

LeadHER ICT Gender Balance Teaching Framework

Beta version

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About this Deliverable

This document is the **Beta version of the LeadHER ICT Gender Balance Teaching Framework (D3.1)**, developed under **Work Package 3 (Teaching Framework Design and Content Development)** of the LeadHER project - *Teaching Framework for Boosting ICT Literacy and Jobs for Girls in Basic and Secondary Education* (Project 101195675), co-funded by the European Union through the Erasmus+ Programme.

It brings together, in a single reference document, the three components through which the LeadHER project translates its evidence base into concrete pedagogical and community-facing tools:

- The Mentoring Schemes Programme, connecting girls with female role models in ICT;
- The Teachers' Toolbox, including a 25-hour continuous curriculum and standalone support materials (available here) for gender-responsive ICT teaching; and
- The DigiSphere Programme, engaging families and communities in supporting girls' digital literacy, confidence and career awareness.

This Beta version is submitted ahead of piloting in **Work Package 4**, where the three components will be tested, observed and refined across the pilot schools in Bulgaria, Portugal and Spain, informing the final version of the Framework.

From Evidence to Design: Grounding the Framework in the Global Research Report (D2.1)

The design of this Framework is the direct output of the analytical work carried out under **Work Package 2 (Needs Assessment and Resource Mapping)**, consolidated in the *Global Research Report (D2.1) "Gender Gap in ICT: Insights and Strategies for Inclusive Education."* That report combined desk research and field research (i.e. focus groups with students, surveys and interviews with teachers, and interviews with HR managers, company representatives and role models) carried out between April and September 2025 across the three intervention countries.

Its central finding is what the report terms the **"paradox of access"**: in all three countries, strong national policy frameworks and curricular mandates have brought girls close to formal parity of access to ICT education, yet this has not translated into equal confidence, sense of belonging, or

continuity into ICT studies and careers. Girls in Spain, for instance, represent only a small share of Computer Science and Engineering graduates, and express far less interest than boys in pursuing digital technology studies, despite comparable early performance. Similar patterns, shaped by different national contexts, were identified in Portugal and Bulgaria.

To explain this paradox, the Global Research Report proposes an analytical framework of **three interrelated gaps**, summarized below.

Gap (D2.1 analytical framework)	Level	Core meaning
Confidence Gap	Individual / psychological	Girls' lower digital self-efficacy and systematic underestimation of their technical abilities, despite performing comparably to boys.
Socialization Gap	Social / cultural	Persistent gender norms within families, peer groups and media that continue to frame technology as a male domain and limit girls' early exposure to it.
Pedagogical Gap	Institutional / pedagogical	The disconnection between teachers' personal commitment to gender equality and the lack of systemic training, inclusive materials and standardized frameworks to enact it in the classroom.

Building on this diagnosis, the Global Research Report closes with a set of **recommendations for the design of the Teaching Framework** (Section 6), organized precisely around a mentoring scheme, a teachers' toolbox and strategies for engaging families and communities. This Framework is the direct operationalization of those recommendations: each of its three components is designed to close one of the three gaps identified in D2.1, moving *"from access to agency, from equality of opportunity to equality of participation."*

General Description of the Teaching Framework

The LeadHER ICT Gender Balance Teaching Framework translates the evidence and recommendations of D2.1 into a coherent, actionable set of tools for schools, teachers, mentors, families and communities. Its purpose is to move beyond formal access and address the confidence,

socialization and pedagogical dimensions that D2.1 identified as decisive for girls' sustained participation in ICT education and careers. The Framework is designed to be:

- evidence-based, grounded directly in the findings of the Global Research Report (D2.1);
- modular and adaptable, so that each component can be implemented independently or as part of an integrated school-level strategy;
- scalable beyond the pilot schools involved in Work Package 4; and
- transferable across the different national and institutional contexts of Bulgaria, Portugal and Spain, and beyond.

Framework Architecture and Internal Coherence

The Teaching Framework functions as a system of support, in which each component targets a specific gap identified in D2.1 while reinforcing the others. This architecture, first outlined in the WP3 methodological guidelines and confirmed by the D2.1 recommendations, is summarized below.

Framework Component	Primary Gap Addressed	Key Target Group
Mentoring Schemes	Confidence Gap	Girls (basic and secondary education)
Teachers' Toolbox	Pedagogical Gap	Teachers and schools
DigiSphere Programme	Socialization Gap	Families and communities

This structure reflects the central conclusion of the Global Research Report: that sustainable inclusion of girls in ICT requires simultaneous action across psychological, social and institutional dimensions, rather than isolated interventions confined to a single actor or setting.

The Three Components of the Framework

5.1 Mentoring Schemes Programme — Addressing the Confidence Gap

D2.1 found that girls' confidence in their digital skills appears misaligned with their demonstrated competence, and that exposure to visible, relatable female role models is one of the most effective levers for closing this gap. In direct response, the Mentoring Schemes Programme offers two age-appropriate models: **Flexible Interactive Groups** for basic education, and **Dialogical Spaces** for secondary education. Both connect girls with women working in ICT, combining structured dialogue, reflection and practical exposure to build self-efficacy and a stronger sense of belonging in technology.

5.2 Teachers' Toolbox — Addressing the Pedagogical Gap

D2.1 identified a consistent "pedagogical gap" across all three countries: teachers are broadly committed to gender equality but frequently rely on personal intuition rather than structured, evidence-based frameworks, due to a lack of specific training and inclusive materials. The Teachers' Toolbox responds directly to this gap through a **25-hour continuous curriculum**, organized into six modules combining guided learning and structured self-learning, together with standalone support materials that can be used independently of formal training.

5.3 DigiSphere Programme — Addressing the Socialization Gap

D2.1 showed that family and community environments often function as passive enablers, focused on supervision rather than active encouragement, and identified family engagement as foundational, rather than supplementary, to girls' digital inclusion. The DigiSphere Programme addresses this socialization gap through a menu of activity models and a school-level action-plan template, designed to turn families and communities into active partners in supporting girls' digital literacy, confidence and career awareness.

How this Document is Organized

Following this general introduction, the document is organized into three parts, each corresponding to one component of the Framework:

- **Part I** — Mentoring Schemes Programme: Guidelines for Design and Implementation
- **Part II** — Teachers' Toolbox: 25-Hour Continuous Curriculum (Modules 1–5)
- **Part III** — DigiSphere Programme: Guidelines and Action Plan

Together, these three parts constitute the Beta version of the LeadHER ICT Gender Balance Teaching Framework, ready for piloting in Work Package 4.

Part I.

Mentoring Schemes for Basic and Secondary Education

1. About LeadHER and the Mentoring Schemes Programme

This guide presents the LeadHER Mentoring Schemes Programme and offers practical support for designing, adapting, and implementing structured mentoring experiences that connect girls with women role models in ICT and related digital fields, helping to challenge stereotypes, strengthen confidence, and make pathways to ICT-related studies and careers more visible and relatable. It is written for schools, school clusters, VET providers, associations, NGOs, municipalities, libraries, youth centres, and other organisations working with girls and young people, and can be used both for stand-alone mentoring cycles and for broader local action plans linked to guidance, teaching, and community engagement.

The Mentoring Schemes Programme is one of the core components of the LeadHER Teaching Framework. It creates structured opportunities for girls to meet women role models in ICT and related digital fields, question stereotypes, and connect digital learning to real studies and jobs. The purpose is not only to inspire, but also to make ICT pathways visible, relatable, and discussable in everyday educational settings.

Under LeadHER, the programme comprises two complementary schemes:

- **Flexible Interactive Groups**: ICT role-model mentoring for girls in basic education;
- **Dialogical Spaces**: ICT role-model mentoring for girls in secondary education.

The schemes are designed primarily for schools, but they can also be implemented by NGOs, youth associations, municipalities, libraries, community organisations, and other actors working with girls and young people. They can function as stand-alone interventions or as part of a broader plan linked to the Teachers' Toolbox and DigiSpheres.

Education-stage labels should be interpreted according to national systems. In these guidelines, basic education refers to earlier compulsory or pre-secondary stages, while secondary education refers to upper-secondary or equivalent pathways.

Once finalised, the programme and its support materials can be made available through the project website in English, Portuguese, Bulgarian, and Spanish.

A subtle distinction between common approaches

Flexible Interactive Groups | A mentoring approach for basic education in which girls engage in small, dynamic, hands-on group activities supported by female ICT role models and school staff. Its purpose is to make technology feel accessible, enjoyable, and relevant, while building confidence and challenging early gender stereotypes.

Dialogical Spaces | A mentoring approach for secondary education based on structured dialogue and reflection between girls and female ICT role models. It creates safe spaces to discuss pathways, barriers, aspirations, and real experiences in technology, helping participants connect their interests with future ICT studies and careers.

2. Objectives, intended users and future use

The Mentoring Schemes Programme addresses a key barrier identified in LeadHER: many girls receive too little encouragement, too little representation, and too little practical information about digital learning and ICT careers. Mentoring responds to this by creating human connections that can shift expectations, build confidence, and widen aspirations.

Overall objectives of the programme are to:

- connect girls with credible and diverse women role models in ICT and related fields;
- challenge stereotypes about who belongs in technology;
- strengthen girls' confidence, curiosity, participation, and voice in digital learning;
- improve awareness of ICT-related studies, jobs, and progression pathways;
- help schools and organisations establish repeatable mentoring practices and local partnerships;
- contribute to more coherent school-community ecosystems that support girls' aspirations.

Intended users include schools, school clusters, VET providers, associations, NGOs, municipalities, libraries, youth centres, and other organisations that work with families or young people.

Future use is built into the design. The schemes can continue beyond the project lifetime as part of tutoring, career guidance, enrichment activities, club programmes, transition activities, open days, or school-community partnerships.

Transferability is high: the models can be replicated in other countries and settings by identifying local role models, adapting language and examples, and adjusting the delivery format to available time and resources.

3. Expected results

The results below are proposed as the common outcome frame for both mentoring schemes:

Participant group	Expected results
Girls and young women	Greater confidence in relation to ICT and digital learning; broader understanding of ICT-related studies and jobs; stronger sense that girls belong in technology; more

	willingness to participate, ask questions, and imagine future pathways.
Mentors / role models	Stronger connection with schools and communities; clearer understanding of how to communicate their pathway to younger audiences; reinforced commitment to gender equality and educational outreach.
Schools and organisations	A tested mentoring model; stronger links with women role models and local partners; reusable materials and procedures; evidence and feedback to improve or scale future implementation.
Wider school-community ecosystem	More visible positive narratives about girls and ICT; better coordination between guidance, teaching, and external partners; stronger conditions for continuity across project components.

4. Common design principles

The two mentoring schemes differ in age group and pedagogical emphasis, but they should be guided by the same core principles:

- **Girl-centred and empowering** – Girls' experiences, aspirations, and participation should remain the main reference point;
- **Interactive and dialogical** – Mentoring should not be a one-way lecture. It should combine questions, exchange, reflection, and practical engagement;
- **Age-appropriate and concrete** – Examples, language, and activities should fit the developmental stage of participants;
- **Diverse in representation** – Mentors should reflect different roles, pathways, ages, work settings, and personal trajectories whenever possible;
- **Honest but hopeful** – Mentors can discuss obstacles and bias, but the overall message should remain constructive and enabling;
- **Safe, ethical, and inclusive** – The programme should protect participants, respect boundaries, and make room for different backgrounds and needs;
- **Flexible but structured** – Schools and organisations should be able to adapt the models without losing the core logic of the scheme;
- **Connected to wider practice** – Mentoring works best when linked to tutoring, curriculum, careers guidance, DigiSphere actions, or broader school planning;
- **Low-threshold and sustainable** – Strong mentoring does not require expensive equipment; it requires prepared people, a clear design, and follow-up;

- **Reflective and evidence-informed** – Implementation should be documented so that it can be improved, compared, and scaled.

5. Programme architecture at a glance

The two schemes are complementary rather than interchangeable. **Flexible Interactive Groups** are designed for earlier stages, where the priority is positive first identification with ICT through short, interactive encounters. **Dialogical Spaces** are designed for later stages, where the priority is reflection, decision-making, pathway exploration, and deeper conversation.

5.1. Flexible Interactive Groups at a glance

Education stage	Basic education (adapted to national systems)
Core pedagogical logic	Short, interactive mentoring encounters in small groups, ideally combining practical activities with close contact to one or more women role models
Primary purpose	Build early confidence and belonging, normalise girls in ICT, and make technology feel accessible and enjoyable
Recommended cycle	4 core sessions over 4-8 weeks Session length: usually 45-60 minutes
Typical mentor profile	Women working or studying in ICT or adjacent digital fields; alumni; VET or higher education students; women in technical, creative, or applied digital roles
Typical outputs	Questions boards, mini-products, reflection cards, simple showcases, take-home prompts for families
Intensity options	Light: 3 sessions Standard: 4 sessions Extended: 5 sessions, including a family or community link through DigiSpheres

5.2. Dialogical Spaces at a glance

Education stage	Secondary education (adapted to national systems)
Core pedagogical logic	Structured group dialogue with female ICT role models, combined with reflection, pathway exploration, and practical career navigation

Primary purpose	Support identity formation, informed choice, agency, and sustained interest in ICT-related studies and jobs
Recommended cycle	5 core sessions over 6-10 weeks Session length: usually 60-90 minutes
Typical mentor profile	Women professionals, entrepreneurs, researchers, apprentices, VET/higher education students, alumni, or technical staff able to discuss real pathways and working realities
Typical outputs	Pathway maps, action plans, mentor question sets, reflection logs, portfolio ideas, signposting to further opportunities
Intensity options	Light: 4 sessions Standard: 5 sessions Extended: 6 sessions, including a site visit, speed mentoring, portfolio clinic, or project feedback

Both schemes can be implemented on their own, but they are likely to be stronger when connected to other LeadHER components. For example, DigiSpheres can provide family-facing or community-facing moments, while the Teachers' Toolbox can reinforce girls' participation and digital confidence in regular teaching.

6. Flexible Interactive Groups: design guidelines for basic education

6.1. Context and rationale

Flexible Interactive Groups are intended for girls in basic education, when aspirations are still fluid and stereotypes are often becoming normalised. At this stage, mentoring should feel accessible, playful, and concrete. The aim is to help girls experience ICT as something they can participate in, understand, and enjoy.

The model is called 'flexible' because schools can adapt group size, number of mentors, activity stations, and delivery rhythm. What should remain constant is the emphasis on interaction, short cycles, and positive identification with women role models.

The descriptions below are modular. Organisations can shorten, combine, or expand them depending on age group, time, and available partnerships.

6.2. Core objectives

- help girls see women and girls like themselves as legitimate participants in ICT;
- build confidence through short, success-oriented practical experiences;
- widen girls' image of technology beyond narrow or stereotyped roles;
- encourage questions, curiosity, and voice in a supportive group setting;
- create a first bridge between everyday school experience and real digital jobs or studies

6.3. Profile of participants

Primary participants are girls in basic education. Depending on national structures, this may include upper primary and/or lower secondary stages. Schools may also include boys in selected collective moments when the purpose is to challenge stereotypes at class level, but facilitation should ensure that girls' participation remains central.

Mentors should be women who can connect well with younger learners. They do not all need to be senior professionals. Relevant profiles include alumni, higher education or VET students, junior employees, digital creators, technicians, or women who use ICT in applied ways in different sectors.

Each cycle should also include a school-based adult facilitator, such as a class teacher, tutor, counsellor, psychologist, librarian, or youth worker.

6.4. Recommended format and number of sessions

Recommended cycle: 4 core sessions. This is long enough to establish familiarity while remaining realistic for most schools.

- Recommended duration per session: 45-60 minutes;
- Recommended delivery span: 4-8 weeks;
- Recommended group size: 10-15 girls for small-group work, or a full class group if additional adults or rotating stations are available;
- Recommended mentor presence: 2-4 mentors across the cycle, with at least one mentor participating in more than one session where possible.

A minimum viable version can run in 3 sessions with 1-2 mentors and very simple materials. An extended version can include a fifth session linked to a DigiSpheres family activity, a school showcase, or a broader careers event.

6.5. Suggested session sequence

Session 1 | Welcome, belonging, and stereotype-breaking

Use an opening activity that asks who uses technology, what counts as ICT, and where girls see technology in their daily lives. Mentors briefly introduce themselves in simple, relatable terms. Close with a myth-or-fact activity, a drawing task, or a short question wall.

