomes, boundaries and sustainable work, avoiding the "superwoman" narrative. |

# 6. Stakeholder Responsibilities

The framework requires coordinated action. The table below clarifies the main responsibilities of different stakeholders without repeating all stage-specific recommendations.

*Table 5 Stakeholder Responsibilities*

| Stakeholder | Main responsibility | Priority actions |
|---|---|---|
| Family | Create a supportive home environment for girls' and women's participation, progression and confidence in STEM, ICT and digital careers. | • Encourage early STEM and digital curiosity without gender stereotypes.<br>• Seek and use information about STEM subjects, digital pathways, scholarships and careers.<br>• Support participation in clubs, studies, internships, mentoring, mobility and leadership opportunities.<br>• Share household and caring responsibilities so that learning and career progression are not treated as women's individual burden.<br>• Cooperate with schools and community organisations when guidance, accessibility or safeguarding support is needed. |
| Schools | Build early STEM identity, confidence, inclusive | • Introduce STEM early and as part of ordinary learning. |

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| | participation and informed subject choices. | • Train teachers and guidance staff on stereotypes, bias and inclusive pedagogy.<br>• Engage families and ensure clubs, subject choices and learning resources are not dependent on income, location or prior exposure. |
| Higher education institutions | Support entry, retention, belonging and progression in ICT and digital programmes. | • Provide bridging support, mentoring and non-stigmatising basic ICT help.<br>• Review hidden curriculum and informal networks.<br>• Ensure accessibility by design in platforms, laboratories and assessments.<br>• Recognise prior learning, foreign qualifications and non-linear pathways.<br>• Cooperate with employers on paid, inclusive work-based learning and fair access to early career opportunities. |
| Vocational education and training providers | Offer flexible, practice-oriented and recognised routes into digital roles. | • Use modular and stackable pathways.<br>• Recognise prior learning and professional experience.<br>• Design programmes compatible with work and caring responsibilities. |

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| Non-formal digital skills providers | Create accessible routes for learners outside formal education. | • Use inclusive communication and diverse role models.<br>• Connect short-term courses to longer-term pathways.<br>• Provide mentoring and progression support. |
| Employers partnering with education | Support fair transition from learning to digital work and contribute to inclusive career and leadership pathways. | • Offer paid internships and work-based projects.<br>• Contribute to mentoring, sponsorship and leadership exposure.<br>• Use inclusive and skills-based recruitment practices in partnerships with education providers. |
| Policymakers and funding bodies | Create enabling conditions for long-term, systemic inclusion. | • Fund early STEM, rural access, accessibility and reskilling.<br>• Encourage monitoring and intersectional programme design.<br>• Support cooperation between education, employers and community organisations. |

# 7. Conclusion

Integrating intersectionality into digital skills education is not an additional administrative exercise. It improves the quality, relevance and fairness of education by helping institutions understand who is reached, who is excluded, who progresses and who remains unsupported.

The digital sector needs diverse talent, but diversity cannot be achieved by inviting girls and women into systems that were not designed with their different realities in mind. Educational institutions must therefore move from isolated inclusion activities to systematic programme design. This is especially important in the third and fourth stages, where education providers should not replace employers, but can create stronger bridges through lifelong learning, career guidance, alumni networks, mentoring, sponsorship and inclusive employer partnerships.

A successful digital skills programme is not one that simply counts how many girls and women participate. It is one that removes avoidable barriers, supports different starting points and life situations, enables recognised progression from one stage to the next, and helps learners participate in shaping a more inclusive digital society.

# Annex 1. Intersectional Programme Design and Review Questions

This set of design and review questions can be used when developing, reviewing or improving digital skills programmes. It is intended as a practical reflection tool and can be adapted to different institutional contexts.

| Design and review area | Questions |
|---|---|
| Target group and outreach | • Does the programme recognise different groups of women and girls rather than treating them as homogeneous?<br>• Which groups are most likely and least likely to hear about the programme?<br>• Are outreach channels accessible outside existing digital networks and through families, schools or trusted community organisations?<br>• Is information available in clear language and, where needed, in multilingual formats? |
| Access and participation | • Is there a fee or hidden cost?<br>• Are equipment, software, internet access or transport required?<br>• Is the schedule compatible with school, work, parental status, childbearing or caring responsibilities?<br>• Are location, platforms and materials accessible?<br>• Is prior knowledge clearly stated and supported? |

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| Learning environment | • Do learners see themselves represented in examples, materials and role models?<br>• Are teachers trained to recognise stereotypes and bias?<br>• Are there clear rules for respectful communication?<br>• Can learners ask basic questions without shame?<br>• Is peer learning organised fairly? |
| Curriculum and pedagogy | • Does the curriculum connect technical skills to real-world problems and social purpose?<br>• Does it use stories, games, examples and role models that make STEM feel relevant and possible?<br>• Does it include ethics, safety, accessibility and inclusive design?<br>• Are there multiple ways to demonstrate learning?<br>• Are examples drawn from different contexts and communities? |
| Support and progression | • Is mentoring available?<br>• Is sponsorship available where leadership or career advancement is an objective?<br>• Is career or subject-choice guidance included where relevant?<br>• Are learners supported in moving to the next stage?<br>• Are internships, clubs, networks, conferences or further learning opportunities accessible?<br>• Are prior skills and experience recognised?<br>• Is follow-up support available after completion? |