Session 2 | Explore by doing

Organise a practical session using short stations or mini-challenges such as unplugged coding, robotics, digital creativity, data in daily life, user-centred design, or problem-solving with simple tools. Mentors rotate between groups, encouraging participation and asking questions rather than taking over.

Session 3 | Ask, solve, imagine

Create space for a guided Q&A about mentors' studies, jobs, mistakes, favourite tools, teamwork, and everyday problem-solving. Combine this with a small challenge such as imagining a digital solution to a local problem or improving a familiar object or service with technology.

Session 4 | Showcase, reflection, and next step

Students share what they discovered, what surprised them, and what they may want to try next. Use a reflection card or exit ticket. A strong closing option is to create a take-home prompt for families or a mini showcase connected to DigiSpheres.

6.6. Results to be achieved

- Girls can name more than one kind of ICT-related role or pathway;
- Girls show greater willingness to speak, ask questions, or try practical tasks related to technology;
- Girls report a stronger sense that ICT is also for them;
- Schools obtain a workable model for early-stage role-model mentoring;
- Teachers or facilitators gather practical insights into what engages the group.

6.7. Useful facilitation tips

Facilitation tips!

- Keep mentor talks short and interactive. Younger participants usually respond better to dialogue than to long presentations;
- Use visual, tactile, or game-like activities where possible;
- Do not assume prior technical knowledge. The goal is confidence and curiosity, not expert performance;
- Value many kinds of digital roles, including creative, applied, technical, and collaborative roles;
- Always close with a simple next step: a question to take home, a club to join, a follow-up activity, or another encounter

7. Dialogical Spaces: design guidelines for secondary education

7.1. Context and rationale

Dialogical Spaces are intended for girls in secondary education, when educational and career choices become more immediate and identity questions become more explicit. At this stage, many girls are weighing subject options, post-school pathways, confidence, belonging, economic realities, and social expectations.

The model is called 'dialogical' because it is built around structured conversation rather than one-way inspiration. It should help girls analyse opportunities and barriers, ask complex questions, and develop a more concrete sense of possible next steps.

7.2. Core objectives

- Support girls in reflecting on identity, skills, interests, and future pathways;
- Make visible the diversity of ICT studies, jobs, and entry routes;
- Create safe spaces to discuss stereotypes, bias, digital safety, and belonging;
- Strengthen girls' decision-making capacity and awareness of support networks;
- Connect motivation with realistic action, not only with inspiration.

7.3. Profile of participants

Primary participants are girls in secondary education. Depending on the local context, the scheme may be delivered in general secondary education, vocational education and training, or other equivalent pathways. Mixed-gender components can be used selectively, but the facilitation design should still foreground girls' voice and benefit.

Mentors can include women professionals, entrepreneurs, researchers, technicians, freelancers, apprentices, alumni, or university and VET students in digital or ICT-related fields. It is especially useful to combine different kinds of pathways, including academic, vocational, and non-linear routes.

Each cycle should be supported by a school-based facilitator such as a tutor, counsellor, career adviser, class teacher, or youth worker who can connect mentoring to the students' broader learning journey.

7.4. Recommended format and number of sessions

Recommended cycle: 5 core sessions. This gives enough time for trust, reflection, and pathway exploration without making the scheme too heavy to organise.

- Recommended duration per session: 60-90 minutes;
- Recommended delivery span: 6-10 weeks;

- Recommended group size: 12-20 girls, or an existing tutoring/careers group;
- Recommended mentor presence: 2-5 mentors across the cycle, with at least one returning mentor if possible.

A lighter version can be delivered in 4 sessions. An extended version can add a sixth element such as a workplace visit, speed mentoring carousel, portfolio clinic, or feedback session on student projects.

7.5. Suggested session sequence

Session 1 | Opening the space

Establish group agreements, introduce the purpose of the scheme, and explore expectations, stereotypes, and current perceptions of ICT. Use prompts such as 'Who is expected to be good at technology?' or 'What makes someone feel they belong?'

Session 2 | Pathways into ICT

Mentors share their trajectories, including turning points, doubts, choices, setbacks, and supports. Students map different study and job routes and compare academic, vocational, and mixed pathways.

Session 3 | Skills in action

Focus on what people actually do in ICT-related work and which skills matter. This session can include mini case studies, short project demonstrations, portfolio examples, or real problem-solving scenarios.

Session 4 | Barriers, wellbeing, rights, and resilience

Create space to discuss gender bias, online environments, self-confidence, teamwork, harassment, digital safety, and how to respond when things go wrong. The purpose is not to alarm, but to build realistic and supportive strategies.

Session 5 | My next step

Each participant identifies one or more realistic next steps: a subject choice, a club, a course, an application, a portfolio action, a workplace contact, or another mentoring opportunity. A useful closing product is a simple personal roadmap or action card.

[Optional] Session 6 | Extended exposure

Where resources allow, add a workplace visit, a speed mentoring session, a portfolio clinic, a mini project review, or a public-facing dialogue panel connected to DigiSpheres or a school guidance event.

7.6. Results to be achieved

- Girls can identify concrete ICT-related pathways, study options, or occupations that interest them;
- Girls show stronger confidence in discussing their future and asking for guidance;

- Girls gain a more realistic understanding of both opportunities and barriers in ICT-related fields;
- Participants leave with at least one named next step or support contact;
- Schools and organisations establish a reusable mentoring format for older students.

7.7. Useful facilitation tips

> 💭 **Facilitation tips!**
>
> - Use authentic dialogue, not only motivational speeches;
> - Invite mentors to discuss both successes and uncertainties so students hear realistic stories;
> - Encourage students to prepare questions in advance and anonymously if needed;
> - Balance aspiration with practical information such as subjects, courses, application routes, and workplace realities;
> - Always connect reflection to action: what can the student do next, who can support it, and when?

8. Roles and responsibilities

The exact staffing structure can vary, but each implementation should make responsibilities explicit.

Role	Main responsibilities
Programme coordinator	Oversees planning, adaptation, quality assurance, and documentation at project, network, or organisational level.
School / organisation focal point	Agrees calendar and target group, manages logistics, supports recruitment of mentors, coordinates family communication where relevant.
Facilitator / tutor / counsellor	Leads or co-leads sessions, supports group dynamics, adapts activities, ensures continuity, and collects feedback.
Mentor / role model	Shares experience, participates in dialogue or activities, encourages questions, respects agreed boundaries, and models inclusive participation.
Safeguarding / wellbeing contact	Supports risk assessment, consent procedures, referrals, and handling of sensitive issues.
Community or employer partner	May provide mentors, venues, visits, examples, sponsorship, or follow-up opportunities.

9. Recruitment and mobilisation of mentors

A strong mentoring scheme depends less on high-profile speakers than on relevant, prepared, and reliable role models. Schools should recruit mentors whose stories are diverse, relatable, and suitable for the target age group.

Potential recruitment channels include:

- Alumni networks;
- Local tech SMEs and larger employers;
- Universities, VET providers, and research centres;
- Women-in-tech associations or interest groups;
- Public-sector digital services and municipal departments;
- Community organisations, libraries, makerspaces, or innovation hubs;
- Project partners and the social media mobilisation foreseen under T6.3.

Suggested selection criteria for mentors:

- Interest in supporting girls and young women;
- Ability to communicate clearly with the relevant age group;
- Willingness to engage respectfully with gender equality aims;
- Availability for briefing and for the agreed session(s);
- Readiness to follow school safeguarding, confidentiality, and communication procedures;
- Where possible, diversity in pathway, role, background, and type of workplace.

A simple mobilisation process can follow five steps: map potential sources; send a targeted call or invitation; collect short mentor profiles; confirm availability and fit; create and maintain a mentor pool for future cycles.

10. Mentor preparation and matching

Mentors should not be sent into sessions without preparation. Even experienced professionals benefit from a short orientation that explains the purpose of LeadHER, the age group, the session format, and the kind of interaction expected.

A basic orientation session of 60-90 minutes is recommended. It can be delivered online or in person and should cover:

- the aims of the mentoring scheme and the LeadHER gender-equality rationale;
- the age group, school context, and expected level of prior knowledge;
- session flow, materials, and the mentor's specific role;
- inclusive language and anti-stereotype communication;
- how to discuss challenges honestly without discouraging participants;
- safeguarding, boundaries, confidentiality, and points of contact;
- practical logistics, documentation, and communication arrangements.

Matching or grouping mentors should consider not only technical expertise but also communication style, language, availability, and representational diversity. Whenever possible, combine mentors with different types of pathways so students do not encounter a single story of success.

Mentors are encouraged to:

- use concrete examples from their own study or work life;
- show different sides of ICT work, including teamwork, creativity, problem-solving, and learning from mistakes;
- invite questions and make room for uncertainty;
- avoid jargon unless it is clearly explained;
- respect time boundaries and school protocols.

Mentors should avoid:

- long monologues that leave little space for interaction;
- presenting ICT as only for exceptional or naturally gifted people;
- reinforcing stereotypes about girls, boys, or certain educational routes;
- sharing personal contact details unless this has been agreed through school procedures;
- handling sensitive disclosures without involving the appropriate school contact.

11. Suggested support resources pack

To make the mentoring schemes reusable and easier to transfer, the programme should be accompanied by a small support resources pack. This can be translated and adapted locally.

- programme overview sheet;
- scheme descriptions for Flexible Interactive Groups and Dialogical Spaces;
- mentor call text and social media mobilisation assets;
- mentor registration or expression-of-interest form;
- mentor briefing note or slides;
- sample session plans and activity prompts;
- student reflection sheets or exit tickets;
- attendance sheet and facilitator observation log;
- student, mentor, and staff feedback forms;
- action plan template for schools and organisations;
- consent, data-protection, or media-use templates as required by local procedures.

Editable master files should be kept in a format that supports straightforward translation and local adaptation.

12. Translation and localisation

Because the programme is intended to be available in English, Portuguese, Bulgarian, and Spanish, translation should be treated as an implementation step rather than as a final cosmetic step. A well-translated mentoring scheme is easier to pilot, easier to understand, and more inclusive.

Steps to ensure proper translation include:

- Translate all student-facing, mentor-facing, and family-facing materials that need to be used in national language;
- Adapt terminology for school stages, VET pathways, job titles, and local institutions;
- Replace examples, organisations, and signposting with local or national references where useful;
- Avoid idioms or culturally narrow examples in the master version when possible;
- Pilot translated materials with local staff and revise unclear wording before full implementation;
- Document local adaptations so that cross-country learning remains possible.

13. Implementation conditions and resource requirements

The mentoring schemes are intentionally designed to be feasible with modest resources. The most important conditions are preparation, committed facilitators, and access to suitable role models.

Category	Minimum conditions / useful additions
Human resources	Minimum: 1 school or organisation focal point, 1 facilitator, and at least 1-2 mentors. Useful addition: a wider mentor pool, co-facilitators, student ambassadors, or community partners.
Time	Minimum: 3-5 sessions plus preparation and follow-up. Useful addition: time for mentor briefing, reflection, and a follow-up or celebration moment.
Spaces	Minimum: a classroom, library, meeting room, or online space suitable for discussion. Useful addition: a lab, makerspace, workplace, or community venue.
Equipment and materials	Minimum: printed prompts, pens, board, projector if available, and any low-cost practical materials. Useful addition: devices, robotics kits, portfolio examples, or transport for visits.
Budget	Minimum: small operational budget for materials and coordination. Useful addition: refreshments, transport, recognition for mentors, or event costs.

Category	Minimum conditions / useful additions
Documentation	Minimum: attendance record and short feedback tool. Useful addition: pre/post questionnaire, facilitator log, photos with permission, short case studies.

Where equipment is limited, schools can use unplugged activities, printed case studies, paper-based design tasks, and conversation-based mentoring. The quality of facilitation matters more than technical complexity.

For future transfer, organisations may choose between a minimum viable model and an extended model:

- Minimum viable model: one target group, one facilitator, one or two mentors, low-cost materials, and a short cycle;
- Extended model: multiple mentors, blended practical and dialogical formats, a family or community link, and one follow-up action such as a visit, showcase, or ongoing club.

14. Suggested implementation timeline

The timeline below can be adapted to local calendars. It is designed to support both project piloting and future independent use.

Phase	Main actions
6-8 weeks before delivery	Select the scheme, define the target group, appoint the focal point and facilitator, identify suitable calendar windows, and start mapping mentors or partner organisations.
4-6 weeks before delivery	Recruit or confirm mentors, complete any required safeguarding or consent procedures, adapt materials, and decide whether a family or community link will be included.
2-3 weeks before delivery	Run mentor briefing, prepare students, send any family communication, finalise resources, and if relevant collect a short baseline or expectation survey.
Delivery period	Implement the planned sessions, monitor attendance and participation, and document adaptations or emerging issues.
1-2 weeks after delivery	Collect feedback from students, mentors, and staff; hold a closing reflection; and decide on next-step opportunities or continuity actions.
1-3 months after delivery	Follow up with participants where possible, review outcomes, and update the mentor pool and materials for the next cycle.

Project piloting note: for WP4 round 2, preparatory meetings should precede implementation, and school calendars should be agreed early enough to support delivery from M21 (from September 2026) in the newly engaged implementation schools.

15. Inclusion, safeguarding and ethics

Mentoring should be encouraging and open, but it also requires clear boundaries and safe procedures.

- Follow national and local child-protection, safeguarding, and data-protection requirements;
- Inform students and families appropriately about the purpose, format, and any documentation or media use;
- Establish group agreements on respect, participation, and confidentiality at the start of the cycle;
- Use accessible language and provide reasonable adjustments for learners with disabilities or additional needs;
- Be attentive to intersectional factors such as socioeconomic background, ethnicity, migration experience, disability, or rural isolation;
- Clarify what happens if sensitive issues arise, including where students can seek support;
- Use moderated or approved platforms for any online elements;
- When mixed groups are used, actively protect girls' opportunity to speak and participate.

16. Monitoring, evaluation, and documentation

Monitoring should be light enough to be feasible and strong enough to support learning and improvement. The same basic framework can be used across countries, even if tools are adapted locally.

Dimension	Possible indicators and sources
Reach	Number of schools or organisations involved; number of sessions delivered; number of students participating; number and diversity of mentors involved.
Engagement	Attendance; participation in discussion or activities; number of questions raised; completion of reflection tasks; facilitator observation notes.
Perception and learning	Short before/after responses on confidence, interest, stereotype awareness, and knowledge of pathways; student reflections or exit tickets.
Implementation quality	Completion of planned sessions; mentor preparedness; appropriateness of materials; quality of facilitation; adaptations made during delivery.
Sustainability	Whether the school intends to repeat the scheme; mentor pool retained; follow-up activities created; links made to guidance, DigiSpheres, or clubs.

Useful low-burden tools include a one-page facilitator log, a short mentor feedback form, and a student exit card after each session or at the end of the cycle.

Illustrative student feedback statements include:

- I can imagine myself learning more advanced digital or ICT skills;
- I know more kinds of ICT-related jobs or study pathways than before;
- I felt comfortable asking questions during the mentoring sessions;
- The mentoring sessions helped me think differently about girls and technology;
- I can identify at least one next step I could take after this programme.

17. Common challenges and practical responses

Common challenge	Practical response
Mentor cancellation or low availability	Keep a reserve list, confirm early, use more than one mentor where possible, and prepare a fallback format such as a recorded message or a staff-led session with mentor materials.
Students are quiet or hesitant	Use anonymous questions, pair discussion before whole-group sharing, short practical tasks, and mentor prompts that normalise uncertainty.
The session becomes too abstract	Bring concrete artifacts, short demonstrations, day-in-the-life examples, real projects, or simple local problems to solve.
Girls speak less in mixed groups	Use girl-only breakouts or first-response rounds, assign structured turn-taking, and monitor participation actively.
Limited equipment or budget	Use unplugged activities, printed materials, low-tech design tasks, and school spaces rather than specialised labs.
Mentoring ends as a one-off inspirational event	Always include a closure task, a next-step plan, or a link to another school or community opportunity.
Families are uncertain or disengaged	Share simple information, invite a closing moment, or connect the scheme to DigiSphere communication and family activities.
Sensitive topics arise unexpectedly	Acknowledge the issue, avoid trying to solve it alone, and follow the agreed safeguarding and referral procedure.

18. Action plan template for schools and organisations

The template below can be used by a school, NGO, association, or other organisation to plan a cycle of one of the mentoring schemes.

18.1 Local action plan template

Field	To be completed locally
Organisation / school	[Insert name of the school or organisation, country, and main contact person.]

Field	To be completed locally
Scheme selected	[Flexible Interactive Groups / Dialogical Spaces / combination of both.]
Target group	[Describe age/stage, expected number of participants, and whether the group is girls-only or mixed.]
Local need or rationale	[Briefly describe why this group or context would benefit from the mentoring scheme.]
Objectives for this cycle	[List 3-5 concrete objectives for the local implementation.]
Mentor profile and recruitment plan	[How many mentors are needed? From which organisations or networks will they be recruited?]
Session structure and calendar	[Insert number of sessions, dates, duration, and whether any optional visits or showcases are included.]
Roles and responsibilities	[Who is the focal point? Who facilitates? Who manages logistics, safeguarding, and evaluation?]
Resources and budget	[Describe spaces, materials, equipment, transport, or other resources needed.]
Family / community link	[Describe any link to DigiSpheres, family communication, alumni, employers, or community partners.]
Inclusion and safeguarding measures	[List key measures, consent procedures, accessibility adaptations, and referral contacts.]
Monitoring and evaluation plan	[Which simple tools will be used to document attendance, feedback, and outcomes?]
Continuation / sustainability	[What follow-up action, repetition, or integration into regular practice is planned?]

Part II.

Teachers' Toolbox

Pedagogical and Conceptual Logic of the Teachers' Toolbox

Pedagogical logic

The design of the LeadHER Teachers' Toolbox follows a clear pedagogical and conceptual logic that explains how and why girls' participation in ICT education and career pathways is shaped, and where educational interventions can be most effective.

Evidence from the Global Research Report demonstrates that gender inequality in ICT is not primarily the result of access barriers, but of interconnected psychological, pedagogical, and social factors that influence girls' engagement over time. These factors operate in a cumulative way and, if not addressed coherently, can progressively limit girls' participation and aspirations in ICT-related learning and careers.

1. **From stereotypes to participation**

Gender stereotypes surrounding ICT influence expectations about who "belongs" in technology-related fields. These stereotypes shape girls' perceptions of their own abilities and of ICT as a domain, often leading to lower self-confidence and reduced willingness to engage visibly in digital learning. Confidence, therefore, functions as a critical mediating factor between social narratives and actual participation in ICT education.

Participation is not only a matter of enrolment, but of active involvement in learning processes, including speaking up, experimenting, taking technical roles, and persisting when challenges arise. When confidence is undermined, participation decreases, which in turn limits learning opportunities and reinforces existing gaps.

2. **The role of pedagogy**

Pedagogical practices play a decisive role in either reinforcing or counteracting these dynamics. Teaching approaches that are not consciously gender-responsive may unintentionally amplify confidence gaps and unequal participation. Conversely, inclusive and reflective pedagogical strategies can create learning environments in which girls are encouraged to engage actively, develop competence, and see themselves as capable ICT learners.

For this reason, gender-responsive pedagogy forms the core of the Teachers' Toolbox, translating conceptual understanding into everyday teaching practice that supports sustained engagement.

3. **Connecting learning to future pathways**

Even when girls participate and perform well in ICT learning, their engagement may not translate into educational or career choices if they cannot envision ICT as relevant to their interests, values, or future aspirations. Career orientation and the visibility of diverse ICT pathways are therefore essential to connect learning experiences to long-term outcomes.

Embedding career perspectives and role models within ICT education helps bridge the gap between classroom participation and future educational and professional decisions.

4. **Mentoring as reinforcement and continuity**

Mentoring schemes complement classroom-based interventions by providing structured opportunities for dialogue, reflection, and exposure to lived experiences in ICT-related fields. Within the LeadHER framework, mentoring is conceived not as an isolated activity, but as a reinforcing mechanism that builds on the conditions established through inclusive pedagogy and confidence-building practices.

Effective mentoring strengthens girls' sense of belonging and supports informed decision-making, particularly when it is coherently linked to classroom learning and career orientation.

Structure and delivery of the curriculum

The Teachers' Toolbox includes a **25-hour continuous curriculum for teacher training**, organized into six modules combining guided learning and structured self-learning. Besides the modules presented next, LeadHER provides standalone support materials that can be used independently of formal training. The proposed time distribution for the six modules of the curriculum is as follows:

Module	Title	Total hours	Guided learning	Self-learning
1	Foundations of Gender-Responsive ICT Education	3h	2h	1h
2	Confidence, Identity & Stereotypes as Barriers to ICT Participation	5h	3h	2h
3	Safe, Empowering & Inclusive Learning Environments	4h	2h	2h
4	Gender-Responsive Pedagogy & Inclusive ICT Practices	6h	4h	2h
5	Inclusive ICT Projects, Career Orientation & Role Models	4h	2h	2h
6	Implementing the LeadHER Mentoring Schemes	3h	3h	-
Total		**25h**	**16h**	**9h**

Module 1. Foundations of Gender-Responsive ICT Education

General description of the module

1. Module number and title

Module 1. Foundations of Gender-Responsive ICT Education

2. Primary purpose and objective of the module

This module introduces the foundations of gender-responsive ICT education. Its purpose is to help teachers and school staff understand why girls' participation in ICT continues to require attention and what schools can do to support it more intentionally and inclusively.

The main objective of this module is to build a shared understanding of the ICT gender gap, the main concepts linked to it, and the role of teachers and schools in creating more inclusive and motivating ICT learning experiences for girls.

3. Module summary

This module is the starting point of the LeadHER curriculum. It introduces the main ideas that teachers need before moving to the more practice-oriented modules. Participants explore why gender matters in ICT education, how the gender gap in ICT is expressed, and how stereotypes, bias, socialisation, confidence, and school practices can shape girls' participation and aspirations.

The module also introduces a simple but important idea: girls' underrepresentation in ICT is not only about access to technology. It is also about whether girls feel confident, included, visible, supported, and able to imagine themselves in ICT-related learning and careers. The module helps participants connect these ideas to their own school context and identify one realistic first step for change.

4. Duration

Total duration: 3 hours

Guided learning: 2 hours

Structured self-learning: 1 hour

Suggested delivery format: This module can be delivered face to face, online, or in a blended format. A practical option is one guided session of 2 hours, followed by one structured self-learning task (1 hour) that participants complete individually.

5. Prerequisites

No prior specialist knowledge is required. This module is suitable for ICT teachers, non-ICT teachers, school staff, and other education professionals who want to develop a better understanding of how to support girls' participation in ICT learning. Participants do not need advanced technical expertise. They only need an interest in inclusive education and a willingness to reflect on their own context.

Learning objectives

By the end of this module, participants will be able to:

- explain why gender matters in ICT education;
- describe key concepts related to gender-responsive ICT education;
- identify factors that influence girls' participation, confidence, and aspirations in ICT;
- reflect on how school practices and classroom experiences can support or limit girls' engagement in ICT;
- identify one realistic first step to make ICT education more inclusive and gender-responsive in their own context.

Core content

Unit 1. Why gender matters in ICT education

Duration

35 minutes (guided learning)

Purpose

To provide the starting context for the module and help participants recognise why girls' participation in ICT still needs attention in school education.

Core content

Digital education is now part of everyday school life. In many schools, girls and boys use the same devices, attend the same classes, and take part in the same learning activities. At first sight, this can create the impression that the issue of gender in ICT has already been solved. However, equal access does not always lead to equal learning experience. Learners may still participate differently, receive different messages about their abilities, or feel more or less confident in ICT-related tasks.

The ICT gender gap is not only about numbers, such as how many girls choose a subject or how many boys and girls are present in a classroom. It is also about what happens during the learning process. Participation includes speaking up, asking questions, trying new tasks, taking technical roles,

making mistakes, trying again, and seeing themselves as capable. When some learners become less visible or less confident in these moments, equal access alone is not enough.

Gender matters in ICT education because girls and boys do not always receive the same messages about who "belongs" in technology-related learning. These messages may come from family, the media, school culture, peer expectations, classroom materials, or teachers' assumptions. Sometimes they are open and obvious. More often, they are subtle. For example, boys may be expected to solve technical problems more quickly. Girls may be encouraged to be careful, organised, or supportive, but not always to take the lead in technical tasks. Over time, these small messages can influence confidence, participation, and future choices.

This also means that the issue is not about ability. Girls do not participate less in ICT because they are less capable. The problem is that confidence and participation are shaped by experience. If learners repeatedly feel overlooked, less encouraged, or less represented, they may begin to hold back even when they are able to do the work. In this way, the school environment can either reduce or reinforce gender gaps. The curriculum therefore treats ICT education as both a pedagogical issue and a social one. It asks teachers to look not only at content, but also at who feels visible, capable, and included.

Teachers and schools have an important role here. They cannot control every message learners receive, but they do shape many important parts of the learning experience. They shape how tasks are organised, who is encouraged, how examples are presented, how mistakes are treated, and whose ideas are heard. Small choices in everyday practice can influence whether girls experience ICT learning as welcoming, confidence-building, and relevant. For this reason, the Teachers' Toolbox is meant to support teachers with clear concepts and practical first steps, rather than leaving inclusion to intuition alone.

Key Messages

- Equal access to ICT does not always mean equal participation.
- The ICT gender gap is shaped by confidence, stereotypes, social messages, and school practices.
- Participation means more than attendance; it includes voice, visibility, experimentation, and confidence.
- Teachers and schools can influence how girls experience ICT learning.
- Gender-responsive ICT education starts with noticing patterns and taking practical action.

Reflection elements

Reflection insights

Use the questions below for pair discussion or short written individual reflection:

In my school, do girls and boys appear equally confident in ICT-related learning?
Who usually volunteers first in digital or technical activities?
Who tends to take the lead when a group works with a device or digital task?
Are there situations in which girls are present, but less visible or less active?
What messages might learners receive in school about who is "good at ICT"?

Practical exercise: Participation snapshot

Ask participants to think of one recent ICT-related lesson, project, or classroom activity from their own practice or school context. This can be a formal ICT lesson or another lesson that included digital work.

Then, they have to complete the short task below:

Step 1. Recall the activity: Write the name or type of activity (example: coding activity, digital presentation, research task, group project, robotics task, online collaboration)

Step 2. Observe the pattern: Write short notes on the following:

Who used the device or controlled the digital task most of the time?

Who spoke most during the activity?

Who suggested ideas?

Who asked for help?

Who appeared confident?

Who became quieter or less involved?

Step 3. First interpretation

Write 2–3 sentences on the following topics:

What does this example suggest about participation in my context?

Is there anything I would now look at more carefully?

Application to practice

This unit helps participants use the main ideas of the topic in their own school context. It brings the theoretical focus of the unit, more specifically, the difference between access and participation, and the influence of stereotypes, expectations, confidence, and visibility into everyday school practices. Participants can use this perspective to look more carefully at ICT-related lessons, group work, classroom interaction, and school messages about technology, and to notice whether girls and boys

are experiencing ICT learning in the same way. This gives them a more informed basis for reflection and for later practical steps in teaching and school practice.

Suggested materials/resources

- short slide deck or presentation for Unit 1;
- one-page reading text with the core content above;
- reflection worksheet with the five questions;
- participation snapshot template;
- flipchart, whiteboard, or shared digital board for collecting key observations.

Unit 2. Key concepts for understanding gender-responsive ICT education

Duration

45 minutes (guided learning)

Purpose

To provide learners with a clear and shared understanding of the main concepts used in gender-responsive ICT education and connect these concepts to everyday school practices.

Core content

Gender-responsive ICT education requires a clear understanding of a few key concepts. These concepts help teachers name what they see in school practices and think more carefully about participation, fairness, support and inclusion.

Gender refers to the social expectations, roles, and messages that influence how girls and boys are seen, treated, and encouraged. These expectations can shape interests, confidence, behaviour, and future choices. In education, gender is relevant because learners do not enter the classroom free from these wider messages. They bring with them ideas about what is suitable, expected, or possible for them.

Equality means that all learners are given the same opportunities, access, or treatment. In education, ICT in particular, this may mean that all students use the same devices, attend the same lessons and complete the same tasks.

Equity means recognising that the same offer does not always lead to the same experience or outcome. Some learners may need different forms of support, encouragement, visibility, or access to leadership roles in order to participate fully. In this sense, equity is about fairness in practice, not only fairness in intention.

This distinction is important in ICT education. A classroom may be equal in structure, but not fully equitable in experience. For example, all students may work on the same group task, but some may speak more, lead more, or feel more confident taking technical roles.

Stereotypes are simplified and limiting beliefs about what girls or boys are supposedly like, interested in, or good at. In ICT, stereotypes often suggest that boys are naturally more interested in technology, more capable in technical tasks, or more suited to digital careers. Girls may be seen as less confident, less technical, or more suitable for supportive or organisational roles. These stereotypes are not always stated openly. They may appear in examples used in class, classroom talk, role allocation in group work, expectations about performance, career messages, or digital media.

Bias refers to assumptions or patterns of judgement that influence how people are treated and how decisions are made. Bias may be conscious or unconscious. In school life, it can influence who is encouraged to try, who gets more support, who is trusted with technical responsibility, whose mistakes are excused, and whose success is noticed.

Socialisation is the process through which children and young people absorb messages from family, school, peers, media, and society about who they are and what is expected of them. Socialisation shapes identity, self-image, confidence, interests, and future aspirations. In ICT education, it helps explain why some learners may already feel that technology is "for them," while others may feel more uncertain or distant from the subject.

Representation refers to how girls, boys, women, and men are shown or made visible in learning materials, classroom examples, school displays, media, and discussions about ICT. Representation matters because it influences who is seen as belonging in technology and whose achievements or futures are imagined in this field.

These concepts are useful because they move the discussion away from individual blame. They help teachers understand that participation in ICT is shaped by a wider set of influences and that school practice plays an important part in either reinforcing or reducing these patterns.

Key Messages

- Gender shapes how learners are seen, encouraged, and supported in education.
- Equality and equity are not the same. Equal access does not always create equal experience.
- Stereotypes can influence how learners see themselves and how others respond to them.
- Bias can appear in small, everyday decisions in classroom life.
- Socialisation helps explain why confidence, participation, and aspirations do not develop in the same way for all learners.

Reflection elements

Reflection insights

Use the questions below for pair discussion or short written individual reflection:

Where do I see the difference between equality and equity in school practice?

Are there stereotypes about girls and boys that still appear in ICT-related learning?

In what kinds of classroom situations might bias appear without being openly visible?

What messages about technology, confidence, or ability do learners receive in school?

Which of these concepts helps me describe my own school context more clearly?

Practical exercise: Concepts in school life

Give participants the list of examples. Ask them to read each one and choose the concept that fits best. Then review the answers together and briefly discuss which examples are most similar to situations in their own school. More than one answer may be possible.

1. All students are given the same digital assignment, but boys in the group do most of the technical work while girls take supporting roles.
2. A teacher says that boys usually enjoy coding more than girls.
3. A girl says she likes technology but does not feel that it is "really for people like her."
4. A school display about digital careers mostly shows men and boys.
5. During a group task, a boy is immediately asked to solve the technical problem, even though a girl in the group has similar skills.
6. In class, boys are often described as "naturally technical," while girls are praised for being organised and careful.
7. A robotics club is open to everyone, but almost all of the posters, examples, and success stories used to promote it feature boys.
8. A teacher gives the same digital task to all learners, but only a few confident students are actively supported to present their work.
9. A parent tells a girl that ICT is a useful skill, but probably not something she would want as a future career.
10. In a mixed group, a girl suggests a technical solution, but the group listens only when a boy repeats the same idea.
11. Girls and boys are both invited to join an ICT activity, but boys join in more quickly because they already see it as something familiar and expected.
12. A teacher notices that girls in class often wait before trying a digital task because they are afraid of making mistakes in front of others.

Possible answers

1. equality without equity

2. stereotype
3. socialisation / stereotype
4. representation / stereotype
5. bias
6. gender / stereotype
7. representation
8. equality without equity / bias
9. socialisation / stereotype
10. bias
11. gender / socialisation
12. socialisation

Application to practice

Participants use the concepts from this unit to look more carefully at everyday school situations and interpret what may be happening beneath the surface. The concepts of gender, equality, equity, stereotypes, bias and socialisation help them describe classroom interaction, task allocation, participation and school messages in a more precise way. This gives them a stronger basis for recognising patterns in ICT-related learning and for reflecting more clearly on what girls may be experiencing in their own school context.