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| Monitoring and improvement | • Who applies, participates, completes and progresses?<br>• Who drops out and why?<br>• Who receives visibility, sponsorship, strategic assignments or leadership roles?<br>• Do learners feel safe and included?<br>• How is feedback collected?<br>• How are findings used to improve the programme? |

# Annex 2. Menu of Educational Interventions

The following intervention examples can be adapted to different national and institutional contexts. They are not a mandatory list, but a practical menu of possible actions. The factors indicated in the table show the main intersectional barriers each intervention can help address. They should not be read as fixed identity categories or as an exhaustive checklist, since many interventions respond to several overlapping forms of inequality.

| Intervention | Target group | Problem addressed | Core activity | Main intersectional factors addressed |
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| Early STEM awareness in kindergartens | Children aged 3 to 6, early childhood educators and families | Gender stereotypes and lack of early exposure to STEM | Playful science, building, counting, observation, storytelling, serious games and problem-solving activities integrated into daily learning, combined with educator training and family engagement. | • Age;<br>• Gender identity;<br>• Socioeconomic status. |
| Free school-based coding | Girls in primary and lower secondary | Unequal access to extracurricular | Free clubs organised in schools, libraries or community | • Gender identity; |

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| and robotics clubs | schools, especially from low-income families or rural areas | digital learning, devices, software, connectivity and early confidence-building opportunities | centres, with equipment provided and transport barriers considered. | • Socioeconomic status;<br>• Geographical location. |
| Mobile STEM laboratories for rural schools | Schools in rural or geographically isolated areas | Limited access to laboratories, equipment or specialist teachers | Mobile teams, regional hubs or virtual mentoring bring equipment, workshops, role models and hands-on experiments to schools with limited local provision. | • Socioeconomic status;<br>• geographical location;<br>• Disability. |
| ICT bridging modules for first-year students | Students entering ICT-related higher education or vocational programmes, including adult | Unequal prior exposure to digital tools, academic platforms, cybersecurity, data protection | Non-stigmatising diagnostic self-assessment followed by short optional modules, booked ICT support and peer learning. | • Age;<br>• Socioeconomic status;<br>• Migration background. |

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| | learners and career changers | and technical concepts | | |
| Peer mentoring for women in ICT programmes | Women entering ICT higher education or vocational training | Isolation, low belonging and lack of informal support | First-year students are paired with senior students or graduates; group mentoring addresses study and professional identity. | • Gender identity and sexual orientation;<br>• Migration background;<br>• Race, Ethnicity. |
| Accessibility-by-design audits for ICT learning | Students and staff using ICT laboratories, online platforms and technical learning environments | Inaccessible physical or digital learning environments, including barriers for disabled and neurodivergent learners | Regular audits of laboratories, software, platforms, assistive technologies, teaching materials, assessment formats and work-based learning. | • Disability;<br>• Gender identity;<br>• Socioeconomic status. |
| Career readiness programmes | Final-year students and recent graduates | Weak preparation for job search and workplace entry | Structured training on CVs, interviews, negotiation, workplace communication, | • Gender identity;<br>• Socioeconomic status; |

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| for STEM and ICT graduates | | | networking and mentoring. | • Migration background. |
| Paid internship partnerships | Students from underrepresented or lower-income backgrounds | Unpaid internships, informal recruitment channels and pressure to choose faster routes into paid work | Cooperation with employers to create paid internships with clear learning outcomes, inclusive selection and flexible arrangements. | • Socioeconomic status;<br>• Gender identity;<br>• Geographical location;<br>• Migration background. |
| Career restart digital skills programmes | Women returning after career breaks or entering digital careers later in life | Non-linear career paths and age-related bias | Flexible reskilling with recognition of prior learning and foreign qualifications, mentoring, career counselling and employer links. | • Age;<br>• Gender identity;<br>• Parental status;<br>• Migration background;<br>• Socioeconomic status. |
| Inclusive digital | Advanced students, graduates and women | Lack of leadership pathways and narrow | Leadership training combined with sponsorship, public speaking, project | • Gender identity and sexual orientation; |

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| leadership academies | professionals preparing for leadership | leadership models | leadership, negotiation, inclusive management, accessible leadership tools, outcome-based norms and exposure to diverse women leaders, including female technology founders and entrepreneurs, in cooperation with relevant professional and non-profit organisations. | • Age;<br>• Disability;<br>• Race;<br>• Ethnicity;<br>• Migration background;<br>• Parental status;<br>• Socioeconomic status. |

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