Suggested materials/resources

- one-page glossary of the key concepts;
- worksheet with the school examples for the matching activity;
- answer sheet for facilitators or self-check;
- short reflection sheet for the follow-up discussion;
- simple slide or handout summarising the main concepts.

Unit 3. Girls' participation, confidence, and aspirations in ICT learning

Duration

40 minutes (guided learning)

Purpose

To explore how girls' participation in ICT learning is shaped by confidence, visibility, classroom experience, and future expectations, and to support closer attention to these patterns in school practice.

Core content

Girls' participation in ICT learning develops through many small experiences over time. These experiences include who is encouraged to try, who is trusted with technical tasks, whose ideas are heard, how mistakes are treated, and whether learners feel that ICT is a space where they belong. The topic is not only whether girls are present in ICT learning, but how they experience it.

Participation means active involvement in learning. It includes speaking up, asking questions, trying tasks, using devices, solving problems, making decisions, taking technical roles, presenting work, and staying engaged when something is difficult. A learner may attend every lesson and still participate less if they remain in the background or take only supportive roles.

Confidence affects how learners respond to challenge. Learners who feel less confident may hesitate before starting, wait for others to take the lead, avoid taking risks, or give up more quickly when something does not work. This does not mean they are less capable. It means that confidence shapes whether learners use the opportunities available to them.

Aspirations are also influenced by school experience. If ICT is presented as narrow, highly technical, or suited only to certain types of learners, some girls may distance themselves from it. If ICT is linked to creativity, collaboration, problem-solving, and real-life relevance, it can feel more open, meaningful, and possible.

These three elements are closely connected. When confidence is lower, participation often becomes narrower. When participation becomes narrower, learners have fewer chances to practise, make decisions, test ideas, and build visible competence. Over time, this can affect how they see themselves and what they imagine for the future. Participation can also be described as active involvement in learning processes such as speaking up, experimenting, taking technical roles, and persisting when challenges arise, while confidence is linked to willingness to try, make mistakes, and continue.

Classroom experience matters here. In ICT-related activities, small patterns can make a real difference. For example:

- who gets the device first;
- who is asked to solve the technical problem;
- who explains the solution to others;
- whose idea is acknowledged;
- who is praised for initiative or persistence;
- who is allowed to make mistakes and try again.

These patterns influence not only what learners do, but also how they see themselves. When girls are regularly given less visible roles, interrupted more easily, or praised mainly for being careful or

organised, they may begin to participate more cautiously. When they are encouraged to test ideas, lead, solve problems, and recover from mistakes, confidence and engagement can grow.

Teachers can support more balanced participation in simple ways. They can, for example:

- pay attention to who takes technical and decision-making roles in group work;
- rotate roles so that all learners have a chance to handle devices, troubleshoot, present, and explain;
- give thinking time before stepping in too quickly;
- invite quieter learners into the task without putting them under pressure;
- praise effort, strategy, persistence, and problem-solving, not only speed or correct answers;
- treat mistakes as a normal part of learning;
- use examples and tasks that connect ICT to real-life issues, creativity, collaboration, and social value;
- make sure girls' ideas are heard and taken seriously.

Key Messages

- Participation means active involvement, not only attendance.
- Confidence affects whether learners speak up, try, persist, and take technical roles.
- Everyday classroom experience influences how girls see themselves in ICT.
- Aspirations are shaped by whether ICT feels relevant, welcoming, and possible.
- Small patterns in school practice can influence long-term engagement in ICT learning.

Reflection elements

💭 Reflection insights

Use the questions below for pair discussion or short written individual reflection:

In ICT-related activities, who usually takes the lead and who stays in supporting roles?

Which learners seem comfortable making mistakes and trying again?

Are there learners who are present but less visible during digital tasks?

What kinds of classroom experiences might strengthen or weaken confidence in ICT?

What messages about future possibilities in ICT might girls be receiving in school?

🏫 Practical exercise: Teacher response review

Participants read a set of short classroom scenarios from ICT-related learning. For each one, they discuss which teacher response is more supportive and which response may weaken confidence, participation, or visibility.

Give participants the scenarios below. Ask them to read each one and discuss the two teacher responses. For each scenario, they must decide: which response is more supportive; which response may weaken participation or confidence; why this matters for girls' experience in ICT learning. This activity can be done individually first and then discussed in pairs or small groups. If time is limited, divide the participants in 3 groups and give only 1 scenario each.

Scenario 1. Hesitating to take the technical role

The class is working in mixed groups on a digital task that involves using a coding tool. In one group, a boy takes the laptop straight away and starts clicking through the activity, while a girl beside him watches and reads the instructions aloud. When the teacher passes by, the girl says, "I think I understand it, but I don't want to mess it up." The boy keeps working quickly and does not ask for her input. After a few minutes, the girl stops suggesting ideas and focuses only on checking whether the group is following the task correctly.

Teacher response A: "Let's pause for a moment. I'd like you both to share the task, and I want everyone in the group to have a chance to try, test, and explain their thinking."

Teacher response B: "Why don't you keep reading the instructions for now, and then maybe try the next part once the group is more settled?"

Scenario 2. A good idea is overlooked

During a group discussion about how to solve a digital design problem, one girl suggests a practical solution and briefly explains why it could work. The group does not respond, and the discussion moves on quickly. A minute later, a boy in the same group repeats almost the same idea, and the others immediately agree that it is the best option. The girl becomes quieter and leans back from the table while the rest of the group continues planning the task. The teacher notices that the group seems active and focused, but also sees that one learner's contribution was not acknowledged.

Teacher response A: "I want us to go back to the first idea that was mentioned and make sure all contributions are heard properly before the group decides."

Teacher response B: "It sounds like the group is moving in a good direction now. Let's keep the discussion going and see how the idea develops."

Scenario 3. Mistake and stepping back

A girl is trying to complete a step in a digital activity in front of her group. She clicks the wrong option, and the result on the screen is not what the group expected. Two classmates laugh lightly, and one of them says, "Just give it to me, I'll do it faster." The girl immediately takes her hands away from the keyboard and says, "I'm not good at this anyway." The teacher hears the comment and sees that the girl has stopped participating, even though she was trying only a moment earlier. The atmosphere in the group has shifted from experimentation to embarrassment.

Teacher response A: "Stop there for a second. Mistakes are part of the task, and we learn by testing different options. Let's look together at what happened and give her the chance to try again."

Teacher response B: "That's okay, these tasks can be tricky at first. Watch one more example, and then you can join in again on the next step."

Practical exercise: Barriers and supports table

Ask participants to work individually or in pairs. They have to read each of the barriers in the table below and think about what teachers, schools, or learning activities can do to reduce these barriers and support girls' participation and motivation. Each pair/individual must write one or two possible supports in the second column. Then review the answers together and discuss which barriers feel most familiar in their own school context and what practices they already apply in their classroom.

Possible barriers for girls' participation or motivation	Possible supports
Fear of making mistakes in front of others	
Low confidence to speak or take the lead	
Boys dominate a discussion or task	
Girls take mainly supportive roles	
Some ideas are ignored or not taken seriously	
Activities feel too competitive or too narrow	
Very limited examples of girls/women, represented in the subject books or related careers	
Feedback and knowledge assessment value speed and correct answers more than effort and progress	

Follow-up discussion (optional, if time allows)

- Which barriers are most visible in your own context?
- Which supports are already used in your practice?
- Which support would be most useful to strengthen?

Application to practice

This unit brings attention to how girls experience learning in real classroom situations: who takes the lead, who stays less visible, who feels confident enough to try, and how learners respond to challenge, mistakes, and group roles. It supports closer observation of participation, confidence, motivation, and future orientation in everyday school practices, and helps teachers recognise where girls may need more space, encouragement, visibility, or support.

Suggested materials/resources

- short handout or slide summarising participation, confidence, and aspirations in learning;
- worksheet with the teacher-response scenarios;
- barriers-and-supports table worksheet;
- short reflection sheet for individual notes or pair discussion;
- simple observation checklist on visibility, roles, confidence and participation;
- facilitator notes with key discussion points and example support strategies.

Unit 4. One first step towards more gender-responsive practice

Duration

60 minutes (self-learning)

Purpose

To turn the ideas from the module into one clear and realistic first step in classroom or school practice, with attention to girls' participation, confidence, visibility and motivation in learning.

Core content

A more gender-responsive learning environment is built through **everyday practice**. It is shaped by how tasks are organised, how roles are shared, how feedback is given, whose ideas are recognised, what kinds of examples are used, and what learners understand as success. These elements may seem small on their own, but they influence whether girls feel confident to take part, try, speak, lead, and continue.

A useful starting point is to look at a few practical areas. One area is **participation and role distribution**. Girls may be present in an activity but still take less visible or less demanding roles, especially in group work. Another area is **feedback and encouragement**. Learners engage more actively when effort, persistence, strategy, and improvement are noticed, not only speed or correct answers. A third area is **classroom interaction.** It matters who speaks first, whose ideas are heard, who gets interrupted, who is invited to explain, and who is given time to think before others take over.

It is also important to look at **materials, examples and representation.** If girls and women are rarely visible in examples, displays, stories, or future pathways linked to the subject, some learners may find it harder to see themselves in those spaces. **Relevance and motivation also matter.** When learning connects to creativity, collaboration, problem-solving, real-life situations, and different strengths, it becomes easier for more learners to find meaning in it.

The aim is not to redesign everything at once. **A strong first step is usually small, clear, and specific.** It may involve changing one aspect of group work, one part of teacher feedback, one set of examples, one way of observing participation, or one routine that affects confidence and visibility. Practical change becomes more realistic when it starts from one pattern that has already been noticed.

Key Messages

- Everyday teaching choices influence participation, confidence, and motivation.
- Small patterns in classroom life often have a strong effect over time.
- A useful first step is specific, realistic, and closely linked to actual practice.
- Participation, feedback, visibility, and representation are all part of an inclusive learning environment.
- One clear and actionable change is more useful than a long list of intentions.

Practical exercise: Review of current teaching reality

Part 1: Self-check (10-15 min.)

Think about your teaching practice, regardless of the subject, you are teaching: such as ICT, mathematics, science, languages, arts, social sciences, project work, presentations, research tasks, or collaborative digital activities. Read the statements below and mark each one as: Yes / Partly / Not yet.

Statement	Yes	Partly	Not yet
Girls and boys have similar chances to take active and visible roles during tasks that use digital tools.	☐	☐	☐
Girls are encouraged to use devices, platforms, or digital applications directly, not only to support others.	☐	☐	☐
Technical, leading, or decision-making roles are shared more fairly during group work.	☐	☐	☐

Girls are not left mainly with organisational, decorative, or note-taking roles when digital tasks are completed in groups.	☐	☐	☐
Girls' ideas are noticed and taken seriously during digital activities and discussions.	☐	☐	☐
Feedback during digital tasks values effort, persistence, strategy, and improvement, not only speed or correct answers.	☐	☐	☐
Mistakes made while using digital tools are treated as part of learning, not as something embarrassing.	☐	☐	☐
Learners are given enough time to try, explore, and solve problems before someone else takes over.	☐	☐	☐
Classroom interaction during digital activities supports participation from quieter or less confident learners.	☐	☐	☐
Girls are encouraged to ask questions, test ideas, and take initiative during digital tasks.	☐	☐	☐
Examples, materials, or resources used in digitally supported learning include girls and women in active and positive roles.	☐	☐	☐
Digital tasks are presented in ways that feel relevant and meaningful to a wide range of learners.	☐	☐	☐
Activities that use digital tools allow for different strengths, not only fast performance or competition.	☐	☐	☐
Group work with digital tools is organised so that participation can be observed and shared more equally.	☐	☐	☐
Learners receive encouragement that helps build confidence when they feel unsure about a digital task.	☐	☐	☐
Girls are visible as capable participants in digitally supported learning across different subjects, not only in ICT lessons.	☐	☐	☐
I pay attention to who uses the device, who speaks, who decides, and who becomes less visible during digital activities.	☐	☐	☐
I notice whether girls and boys experience digitally supported learning in the same way.	☐	☐	☐
I can identify at least one classroom or school pattern that may reduce girls' participation or confidence in learning with digital tools.	☐	☐	☐

Look again at the statements marked Partly or Not yet. Then write short answers to the following questions:

- *Which 2 or 3 points seem most important in my context?*
- *Which one of them would I like to improve first?*
- *Why does this area matter in my own classroom or school practice?*

Part 2: Choose one priority area

Look again at the statements you marked as Partly or Not yet in the checklist. Choose one area that feels most important in your own teaching or school context.

Tick one:

- ❑ active participation during lessons that use digital tools\
- ❑ confidence to try, ask questions, or take initiative
- ❑ role distribution in pair or group work
- ❑ feedback and encouragement
- ❑ visibility of girls' ideas and contributions
- ❑ classroom interaction and discussion
- ❑ representation in examples, materials, or displays
- ❑ motivation and relevance of digitally supported learning
- ❑ another area: _____

Now write short answers to the following questions:

What do I see in practice?

Describe one specific pattern you have noticed during lessons or activities that use digital tools.

How might this affect girls' learning experience?

Explain how this pattern may influence participation, confidence, motivation, or willingness to take part.

Who seems to have fewer opportunities to participate actively?

Describe which learners may be staying in the background, taking less visible roles, or receiving less encouragement.

Part 3: Plan one first step

Use the space below to define one clear and realistic action that you can try in your own practice.

My context

[Which lesson, class, subject, project, or school situation am you involved in]

What I want to improve

[What exactly would you like to change?]

One action I will try

[What will you do? Keep it small, clear, and realistic.]

When I will do it

[In which lesson, activity, or period?]

What I will pay attention to

[What will you observe to see whether this is helping?]

Examples of possible first steps

- rotate roles more clearly in pair or group work;
- invite girls more actively into visible or decision-making roles;
- change one part of the feedback style to value effort, persistence, and progress;
- review one lesson, example, or display for representation;
- introduce a digitally supported task in a way that feels more meaningful and motivating;
- pay closer attention to who speaks, who uses the device, and whose ideas are acknowledged.

Part 4: Final reflection

Reflect on the following topics:

- *Why did I choose this action?*
- *What will make it easier to carry out?*
- *What might make it difficult?*
- *What would count as a small sign of progress?*

Application to practice

This unit brings the module into participants' own teaching and school context. The focus is on one real lesson, activity, or school situation that uses digital tools, noticing one pattern that affects girls' participation, confidence, visibility, or motivation, and defining one small change to try next. The final outcome is a short first-step action note that is directly linked to everyday practice and can be used as a starting point for improvement.

Suggested materials/resources

- self-review checklist for lessons and activities that use digital tools;
- reflection sheet for identifying one priority area;
- first-step action note template;
- short examples sheet with possible first actions;
- optional follow-up observation note for checking what changed after the action is tried.

Training materials

Please check the "**Module 1**" support materials on the LeadHER Teaching Framework webpage.

Additional resources

UNESCO report - Gender-responsive STEM education: empowering girls and women in STEM (2019): useful for gender-responsive teaching, stereotypes, and practical directions for supporting girls in STEM and technology-related learning. *Available also in French and Spanish language.*

UNICEF document: Advancing Girls' Education and Gender Equality through Digital Learning (2021): useful for understanding how digital learning can support girls' education while also highlighting barriers that still affect girls' participation and inclusion.

UNICEF Data Report - Bridging the Gender Digital Divide (May 2023): useful for background evidence on girls' digital exclusion, access, and participation, especially in wider discussions about digital inequality.

European Commission - Women in Digital Scoreboard 2024: useful for current EU-level data on women's and girls' inclusion in digital studies, careers, and skills development.

OECD Report - Gender, Education and Skills (2023): useful for broader evidence on gender gaps in education, skills, and later choices, including why strong performance does not always lead to future participation.

OECD Policy paper - Why don't more girls choose to pursue a science career? (2019): useful for discussion of aspirations, participation, and the gap between achievement and later study or career choices.

Digital Skills and Jobs Platform (EU): useful for further resources, training, good practices, and digital-skills materials, including resources connected to girls' and women's participation in digital learning and careers.

Module 2. Confidence, identity & stereotypes as barriers to ICT participation

General description of the module

1. Module number and title

Module 2. Confidence, identity & stereotypes as barriers to ICT participation

2. Primary purpose and objective of the module

This module addresses the psychological, social and cultural barriers that undermine girls' confidence and sense of belonging in ICT. Within the LeadHER Teaching Framework, it is foundational understanding why girls disengage from ICT is a prerequisite for any gender-responsive intervention. The primary goal of the module is to equip teachers with conceptual tools and self-awareness to identify how confidence gaps, identity threats and stereotype mechanisms operate in their classrooms and to begin dismantling them.

3. Module summary

This module explores the internal and external barriers that prevent girls from fully participating in ICT education. Participants will examine the gender confidence gap, the concept of ICT identity and belonging and the mechanisms through which stereotypes form and persist in school environments. They will reflect on how their own attitudes, language and expectations may unintentionally reinforce these barriers. By the end of the module, teachers will have a clearer picture of the psychological landscape their female students navigate and will have practised concrete strategies for building confidence and challenging stereotypes in everyday classroom life.

4. Duration

Total duration: 5 hours

Guided learning: 3 hours

Structured self-learning: 2 hours

Suggested delivery format: Suitable for face-to-face, online or blended delivery. Guided learning is delivered synchronously; self-learning activities are asynchronous.

5. Prerequisites

No specialised ICT knowledge is required. Participants should have basic teaching experience in basic or secondary education and an openness to reflecting on their own practices and assumptions in relation to gender and technology.

Learning objectives

By the end of this module, participants will be able to:

- explain the gender confidence gap and its effects on girls' participation and persistence in ICT activities;
- analyse how ICT identity and belonging are shaped by social and cultural factors in school settings;
- identify the mechanisms through which gender stereotypes form, are transmitted and are reinforced in ICT classrooms;
- reflect on how their own attitudes, feedback and expectations may unintentionally reproduce bias;
- apply at least two concrete strategies to build girls' confidence and challenge stereotypes in their own teaching practice.

Core content

This module is organised into five units that guide participants through a progressive learning journey: from understanding the problem, to recognising it in their own classrooms, to acting on it in practice. Each unit builds on the previous one: the first units establish theoretical foundations; later units bring the content closer to classroom reality and concrete action.

Unit 1. Understanding Confidence as a Barrier: The Gender Confidence Gap in ICT

Duration

30 minutes (guided learning)

Purpose

To help teachers understand what the gender confidence gap is, why it emerges in ICT contexts and how it shapes girls' behaviour, choices and persistence in technology-related learning. This unit establishes the psychological foundations for the rest of the module.

Core content

Confidence is one of the most powerful predictors of engagement and persistence in learning, and one of the most unequally distributed. In ICT education, the confidence gap between girls and boys is well documented: girls consistently underestimate their ICT abilities relative to their actual performance, while boys tend to overestimate theirs. This mismatch has real consequences: it shapes who volunteers, who takes technical risks, who persists after failure and ultimately who pursues ICT studies and careers.

1. What is the Gender Confidence Gap?

The confidence gap refers to the difference between actual competence and perceived competence. In ICT, this gap is particularly pronounced for girls. Research across European countries consistently shows that:

- girls performing at the same level as boys in ICT tasks rate their own ability significantly lower;
- girls are more likely to attribute success to luck or effort and failure to lack of ability;
- girls are more sensitive to early failure experiences, which can lead them to disengage from ICT activities entirely.

This is not a matter of actual skill - it is a matter of self-perception. And self-perception, shaped by social messages, has a direct impact on behaviour.

2. Where Does the Confidence Gap Come From?

The confidence gap does not appear in a vacuum. It is shaped by a combination of factors:

a) **Socialisation**: from an early age, children receive messages from family, media and peers about who is "good at" technology. These messages accumulate over time and shape how girls see themselves in relation to ICT

b) **Stereotype threat**: when girls are aware of the stereotype that "boys are better at ICT", this awareness itself can impair their performance, even when they are fully capable. This is known as stereotype threat, and it operates below the level of conscious thought

c) **Attribution patterns**: teachers and parents sometimes interpret boys' confidence as competence and girls' caution as incompetence, reinforcing the gap through differential feedback and expectations

d) **Lack of representation**: when girls see few women in ICT roles, in examples used in class, or in the curriculum, they receive an implicit message that ICT is not a space for people like them.

3. How the Confidence Gap Manifests in ICT Classrooms

In everyday lessons, the confidence gap shows up in predictable ways:

Behaviour	What it may signal	Teacher response
A girl waits for others to start before touching the keyboard	Fear of failure or of confirming a stereotype	Assign keyboard turns explicitly; say "Your turn first, go ahead and try"
A student asks, "is this right?" before every step	Low self-efficacy; needs external validation	Respond: "What do you think? Tell me your reasoning first"
After getting the correct answer, a girl says "I just guessed"	Attributes success to luck, not ability	Name the skill: "That wasn't a guess, you used the right logic"
A student gives up after the first error	Sees mistakes as proof of inability, not normal process	Normalise: "Errors are part of coding; what could we try next?"
A girl does not raise her hand even when she knows the answer	Social fear of being judged for appearing too eager	Use cold calling with wait time; reduce the pressure of voluntary raising

4. The Confidence Development Pathway

Understanding how confidence develops (or erodes) helps teachers design better learning moments. The diagram below shows the key stages:

Step 1 Exposure to Task	Student encounters a digital or technical task for the first time. Confidence is highly sensitive at this point; environment and framing matter enormously
▼	
Step 2 First Attempt	Student tries the task. Whether this feels safe or risky depends on classroom norms: is error treated as normal, or as a signal of incompetence?
▼	
Step 3 Teacher Response	How the teacher responds shapes the student's attribution: "You worked that out" vs "You're so clever" vs silence. Skill-focused feedback builds durable confidence
▼	

Step 4 Attribution Made	Student interprets the outcome. Girls with low ICT confidence typically attribute success to luck and failure to lack of ability, reinforcing the gap
▼	
Step 5 Future Engagement	Based on attribution, the student either increases engagement (growth) or withdraws from technical roles (disengagement). This cycle repeats across many lessons.

5. Why This Matters for Teachers

Recognising these behaviours as confidence-related, rather than as indicators of actual low ability, is the first step. Teachers who understand the confidence gap can:

- reframe 'avoidance' as a signal that needs a supportive response, not a confirmation of limited potential;
- design activities that build confidence progressively, normalising errors and celebrating effort;
- provide feedback that reinforces girls' sense of competence rather than inadvertently confirming their doubts;
- create classroom norms where uncertainty is safe and asking questions is valued.

6. The Growth Mindset Connection

Confidence is closely related to mindset. Carol Dweck's research on growth mindset shows that students who believe abilities can be developed through effort and strategy are more resilient and more willing to take on challenges. In ICT, fostering a growth mindset is particularly important for girls, who are more likely to hold fixed beliefs about ICT ability (*"either you're good at it or you're not"*). Teachers can actively promote growth mindset language:

Instead of saying…	Try saying…
"That was wrong"	"What strategy could you try next?"
"You're so talented"	"You worked hard and figured that out"
"This is easy"	"This is a new challenge… let's explore it together, I will support you if needed"
"Let him handle the technical part"	"Everyone takes a turn at the keyboard in this class"

Instead of saying...	Try saying...
"You are surprising good at this"	"You're clearly developing strong ICT skills"

Reflection elements

> 💭 **Reflection insights**
>
> Think of a girl in your class who tends to avoid ICT tasks or underestimates her ability. What behaviours have you observed? What might be underlying them?
>
> Reflect on your own feedback patterns: when a student gets something right, how do you typically respond? Does your response reinforce competence or luck?

Application to practice

Review one recent lesson. Identify three moments where a student (particularly a girl) showed signs of low confidence. For each moment, write:

1. What the student did or said;
2. How you (or the class) responded;
3. How you could respond differently to build confidence, using growth mindset language.

> 🏫 **Classroom Snapshot: What the Confidence Gap Looks Like**
>
> **Lesson:** Year 8 class. Students are asked to code a simple webpage in pairs.
>
> **What happens:** Ana and Beatriz sit at the computer. Beatriz immediately says "I don't really get this, can you just do the coding part, Ana? I'll write the notes". Ana agrees, even though both girls are equally capable.
>
> **What the teacher sees:** Two students apparently working cooperatively.
>
> **What is actually happening:** Beatriz has pre-emptively withdrawn from the technical role to avoid the risk of failure. Ana, accepting the label of "the one who gets it", feels quiet pressure to perform, and later says she "just got lucky".
>
> **What the teacher can do:** Assign roles explicitly before the task. Say: "In this activity, both pairs will take turns at the keyboard, switch every 10 minutes".

Suggested materials/resources

Dweck, C. (2006). Mindset: The New Psychology of Success (foundational reading on growth vs. fixed mindset, with direct applications to educational settings and ICT confidence-building)

OECD (2015). The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence (provides evidence on the confidence gap across OECD countries and practical implications for teachers)

European Commission/Joint Research Centre - DIGCOMP Framework (useful background on digital competence development and its relationship to learner confidence)

American Association of University Women (AAUW) - Solving the Equation: Why Girls and Women Opt Out of Computing (research-based analysis of confidence, stereotype threat and social factors shaping girls' ICT participation)

Mindset Works: teacher-facing resources, classroom activities and professional development tools based on Dweck's growth mindset research (www.mindsetworks.com)

Unit 2. Identity, Belonging & the 'ICT Is Not for Me' Belief

Duration

30 minutes (guided learning)

Purpose

To help teachers understand how girls' sense of identity and belonging in ICT is shaped by social and cultural forces, and why many girls develop a conviction that ICT is 'not for them', even before they have had meaningful exposure to it. This unit explores identity as a lever for change.

Core content

Confidence is closely related to identity. Students do not only ask “Can I do this?”; they also ask, “Is this for someone like me?”. In ICT, many girls answer that second question with a “no”; not because of lack of ability, but because the cultural image of ICT (the lone male genius, the technical expert, the gamer) does not resemble who they are or who they want to be. When students do not see themselves reflected in a field, they are unlikely to engage with it deeply or persist in it.

1. ICT Identity: Who 'Belongs' in Technology?

ICT identity refers to the extent to which a person sees themselves as a “tech person”: someone who belongs in digital spaces, understands technology and can contribute to it. This identity is shaped by:

- cultural narratives about who uses technology and who creates it;
- the types of ICT activities presented in school (often framed as programming, gaming or hardware - activities already associated with boys);
- the absence of female figures in ICT curricula, materials and examples;
- peer dynamics, where girls expressing interest in ICT may face social stigma or be seen as “unfeminine”.

2. Classroom Belonging Audit

Use this checklist during or after a lesson to assess whether your classroom environment communicates belonging to all students:

✓	Indicator / Question	Notes
☐	The visual materials in the room (posters, examples) include female ICT practitioners.	
☐	ICT examples used in lessons reflect a range of interests (not only gaming, sport or male-coded topics).	
☐	The language used during lessons is gender-neutral ('everyone', 'they', not 'guys' or 'he').	
☐	During group work, girls take on technical roles (not only documentation or presentation).	
☐	Girls' contributions are acknowledged as publicly as boys' contributions.	
☐	When a girl struggles, I provide verbal guidance rather than taking over the task.	
☐	I have recently named a girl publicly as someone with a useful ICT skill.	
☐	Classroom seating or grouping does not systematically isolate girls from technical resources.	

3. The "ICT Is Not for Me" Belief

The belief develops through a predictable process. Understanding each stage helps teachers intervene at the right moment:

- **Exposure**: repeated encounters with ICT as a masculine domain;
- **Comparison**: perceiving boys as more capable or more entitled in ICT spaces;
- **Internalisation**: incorporating 'ICT is not for me' as part of self-concept;
- **Avoidance**: reducing engagement to protect self-esteem.

Step 1 Exposure	Repeated encounters with ICT as a masculine domain, through media, toys, classroom examples, and peer culture
▼	
Step 2 Comparison	Girls perceive boys as more capable or more entitled in ICT spaces, reinforced by group dynamics and teacher attention patterns
▼	
Step 3 Internalisation	The belief "ICT is not for me" becomes part of self-concept; not a choice, but a conclusion drawn from accumulated experience
▼	
Step 4 Avoidance	Reducing engagement with ICT tasks as a self-protective strategy. This is often misread by teachers as "lack of interest" or "not being good at this"
▼	
Step 5 Reinforcement	Avoidance leads to fewer opportunities, less practice, and lower confidence, deepening the original belief. The cycle repeats.

Once internalised, this belief is resistant to change, but it is not fixed. Teachers who actively cultivate an inclusive ICT identity can disrupt this cycle.

4. Strategies to Strengthen ICT Identity and Belonging

Teachers can take concrete steps to make ICT feel like a space where all students belong:

- **Use inclusive language**
- **Diversify representation**
- **Reframe the image of ICT**
- **Celebrate different strengths**
- **Create collaborative norms**

Strategy	What it looks like in a Maths lesson	What it looks like in a Languages lesson
Use inclusive language	Say "mathematicians and coders use spreadsheets"; include diverse identities	Say "writers use digital tools for research"; connect ICT to their identity

Strategy	What it looks like in a Maths lesson	What it looks like in a Languages lesson
Diversify representation	Show female data scientists using graphs as part of real-world examples	Reference female journalists or digital storytellers when teaching research skills
Reframe ICT image	Present data analysis as collaborative problem-solving, not a solo technical challenge	Frame online research as critical thinking, not just "googling"
Celebrate different strengths	Praise a student for organising her spreadsheet clearly, not just getting the right answer	Acknowledge a student who formatted a digital document thoughtfully
Rotate technical roles	Assign who controls the computer for each activity; switch every 10 minutes	Assign who types in the collaborative document; rotate within each lesson

6. The Role of Peers

Peer culture is a powerful shaper of ICT identity, particularly in adolescence. Girls are sensitive to whether their peers perceive ICT as socially acceptable for them. Teachers can influence peer culture by:

- normalising girls' engagement with technical tasks in front of the whole class;
- addressing dismissive comments or exclusionary behaviour immediately and directly;
- creating structures (such as pair programming or rotating leadership) that reduce dominance patterns;
- facilitating discussions about who 'belongs' in ICT and why, making these assumptions explicit and open to questioning.

Reflection

> 💭 **Reflection insights**
>
> Does the physical and cultural environment of your classroom communicate to all students that they belong? What messages (visible or invisible) might suggest otherwise?
>
> Think of a girl who has disengaged from ICT activities. Could this be related to a sense of not belonging? What might be reinforcing that feeling?

Application to practice

Conduct a short "belonging audit" of your classroom with ICT activities. Use the following prompts:

1. Look at the visual materials in the room (posters, examples, screenshots). Who is represented?
2. Listen to the language used during lessons (your own and students). Is it inclusive?
3. Observe group work: who takes the keyboard? Whose ideas are heard?
4. Reflect: what one change could you make this week to signal to girls that they belong in ICT?

Classroom Snapshot: When Belonging Is Missing

Subject: Year 9 Science class. Students are asked to find data online and build a chart in a spreadsheet.

What the teacher notices: Laura finishes her chart quickly and correctly. When the teacher asks her to explain her method to the class, she says "I don't know, I just clicked stuff" and looks embarrassed.

What is actually happening: Laura does not see herself as a "tech person". Demonstrating competence in front of peers feels socially risky, as it conflicts with how she sees herself and how she fears others will see her.

What the teacher can do: Build in low-key, frequent moments of public recognition: "Laura found a really efficient way to filter the data earlier. Laura, could you quickly show us?" Small, regular visibility signals belonging.

Suggested materials/resources

UNESCO (2020). Cracking the Code: Girls' and Women's Education in STEM (provides a comprehensive analysis of identity and belonging barriers for girls in STEM/ICT, with policy and classroom recommendations)

Cheryan, S. et al. (2013). Ambient belonging: How stereotypical cues impact gender participation in computer science (research article on how classroom environment shapes girls' sense of belonging)

Girls Who Code (girlswhocode.com): classroom-facing resources, role model stories and activities designed to build ICT identity in young women

European Institute for Gender Equality (EIGE) - Gender and Digital Agenda (data and policy resources on women's participation in digital sectors across Europe)

Plan International - Girls and Technology Report (provides survey data and narrative evidence on how girls perceive ICT and what changes their outlook)

Unit 3. How Stereotypes Form and Operate in ICT Classrooms

Duration

40 minutes (guided learning)

Purpose

To help teachers understand what stereotypes are, how they are formed and transmitted and through which mechanisms they influence girls' engagement with ICT (including the subtle, often invisible ways in which stereotypes operate in everyday classroom life).

Core content

Stereotypes are simplified, widely shared beliefs about groups of people - beliefs that are presented as natural but are in fact socially constructed. In ICT education, gender stereotypes operate on multiple levels: they shape what students believe about themselves, what teachers expect from students, and what families and societies consider normal or appropriate for girls. Understanding these mechanisms is essential for teachers who want to interrupt them.

1. What Are Stereotypes and How Do They Form?

A stereotype is a generalisation applied to an entire group that ignores individual variation. Gender stereotypes in ICT. such as “boys are naturally better at coding” or “girls prefer creative subjects over technical ones”, are not the result of biological difference. They are the result of:

- repeated cultural messages (media, advertising, toys, games) that associate technology with masculinity;
- historical exclusion: computing was feminised in its early years, then masculinised as it became economically valuable - a shift that produced lasting cultural associations;
- confirmation bias: people tend to notice evidence that confirms stereotypes and discount evidence that contradicts them;
- social reinforcement: behaviours that fit the stereotype are rewarded; behaviours that deviate from it are questioned or penalised.

2. How Stereotypes Enter the Classroom

Stereotypes do not arrive in classrooms as explicit statements, but rather they operate through subtle channels:

Classroom situation	Without awareness	With awareness
Curriculum content	*All coding examples use game design or sport statistics. Girls engage minimally.*	Teacher adds examples involving social media analytics, health data, and digital art. Broader participation follows.
Teacher language	*"Let him handle the technical part, he's faster at this"*	'Everyone takes a turn at the keyboard. Who hasn't been at the front yet?'
Group dynamics	*Boys take the keyboard by default; girls take notes. Teacher does not intervene*	Teacher assigns roles before the task begins and rotates them mid-activity.
Materials & examples	*Slides show only male ICT professionals. No comment is made.*	Teacher adds female engineers and designers; asks students: 'Why do you think we rarely see women like this in textbooks?'
Feedback on errors	*When a girl makes a coding error, teacher corrects it quickly and moves on.*	Teacher says: 'This is a really common bug — let's trace through the logic together and find it.'

3. Stereotype Threat: When Awareness Impairs Performance

Stereotype threat occurs when a person is aware of a negative stereotype about their group and fears confirming it. In ICT contexts, even subtle signals can activate this:

Triggering signal	What the teacher can do instead
Being the only girl in a technical group task	Balance group composition; create mixed-gender technical pairs
Hearing "let's see if the boys can figure this out"	Use inclusive, challenge-framing language: "Let's all figure this out together"
Seeing only male role models in ICT materials	Actively include women and non-binary ICT practitioners in every unit

Triggering signal	What the teacher can do instead
Star Wars posters or gaming references dominating the room	Audit classroom visual environment; diversify cultural references
Being asked to state gender before a digital test	Remove gender-identity prompts from assessment contexts where possible

4. Stereotype-Free Materials Checklist

Use this checklist before sharing any ICT lesson materials (slides, worksheets, videos):

✓	Indicator / Question	Notes
☐	Female ICT professionals are present in examples and images (not only as an exception)	
☐	ICT tasks are framed across multiple contexts: science, art, social impact, health, languages	
☐	No language assumes male default ("he", "guys", "bro culture")	
☐	Examples of ICT use connect to interests that girls report (social media, creative tools, communication)	
☐	At least one counter-stereotypic example is included (e.g. a girl leading a technical project)	
☐	I have prepared one brief "inoculation message" to name and debunk a relevant stereotype	

5. The Invisibility of Stereotypes

One reason stereotypes are so persistent is that they feel invisible; they masquerade as "natural" differences or individual preferences. Teachers may sincerely believe they are treating all students equally while unknowingly reproducing stereotyped patterns. This is not a matter of bad intentions, but unconscious habit shaped by the same cultural environment that students inhabit. Recognising this is not about blame, it is about developing the awareness needed to interrupt automatic patterns.

5. Disrupting Stereotypes: What Teachers Can Do

Teachers can actively work against stereotypes through:

- **Inoculation messages**: proactively naming and debunking stereotypes ("You may have heard that boys are better at programming - this is a myth that research has consistently disproven");
- **Counter-stereotypic examples**: regularly featuring women and girls as competent, creative ICT practitioners, not as exceptions, but as the norm;
- **Reducing cue exposure**: reviewing classroom materials and environments for stereotype-reinforcing elements and replacing them with inclusive alternatives;
- **Structured participation**: using systems (such as name cards, random selection or role rotation) that ensure equitable participation rather than allowing dominance patterns to emerge naturally;
- **Explicit discussion**: age-appropriately engaging students in conversations about why stereotypes exist, where they come from, and why they are limiting for everyone - including boys.

Reflection

> **Reflection insights**
>
> What stereotypes about ICT might your students hold — about themselves and about others? Where might those stereotypes have come from?
>
> Look at the ICT materials you use most often (slides, worksheets, videos, textbooks). Who is represented? What image of ICT do they convey?

Application to practice

Review one set of ICT teaching materials (a slide deck, a worksheet or a textbook chapter) through a stereotype lens:

1. Count how many female and male ICT professionals are mentioned or depicted.
2. Note the types of ICT activities featured. Which do they align with "masculine" or "feminine" stereotypes?
3. Identify three changes you could make to reduce stereotype-reinforcing elements.
4. Draft one "inoculation message" you could use with your students at the start of an ICT unit.

Suggested materials/resources

Steele, C. M. (2010). Whistling Vivaldi: How Stereotypes Affect Us and What We Can Do (accessible and research-based exploration of stereotype threat and its effects in educational contexts)

Project Implicit (free implicit bias self-assessment tools that help teachers understand their own unconscious associations around gender and ICT)

Google — Made With Code (classroom resources and role model profiles designed to counter the male-coded image of computing)

WISE Campaign - People Like Me toolkit (evidence-based resources for countering gender stereotypes in STEM and ICT education)

European Schoolnet - Digital Citizenship & Online Identity Modules (supports teachers in framing ICT as collaborative, ethical and creative rather than stereotypically technical)

Unit 4. Recognising Bias in Teacher Attitudes, Expectations & Feedback

Duration

40 minutes (guided learning)

Purpose

To support teachers in identifying how their own unconscious biases, expectations and feedback patterns may be contributing to gender gaps in ICT participation, and to develop the critical self-awareness necessary to change them. This unit requires a high degree of professional courage and reflective honesty.

Core content

Teachers are among the most powerful influences on students' beliefs about themselves and their futures. Research consistently shows that teacher expectations shape student achievement - a phenomenon known as the Pygmalion effect. When teachers hold lower expectations for girls in ICT (often unconsciously), those expectations are communicated through subtle but powerful signals: who gets called on, how feedback is phrased, whose errors are corrected and whose are overlooked and how technical ability is celebrated or attributed.

1. Unconscious Bias: What It Is and Why It Matters

Unconscious bias refers to automatic, unintentional preferences or assumptions that influence judgements and behaviours. In educational settings, gender bias can affect:

- which students are selected to answer technical questions;
- how much time is given to students to respond before the teacher moves on;
- whether errors are treated as learning opportunities or as signals of limited ability;
- how group work is organised and which roles students are guided toward;
- how teachers interpret confidence (positively in boys, negatively - as arrogance - in girls) and hesitation (negatively in boys, positively in girls).

These are not deliberate choices. They are the product of the same cultural conditioning that shapes students. But their effects are real and cumulative.

2. Differential Expectations and Their Effects

Decades of research in education show that teachers' expectations, even when not explicitly communicated - affect student performance. In ICT:

Classroom situation	Without awareness	With awareness
Responding to a technical error	*To boy: "Here's why that doesn't work... try changing the condition". To girl: "Good try, keep going"*	Same substantive feedback to both: "Let's trace through the logic; where do you think the error might be?"
Praising a correct answer	*To boy: "You're really good at this". To girl: "You worked really hard on that"*	Praise the process and the skill for both: "You used a systematic approach, that's exactly how programmers think"
Framing ICT competence	*"She's not like other girls, she's really into coding"*	"She's a strong programmer, just like many of her female classmates are developing strong digital skills"
Group role assignment	*Teacher allows group to decide roles informally. Boys take the keyboard; girls take notes.*	Teacher assigns roles before the task: "For this activity, Anna is lead programmer, John is documenter"

3. Feedback Patterns and What They Communicate

Teacher feedback is one of the most direct channels through which bias is expressed. Common patterns include:

Feedback type	Often directed at boys	Often directed at girls
On technical performance	Substantive, strategy-focused **Example**: "Try changing the loop condition"	Effort-focused or vague **Example**: "Good try, keep going"
On correct answers	Praised for ability	Praised for effort

	Example: "You're really good at this"	**Example**: "You worked hard on that"
On errors	Corrected with explanation **Example**: "Here's why that doesn't work"	Corrected briefly or left to peers
On participation	Called on proactively, given wait time	Called on reactively, less wait time

These patterns are not universal or inevitable, but they are common enough to be documented across education systems. Recognising them in one's own practice is the essential first step.

4. Developing Reflective Self-Awareness

Becoming aware of one's own bias requires deliberate effort. Useful strategies include:

i. **Observation**: invite a trusted colleague to observe a lesson and note participation patterns (who is called on, how feedback is given, who takes technical roles);
ii. **Recording**: audio-record a lesson and listen back to your feedback language - is it consistent across genders?
iii. **Data collection**: track for one week who answers technical questions, who leads during group work and who you give extended feedback to;
iv. **Self-assessment tools**: use validated implicit bias tools (such as those offered by Project Implicit) to surface unconscious associations;
v. **Peer reflection**: participate in structured collegial reflection with other teachers around gender dynamics in ICT classrooms.

Practical example: One-week Classroom Observation Tracker

Track your own patterns for one week using this simple log. You don't need to record every interaction, a quick tally at the end of each lesson is enough.

What I tracked	Girls (tally)	Boys (tally)	Notes / Pattern I noticed
Technical questions directed at student			
Substantive feedback given on ICT task			

What I tracked	Girls (tally)	Boys (tally)	Notes / Pattern I noticed
Student led a technical task in group work			
Student given extended wait time to respond			
Contribution publicly acknowledged in class			

5. Moving from Awareness to Action

Awareness alone is not sufficient, and it must be translated into changed practice. Small, consistent changes in feedback and interaction patterns accumulate over time and produce real shifts in classroom culture:

- **Use equitable questioning:** call on girls as often as boys for technical questions and give equal wait time (at least 10 seconds);
- **Provide the same depth of feedback to all students**: avoid short, praise-only responses for girls on technical tasks;
- **Avoid the "exception" trap:** resist framing competent girls as anomalies, present them as representative of normal female capability;
- **Correct inequitable dynamics in groups:** if a boy consistently takes the keyboard away from a girl, intervene directly and explain why equitable participation matters.

Reflection

> 💭 **Reflection insights**
>
> Think about the last lesson you taught. Who did you call on most often for technical questions? Who gave the most answers? Was there a gender pattern?
>
> Consider your feedback: do you give the same depth of feedback to girls as to boys when they make errors in ICT tasks? What might a girl infer from the difference?

Application to practice

Over the course of one week, keep a simple record during lessons:

1. How many times did you call on a girl vs. a boy for a technical question?

2. How many times did you give substantive (strategy or concept-focused) feedback to a girl vs. a boy?
3. How many times did a girl lead a technical task in group work?

At the end of the week, review your record. Identify one specific change you will make in the following week to address any patterns you notice.

Classroom Scenario: Bias in Action (and how to catch it)

Subject: Year 10 Computer Science (or similar). Students are debugging a program in pairs.

What happens: Miguel says "I think the error is in the loop" and the teacher nods and says "Good thinking, try adjusting the condition". Sara says the same thing three minutes later, and the teacher says "Nice try, let's just fix it" and takes the keyboard.

What the teacher intended: To be helpful, Sara seemed less confident.

What the teacher communicated: Miguel can reason through code independently. Sara needs rescuing. Two minutes of different treatment, but it compounds across a year.

Reflection question: Would you have responded the same way if Sara had been the one to speak first?

Suggested materials/resources

Rosenthal, R. & Jacobson, L. (1968). Pygmalion in the Classroom (foundational research on how teacher expectations influence student achievement)

Project Implicit (implicit.harvard.edu): Gender-Science Implicit Association Test (a validated tool for surfacing unconscious associations between gender and science/technology)

OECD - The ABC of Gender Equality in Education (includes evidence on differential teacher behaviour and practical tools for equitable classroom management)

Institute of Physics (UK) - Improving Gender Balance in Schools Resource Pack (evidence-based classroom strategies for reducing differential treatment in STEM subjects)

Unconscious Bias in Schools (Benson & Fiarman, 2020) - a practical guide for educators on recognising and addressing bias in daily practice.

Unit 5. Building Confidence and Challenging Stereotypes in Practice

Duration

40 minutes (guided learning)

Purpose

To bring together the insights from previous units and equip teachers with a practical toolkit of strategies for building girls' confidence and actively challenging stereotypes, specifically in everyday lessons across all subjects where digital tools, ICT resources or technology-based tasks are used. This unit focuses on action and implementation in the context that most teachers recognise: not a specialist ICT class, but a history, science, languages or maths lesson that happens to involve a digital tool, a data spreadsheet, an online research task or a multimedia presentation.

Core content

The barriers explored in this module (i.e. confidence gap, identity threats and stereotype mechanisms) do not only manifest in specialist ICT classes, but surface any time a student interacts with digital tools as part of learning: when they are asked to use a spreadsheet in maths, create a digital poster in art, conduct online research in history, or collaborate on a shared document in a languages class. For most teachers, these are the moments that matter most, because they happen daily, across every subject. This unit presents a practical toolkit organised around five dimensions of classroom practice that any teacher can apply.

1. Designing Confidence-Building Moments Around Digital Tasks

Confidence is built through experience, specifically through experiences of success that feel earned, rather than trivial. When digital tools are part of a lesson, teachers can design these moments deliberately:

- **Introduce digital tasks with low-stakes entry points**: before asking students to produce a final digital output, give them an exploratory phase where they can experiment with the tool without being assessed
- **Normalise technical difficulty as part of learning**: when a student struggles with a digital tool, frame it explicitly as a normal part of the process. "Getting stuck on the software is what everyone experiences" removes the fear of looking incompetent in front of peers
- **Use collaborative digital tasks**: pair or small-group digital activities allow students to share the cognitive and emotional load of a technology task. Structure these carefully (see point 3) to ensure all students access technical roles.

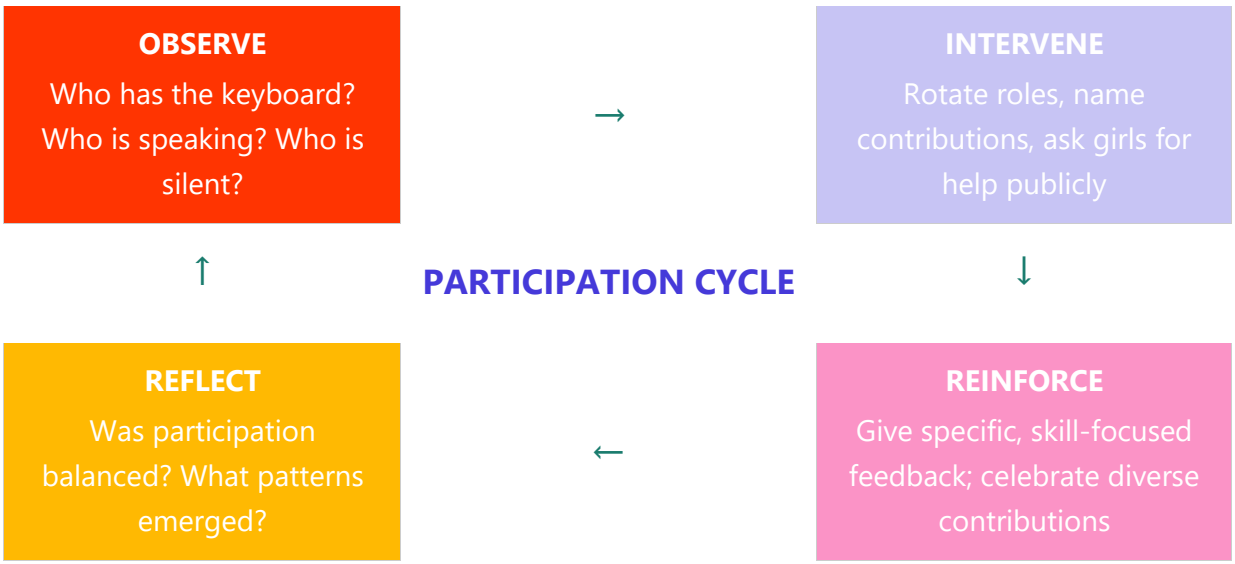
The strategies below apply to any lesson where students interact with a digital tool, whether in science, maths, languages or social sciences:

Strategy	In a maths or science lesson	In a languages or social sciences lesson
Low-stakes entry point	Before analysing data in a spreadsheet, give 5 min to freely	Before a collaborative online research task, give time to

Strategy	In a maths or science lesson	In a languages or social sciences lesson
	explore the filters and sorting tools with no graded output	explore the database freely; no notes required yet
Normalise technical difficulty	When a formula doesn't work: "This happens to everyone, let's read what the error says together"	When doesn't a website load or a tool behaves unexpectedly: "Technical problems are normal; what's our Plan B?"
Scaffold digital tasks progressively	Provide a step-by-step guide for entering data before asking students to interpret it	Provide a structured template for the digital report before expecting independent formatting decisions
Use collaborative digital tasks	Pair students for data collection; assign one to enter data and one to verify accuracy, then rotate	Pair students for digital research; one leads the search, the other evaluates sources, then switch

2. Participation Flow Map – Monitoring Digital Task Equity

Use this cycle to guide your facilitation during any lesson involving digital tools:



3. Creating a Stereotype-Challenging Climate Around Technology Use

In any lesson where digital tools are used, the cultural messages that surround that tool use matter. Teachers can actively shape these messages:

- **Name the norm before the task**: before any technology-based activity, briefly state that all students are equally capable of completing it. A simple "*Everyone in this class can do this; let's explore it together*" signals inclusivity and challenges the implicit assumption that technology tasks are more natural for some students than others;
- **Use inoculation messages in context**: when assigning a digital task, briefly name and expose the stereotype if relevant. For example: "*You may have heard that girls are less comfortable with data tools, and there is no evidence for this*". This does not need to be a long discussion, a sentence or two is enough to reduce stereotype threat;
- **Diversify who counts as competent**: if the only students you visibly ask for help with a digital tool are boys, you are sending a signal. Actively and publicly turn to girls when questions arise about how a tool works. Ask Sofia: she figured out the filter function earlier' reinforces a positive and inclusive image of digital competence;
- **Address comments that reinforce stereotypes immediately**: if a student says "*girls are bad at this*" or makes a dismissive comment about a girl's digital work, respond calmly and directly. **Silence communicates tolerance**;
- **Reflect on the examples and contexts you use for digital tasks**: if your data analysis tasks always use sports statistics, your research topics are predominantly male-coded, or your digital storytelling examples only feature male protagonists, you are narrowing who feels the task is relevant to them.

4. Equitable Participation: Role Rotation in Practice

Before / After — Group Digital Task in Year 9 Geography

Task: Students use an online mapping tool to analyse population data in groups of 4.

Without role rotation: Carlos immediately takes the mouse and navigates the tool. The other students (including two girls) watch. When the teacher asks a question, Carlos answers. The girls' names barely appear in the teacher's memory of the lesson.

With role rotation: Before the task, the teacher assigns roles: Navigator (controls the tool), Reader (reads instructions aloud), Recorder (notes findings), Presenter (shares with class). Roles rotate every 8 minutes. All students, including girls, access the tool directly.

What the teacher says: "In this task, everyone takes the navigator role. When I say switch, the next person takes the mouse, with no negotiating, just rotate"

What changes: Girls gain hands-on experience with the tool, their names appear in class discussion, and confidence builds through direct exposure.

5. Confidence-Affirming Feedback on Digital Work

How teachers respond to digital tasks shapes how students see themselves as technology users, now and in the future.

Classroom situation	Without awareness	With awareness
Student correctly formats a spreadsheet	*"Good work, well done"'*	'You structured that spreadsheet, so the data is easy to read, and that's a strong analytical skill"
Student tries multiple approaches before succeeding	*Teacher doesn't comment on the process, only on the final result*	"I noticed you tried three different approaches before finding one that worked, that persistence is exactly how programmers and data analysts think"
Student makes a technical error	*Teacher sighs, takes the keyboard, and fixes it*	"This is a really common issue with this software, so let's trace through it. What does the error message say?"
Student successfully completes a digital task	*"Lovely presentation, Sofia"*	"Sofia, your data visualisation choices make this really clear. The bar chart was the right call for comparing these numbers"

6. Lesson Implementation Checklist — Digital Tasks with Gender Equity in Mind

Complete this checklist before and after any lesson involving digital tools to monitor your practice:

✓	Indicator / Question	Notes
☐	BEFORE: I have decided how to introduce the digital task in a way that signals all students are equally capable.	

✓	Indicator / Question	Notes
☐	BEFORE: Roles for group/pair digital work have been assigned and will be rotated during the lesson.	
☐	BEFORE: I have prepared at least one brief 'inoculation message' if a stereotype is likely to arise.	
☐	DURING: I monitored who held the keyboard / controlled the device in group tasks.	
☐	DURING: I gave girls and boys equivalent wait time when answering digital questions.	
☐	DURING: I intervened when one student dominated the technical role.	
☐	AFTER: My feedback on digital work was specific and skill-focused (not just 'good job').	
☐	AFTER: I can name at least one girl's specific digital contribution from this lesson.	
☐	AFTER: I noted one pattern to adjust in the next lesson.	

7. Working with Realistic Classroom Constraints

Gender-equitable ICT practice does not require perfect conditions. Below are common constraints teachers face and practical adaptations:

Real constraint	Why it matters for equity	Practical adaptation
Limited devices (one per group of 3–4)	Whoever takes the device first tends to keep it, typically the most confident student.	Introduce a “keyboard timer”: 5-8 minutes per person, tracked visibly. No negotiation.
Mixed-confidence groups	High-confidence students (often boys) answer first, leaving lower-confidence students (often girls) with fewer opportunities	Use think-pair-share before whole-class sharing: 2 minutes individual thinking first.

Real constraint	Why it matters for equity	Practical adaptation
Time pressure in the curriculum	Teachers may feel they cannot pause for equitable participation without falling behind	Frame role rotation as a time-saver: structured turns reduce conflict and off-task behaviour.
Students who resist gender equity interventions	Some students (or parents) may question why you are "forcing girls to do technical tasks"	Frame it as "everyone gets equal practice" as a universal principle, not a gender intervention
Your own uncertainty about ICT	Teachers who are less confident with ICT may inadvertently model avoidance or call on "confident" students to handle the tool	Model productive struggle: "I'm not sure how this works, so let's figure it out together". This is powerful for girls.

8. Quick Reference Toolkit for Any Lesson with Digital Tasks

Strategy	How to Implement It in Any Lesson
Low-stakes exploration	Before any assessed digital task, give 5 minutes to freely explore the tool with no right or wrong outcome
Name the norm	Start every digital activity with: "Everyone in this class can do this — let's figure it out together"
Rotate the keyboard	In group digital tasks, explicitly assign and rotate who controls the device. Do not leave it to chance.
Inoculation message	Briefly expose the "technology is for boys" myth when introducing digital tasks (one or two sentences)
Visible digital competence	Publicly ask girls for help with digital tools: "Ask Mariana, she worked this out earlier"
Process feedback	Replace "Good job" with specific skill language: "You used the filter function really effectively"

Strategy	How to Implement It in Any Lesson
Wait time	After a digital question to the class, wait at least 10 seconds before taking answers.
Don't rescue; guide	When a girl struggles, provide verbal guidance and let her execute the solution herself.
Diverse task contexts	Use data sets, research topics and examples that reflect a range of interests, not only male-coded ones.
Normalise difficulty	When something doesn't work: "This happens to everyone, let's troubleshoot it". Model calm problem-solving.

Reflection

> 💭 **Reflection Prompts**
>
> Think of a lesson you teach regularly that involves a digital tool or technology-based task. Who tends to take the lead on the digital parts? Is there a gender pattern?
>
> Which of the strategies in this unit would feel most natural to implement in your subject area? Which feels most challenging, and why? What would you need to try it?

Application to practice

Identify one upcoming lesson in your subject that includes a digital tool or technology-based task. Before teaching it, plan the following:

1. How will you introduce the digital task in a way that signals all students are equally capable?
2. How will you structure group or pair participation to ensure girls have hands-on access to the tool?
3. What will you say if a student struggles with the tool? How will you respond in a way that builds rather than reduces confidence?
4. How will you give feedback on the digital work that is specific, skill-focused and equitable across genders?

After the lesson, note one thing that went well and one thing you would adjust. Bring your reflections to the next guided session or use them as a self-learning activity.

Suggested materials/resources

Steele, C. M. (2010). Whistling Vivaldi: How Stereotypes Affect Us and What We Can Do (includes evidence on how brief inoculation messages and belonging signals reduce stereotype threat in task performance, applicable across subjects)

OECD — The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence (includes data on how confidence and stereotype threat operate in digital and technical tasks across subject areas, not only specialist ICT)

Khan Academy (khanacademy.org) — Growth Mindset materials for educators (classroom-ready activities and reflection prompts applicable to any subject where technology-based challenges arise)

European Schoolnet. Digital Citizenship across the Curriculum resources (supports teachers in all subjects in embedding inclusive and confident digital tool use within their existing lessons)

Learnstorm (by Khan Academy). Growth Mindset Toolkit: practical classroom tools for normalising effort, errors and persistence in any subject, including during digital tasks.

Self-learning Activities (2 hours)

This module includes 2 hours of autonomous learning activities to deepen teachers' understanding of confidence, identity and stereotypes as barriers to ICT participation. In each unit above, there are suggested exercises and practical applications that can be used as self-learning activities. Additionally, the following activities are suggested for Module 2:

- Read a short article or watch a 10-minute video on stereotype threat in STEM education. Note three insights that connect to your own classroom experience;
- Complete the Gender-Science Implicit Association Test (Project Implicit) – UNIT 4 – and reflect on your results: what surprised you? What patterns might this reveal about your classroom practice?
- Audit one set of ICT teaching materials you use regularly (a textbook chapter, a slide deck, or a worksheet): identify elements that reinforce gender stereotypes and propose three alternatives;
- Write a short reflection (300-400 words) on a moment in your teaching when you may have, unintentionally, communicated lower expectations to a girl in an ICT context. What would you do differently now?
- Design a "confidence-building lesson opener" for an ICT unit you are about to teach. Test it with your class and note the responses.
- Identify one girl in your class who appears to have low ICT confidence. Over one week, implement two strategies from UNIT 5 with this student. Reflect on what you observe.

- Prepare a short (5-minute) classroom discussion prompt on where ICT stereotypes come from and why they are inaccurate. Trial it with a class and note student responses.

These activities can be used by the trainer to create assignments for teachers attending the course. The outputs of these assignments can be used by the trainer as elements of evaluation.

Training materials

Please check the "**Module 2**" support materials on the LeadHER Teaching Framework webpage.

Additional materials are suggested:

- Module 2 presentation - a slide deck for guided training sessions, covering the module purpose, learning objectives and the five units. It introduces the main concepts and provides reflection and application tasks for each unit.
- Key terms and concepts at a glance - a concise reference document explaining the main concepts of the module, such as the gender confidence gap, ICT identity, belonging, stereotype threat, unconscious bias and confidence-building feedback.
- Confidence-building feedback guide - a practical tool with before/after examples showing how teachers can replace vague, biased or confidence-reducing feedback with specific, skill-focused and encouraging feedback.
- Reflection journal - a structured self-reflection tool that helps teachers connect the concepts from each unit to their own classroom practice and identify small changes they can implement.
- Scenario cards - short classroom-based situations illustrating how confidence gaps, stereotypes, identity barriers and teacher bias may appear during ICT or digital tasks. They can be used for pair work, group discussion or individual reflection.
- Self-assessment quiz: "How stereotype-aware is my ICT classroom?" - a reflective checklist that helps teachers assess whether their classroom practices, materials and interactions may unintentionally reinforce gender stereotypes in ICT.
- Stereotype-free materials checklist - a practical review tool for slides, worksheets, textbooks, videos, digital tasks or classroom activities. It helps teachers check whether materials represent girls and women inclusively and avoid reinforcing stereotypes about technology.

Additional resources

The following optional resources may help participants explore the topics of this module further or support their practice after completing the training:

- European Commission – **Women in Digital Scoreboard** (digital-strategy.ec.europa.eu): annual data on women's participation in digital education and ICT careers across EU countries (useful context for understanding the scale of the problem at national and European level);
- UNESCO – **I'd Blush If I Could: Closing Gender Divides in Digital Skills Through Education (2019)**: a comprehensive global report on gender, digital skills and education, with specific analysis of confidence, stereotypes and identity barriers (https://unesdoc.unesco.org/ark:/48223/pf0000367416);
- AAUW – **Solving the Equation: The Variables for Women's Success in Engineering and Computing:** research-based analysis of the factors that drive girls away from ICT, including cultural climate, stereotype threat and identity (https://www.aauw.org/app/uploads/2020/03/Solving-the-Equation-report-nsa.pdf);
- **Girls Who Code** (girlswhocode.com): an organisation working to close the gender gap in computing – their teacher resources, student stories and research reports are directly applicable to classroom practice;
- **AnitaB.org – Research and Resources on Women in Tech**: data, case studies and practical resources on gender representation, confidence and barriers in the technology sector (https://legacy.anitab.org/resources/);
- TED Talk – Caroline Paul: 'To raise brave girls, encourage adventure': an accessible, engaging talk on how socialisation shapes girls' risk tolerance and confidence (useful as a discussion starter for teachers);
- TED Talk – Reshma Saujani: 'Teach girls bravery, not perfection': directly addresses the confidence gap and perfectionism in girls (highly relevant to this module and suitable for sharing with colleagues or students);
- **LeadHER WP2 Needs Analysis findings**: insights on the specific confidence, identity and stereotype barriers facing girls in ICT in Portugal, Spain and Bulgaria (https://leadher-ict.eu/wp-content/uploads/2026/10/LH_2.1.-Report.pdf)

Module 3. Creating Safe, Empowering and Inclusive Learning Environments

General description of the module

1. Module number and title

Module 3. Creating Safe, Empowering and Inclusive Learning Environments

2. Primary purpose and objective of the module

This module aims to support teachers in creating learning environments where girls feel safe, respected, confident and encouraged to participate in ICT-related learning experiences. It addresses the individual, relational and institutional factors that may undermine girls' engagement, wellbeing and sense of belonging in digital and ICT educational contexts.

3. Module summary

This module explores how safe, inclusive and empowering learning environments influence girls' sustained participation in ICT education. Participants will examine how digital wellbeing, classroom climate, gender dynamics, cyberbullying and online gender-based violence affect girls' confidence, engagement and aspirations in ICT pathways.

The module also focuses on prevention and early response strategies, including supportive communication, classroom management approaches, collaboration with families and referral pathways within the school context. Through reflection and practical application, teachers will develop concrete strategies to foster inclusive participation and emotionally safe ICT learning spaces.

4. Duration

Total duration: 4 hours

Guided learning: 2 hours

Structured self-learning: 2 hours

Suggested delivery format: Suitable for face-to-face, online or blended delivery. Guided learning is delivered synchronously; self-learning activities are asynchronous.

5. Prerequisites

No specialised ICT knowledge is required. Participants should have basic teaching experience in basic or secondary education and an openness to reflecting on their own practices and assumptions in relation to gender and technology.

Learning objectives

By the end of this module, participants will be able to:

1. identify factors that negatively affect girls' participation and sense of safety in ICT learning environments;
2. analyse how classroom climate, peer dynamics and digital interactions may reinforce exclusion or disengagement;
3. apply strategies that promote digital wellbeing, confidence and inclusive participation in ICT-related activities;
4. recognise signs of cyberbullying and online gender-based violence affecting students;
5. plan supportive and school-based responses.

Core content

This module is organised in three units:

1. Digital wellbeing and emotional safety in ICT learning
2. Cyberbullying, online gender-based violence and digital exclusion
3. Prevention, safeguarding and supportive school responses

Unit 1. Digital wellbeing and emotional safety in ICT learning

Duration

80 minutes (40 minutes guided learning + 40 minutes self-learning "application to practice")

Purpose

This unit introduces digital wellbeing and emotional safety as important conditions for girls' sustained participation in ICT learning environments. It aims to help participants recognise how classroom climate, digital experiences, stress, and feelings of safety can influence engagement, participation, concentration and persistence in ICT-related activities.

Core content

1. Digital wellbeing in ICT learning environments

Digital wellbeing refers to the conditions that support healthy, balanced and positive experiences with digital technologies. In school settings, digital wellbeing is closely connected to students' ability to participate, concentrate, communicate and learn in safe and supportive environments.

ICT learning environments can create important opportunities for creativity, collaboration and participation. However, they can also generate pressure, anxiety, overstimulation, fear of exposure or negative peer interactions, particularly when students feel unsafe, excluded or constantly evaluated.

For some girls, participation in ICT-related activities may involve additional emotional pressures linked to visibility, fear of making mistakes publicly, negative peer comments, or experiences of exclusion in digital spaces. These experiences may gradually reduce participation, confidence and willingness to continue engaging in ICT learning.

Creating emotionally safe learning environments is therefore not only a wellbeing issue, but also a participation and retention issue.

2. Emotional safety as a condition for participation

Emotional safety refers to students' perception that they can participate, express ideas, ask questions and make mistakes without fear of humiliation, exclusion or negative judgement.

In ICT education, emotional safety can influence:

- willingness to participate in practical activities;
- confidence when experimenting with new tools or tasks;
- collaboration within groups;
- readiness to ask for help;
- persistence after difficulties or mistakes.

Emotionally safe ICT environments are not necessarily environments without challenge. Instead, they are environments where challenge is combined with support, respect and constructive feedback. Teachers play an important role in shaping these conditions through:

- classroom communication;
- group organisation;
- management of peer interactions;
- responses to mistakes or difficulties;
- expectations regarding respectful behaviour online and offline.

Small classroom practices can significantly influence how safe and included students feel during ICT-related activities

3. Healthy digital habits and learning conditions

Healthy digital habits can support concentration, learning and balanced participation in digital environments. In school contexts, these habits may include:

- respectful online communication;
- healthy management of notifications and distractions;
- appropriate use of digital platforms;
- awareness of online behaviours and their impact on others.

Supporting healthy digital habits should not focus only on control or restriction. It should also help students develop autonomy, critical thinking and responsible participation in digital environments.

Teachers can contribute by:

- establishing predictable and respectful classroom norms;
- promoting balanced and purposeful uses of technology;
- encouraging collaborative rather than competitive learning experiences;
- creating moments for reflection about digital experiences and online interactions.

4. Recognising early signs of disengagement

Girls who experience discomfort, exclusion or stress in ICT learning environments may not always openly communicate these experiences. Disengagement can sometimes appear through subtle changes in participation and behaviour.

Possible indicators may include:

- reduced participation in ICT activities;
- avoidance of practical tasks or collaborative work;
- reluctance to speak or share work publicly;
- withdrawal from digital interactions;
- visible anxiety during ICT-related activities;
- negative comments about personal ability or competence.

These signs do not necessarily indicate a serious problem on their own. However, they can help teachers identify situations where additional support, inclusion strategies or communication may be needed.

Early recognition can help prevent progressive disengagement from ICT learning pathways.

Reflection elements

> 💭 **Reflection insights**
>
> Which students participated more actively and confidently?
>
> Were some students quieter, more hesitant or less visible? What about the girls?
>
> What classroom or digital environment factors may have influenced these participation patterns?

Application to practice

Proposal: review one ICT-related activity, lesson or classroom routine from practice and identify:

- one factor that may unintentionally reduce emotional safety or participation;
- one realistic adjustment that could help create a more supportive and inclusive learning environment.

Examples may include:

- adapting group work organisation;
- changing how mistakes are discussed;
- introducing classroom agreements for respectful interaction;
- creating alternative ways for students to participate or ask questions.

Suggested materials/resources

Proposed materials: Classroom climate self-assessment checklist; Practical guide on healthy digital habits in educational settings; Template for reviewing ICT classroom practices

Further reading might include:

UNESCO. (2009). *Policy guidelines on inclusion in education*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000177849

UNESCO. (2020). *Building girls' interest in STEM education: A resource guide*. UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000372310

Unit 2. Cyberbullying, online gender-based violence and digital exclusion

Duration

80 minutes (40 minutes guided learning + 40 minutes self-learning "application to practice")

Purpose

This unit explores how harmful online experiences can affect girls' sustained participation, wellbeing and engagement in ICT learning environments.

It aims to help participants recognise different forms of cyberbullying, online gender-based violence and digital exclusion, as well as their potential impact on participation, confidence, visibility and continued engagement in ICT-related activities.

Core content

1. Online safety and participation in ICT learning

Digital environments are now part of everyday school life and play an important role in ICT learning, communication and collaboration. Students regularly participate in online activities through learning platforms, collaborative tools, messaging applications, coding environments, digital projects and social media spaces connected to school interactions. These environments can create valuable opportunities for participation, creativity and skill development. However, they may also expose students to negative experiences that affect their wellbeing, concentration and willingness to participate in ICT-related activities. For some students, particularly girls, participation in digital environments may involve additional pressures related to online visibility, fear of negative comments, peer judgement or exposure to hostile interactions. In ICT learning contexts, these experiences may become especially significant when students are required to share ideas publicly, present digital work, collaborate online or experiment with unfamiliar technologies.

When students do not feel emotionally safe in digital environments, they may gradually reduce participation, avoid interaction, remain silent during activities or disengage from ICT learning opportunities altogether. In many cases, this disengagement is progressive and may not immediately appear as a disciplinary or behavioural issue.

Teachers therefore play an important role in helping create ICT learning environments where students feel respected, supported and able to participate without fear of humiliation or exclusion. Safe participation is not only linked to technical safety or internet protection measures, but also to relational safety, respectful communication and positive digital interactions.

2. Understanding cyberbullying and online gender-based violence

Cyberbullying refers to intentional harmful behaviour carried out through digital technologies and online communication platforms. Unlike face-to-face bullying, harmful online interactions may occur

continuously, spread rapidly and remain visible over time through screenshots, recordings or shared content.

Cyberbullying may occur through…	These behaviours may include:	In school and ICT-related contexts, this may include:
messaging applications	repeated insults or humiliation	sexist comments or jokes;
social media platforms	spreading rumours online	questioning girls' competence in technology-related tasks;
online games	mocking or publicly exposing classmate	sexualised comments or unwanted messages;
collaborative learning platforms	excluding someone from online groups or activities	pressure related to online appearance or visibility;
image or video sharing	sharing embarrassing content without consent	harassment linked to participation in gaming, coding or digital discussions;
group chats connected to school life	threats, intimidation or hostile comments	image-based abuse or non-consensual sharing of content.

Online gender-based violence refers to harmful online behaviours directed at someone because of their gender or gender expression. Girls may experience forms of online hostility specifically connected to stereotypes about gender, appearance or participation in digital spaces.

These experiences can negatively affect girls' willingness to participate in ICT activities, particularly when digital participation becomes associated with criticism, exposure or ridicule. Some students may begin avoiding participation not because of lack of interest or ability, but because online environments no longer feel safe or supportive.

Teachers may not always directly witness these situations. Students often minimise experiences, remain silent or fear that reporting incidents could worsen the situation socially. For this reason, schools should create supportive environments where students feel able to seek help and discuss concerns safely.

3. Digital exclusion and invisible disengagement

Digital exclusion does not only refer to unequal access to devices or internet connectivity. It may also involve social exclusion, marginalisation or feeling unwelcome within digital learning environments.

Some students may technically have access to digital tools while still feeling excluded from meaningful participation. This can happen when classroom interactions, peer dynamics or online communication patterns make participation uncomfortable, stressful or unsafe.

Students who repeatedly experience negative online interactions or exclusion may:

- avoid collaborative digital tasks;
- participate less actively in discussions;
- stop volunteering for presentations or leadership roles;
- remain silent during group activities;
- disengage from ICT-related opportunities over time.

Disengagement is not always immediately visible. Some students may continue attending activities while becoming progressively less involved, less confident or less willing to contribute publicly. Others may avoid optional ICT activities altogether or begin perceiving ICT spaces as "not for them".

This type of invisible disengagement is particularly important because it can gradually influence educational choices, aspirations and future participation in ICT pathways.

Teachers should therefore pay attention not only to overt incidents or conflict, but also to subtle changes in participation patterns, confidence and interaction within digital learning environments.

4. Recognising warning signs and early indicators

Teachers are not expected to act as investigators or specialists in online harm. However, they are often in a key position to notice changes in behaviour, participation or interaction that may indicate difficulties connected to online experiences or digital exclusion.

Early recognition is important because students experiencing online harm may not directly ask for help. Some may fear embarrassment, social consequences or disbelief from adults and peers.

Possible warning signs may include:

- sudden withdrawal from online participation;
- reluctance to use cameras, microphones or collaborative tools;
- visible anxiety during digital activities;
- avoidance of ICT-related tasks;
- reluctance to share work publicly;
- emotional distress after online interactions;
- frequent peer conflict connected to digital communication;
- increased isolation during collaborative activities.

These indicators should not automatically be interpreted as evidence of cyberbullying or online violence. However, they may signal that additional communication, support or observation is needed.

A supportive response from teachers can make an important difference in helping students feel safe, respected and included. Small actions such as private check-ins, supportive communication or referral to appropriate school support structures may help prevent further disengagement.

5. Promoting respectful digital environments

Preventive approaches are more effective when respectful digital behaviour becomes part of everyday school culture rather than only a response to incidents after harm has occurred.

Creating respectful digital environments involves helping students develop:

- empathy in online communication;
- awareness of the impact of digital behaviour;
- respectful participation habits;
- collaborative communication skills;
- shared responsibility for safe online interactions.

Teachers can support these environments by:

- establishing clear classroom expectations for respectful communication;
- openly discussing responsible online behaviour;
- addressing harmful comments consistently;
- promoting inclusive participation during digital activities;
- encouraging collaborative rather than highly competitive learning environments;
- modelling respectful digital communication themselves.

It is also important that students understand that online harm can affect learning, participation and wellbeing, even when behaviours are sometimes normalised as “jokes” or “typical online behaviour”.

Schools can also encourage student-led or school-wide anti-bullying and cyberbullying awareness campaigns, for example through posters, classroom displays or digital messages placed in visible areas of the school. These materials should include clear information on where students can seek help, both within the school and through external support services, such as national helplines or cyberbullying reporting channels. For some students, speaking to someone outside the school community may feel safer or easier than approaching a teacher or peer directly.

Small and consistent preventive practices can contribute to safer, more inclusive and more supportive ICT learning environments where all students feel able to participate and engage confidently.

Reflection elements

> **Reflection insights**
>
> What types of harmful online behaviours are most commonly discussed among students?
>
> How visible or invisible are these situations to teachers?
>
> What challenges might prevent students from asking for help or reporting online harm?

Application to practice

Proposal: Analyse a short school-based scenario involving cyberbullying, online exclusion or gender-based online harassment connected to ICT learning activities.

Participants identify:

- possible warning signs;
- potential impacts on participation and wellbeing;
- supportive and realistic teacher responses;
- actions that could help create safer digital participation conditions

Suggested materials/resources

- Scenario-based activity or case study
- School discussion guide on respectful digital communication
- Template for reviewing digital participation risks in classroom activities

Unit 3. Prevention, early detection and supportive school responses

Duration

80 minutes (40 minutes guided learning + 40 minutes self-learning "application to practice")

Purpose

This unit focuses on practical and preventive responses that schools and teachers can implement to support safer and more inclusive ICT learning environments. It aims to help participants recognise early warning signs of online harm, understand school-level safeguarding responsibilities, and identify realistic strategies for prevention, support and cooperation with families and guidance teams.

Core content

1. Prevention as part of everyday school practice

Preventing cyberbullying and online harm is most effective when it becomes part of everyday school culture rather than a response activated only after incidents occur.

Safe digital participation develops through consistent expectations, respectful communication and predictable classroom practices. Students are more likely to seek support and report concerns when schools create environments where wellbeing, dignity and inclusion are visibly valued.

Preventive approaches should not rely only on rules or sanctions. They should also support students in developing empathy, digital responsibility and awareness of how online behaviour affects others.

Teachers contribute to prevention through:

- modelling respectful digital communication;
- discussing expectations openly;
- addressing harmful behaviours consistently;
- promoting collaborative digital interactions;
- reinforcing respectful and inclusive classroom norms.

Prevention is therefore not a separate activity but part of how digital learning environments are organised and experienced

2. Recognising early warning signs

Students experiencing online harm or exclusion may not openly disclose their experiences. Some may fear embarrassment, social consequences or disbelief. For this reason, early recognition is an important aspect of school support.

Warning signs may include:

- sudden changes in digital participation;
- reluctance to use online platforms or collaborative tools;
- withdrawal from ICT-related activities;
- visible distress after online interactions;
- social isolation during digital work;
- reduced engagement or motivation;
- reluctance to share work publicly;
- increased peer conflict linked to digital communication.

These indicators should not automatically be interpreted as evidence of cyberbullying or online violence. However, they may suggest that additional communication, observation or support is needed.

Teachers are often well positioned to notice these changes and initiate supportive conversations.

3. Supportive educational responses

When concerns arise, teacher responses can significantly influence whether students feel protected and supported.

A supportive response usually involves:

- listening without judgement;
- taking concerns seriously;
- avoiding blame or minimisation;
- protecting privacy and dignity;
- reassuring students that support is available.

Teachers are not expected to resolve incidents alone or act as investigators. Their role is often to:

- provide initial support;
- ensure student safety;
- document concerns when appropriate;
- activate school procedures and referral pathways.

Beyond responding to individual incidents, teachers can also contribute to prevention by suggesting or supporting school-level awareness initiatives, such as anti-bullying and cyberbullying campaigns, student-led posters, classroom displays or other activities that help make support options visible and accessible. Supportive responses should prioritise student wellbeing and continued participation in school life and ICT learning.

4. School protocols and referral pathways

Schools benefit from having clear and accessible procedures for responding to cyberbullying and online gender-based harm.

Protocols may include:

- reporting procedures;
- safeguarding responsibilities;
- documentation practices;
- referral to school psychologists or guidance teams;
- communication procedures involving school leadership and families;
- follow-up and monitoring arrangements.

Teachers do not need to memorise all procedures, but they should know:

- where guidance is available;
- who to contact;
- how concerns are escalated;
- what support structures exist within the school.

Clear procedures help ensure consistency, reduce uncertainty and strengthen protection for students.

5. Cooperation with families and support teams

Effective responses to online harm often require cooperation between teachers, families and multidisciplinary school teams.

Families may have different levels of digital knowledge or awareness of online risks. Supportive communication therefore becomes essential.

When speaking with parents or carers, teachers should use clear, non-judgemental language, describe concerns based on observed behaviours rather than assumptions, and explain how online harm may affect the student's wellbeing, confidence and participation in ICT learning. It can also be helpful to share practical information about reporting tools, privacy settings, blocking functions, saving evidence and available support services.

Constructive collaboration may involve:

- sharing concerns respectfully, using specific observations rather than blame;
- focusing on student wellbeing, safety and continued participation;
- providing practical information about online risks, reporting options and support services;
- encouraging families to listen to the student and avoid responses that may make them less likely to disclose future concerns;
- avoiding blame or assumptions about the student, family or school;
- identifying shared strategies to support students.

Guidance teams, psychologists and safeguarding staff may also provide specialist support when concerns require additional expertise.

A coordinated response strengthens schools' ability to support students and sustain safe participation in ICT learning environments.

Reflection elements

Reflection insights

How are concerns related to cyberbullying or online harm currently addressed?

> Do staff members know where to seek support or guidance?
> What aspects of prevention or response could be strengthened in your school?
> How are families involved/informed about possible signs/concerns that they should be aware of, in order to foster a safety and healthy online environment for their students?

Application to practice

Proposal: review their school or classroom context and identify:

- one preventive strategy already in place;
- one area where procedures or communication could be improved;
- one practical action they could implement to strengthen safer digital participation.

Examples may include:

- establishing classroom agreements for online interaction;
- creating a referral contact guide;
- introducing regular digital wellbeing check-ins;
- organizing activities/sharing information with families;
- inviting external participants, such as experts or people with lived experience of cyberbullying, to share their stories and relevant information;
- clarifying reporting pathways within the school.

Suggested materials/resources

Slides and presentations including practical examples of:

- common warning signs of cyberbullying or online harm;
- supportive first responses from teachers;
- examples of how to communicate concerns to families;
- simple classroom strategies for safer digital participation;
- school reporting and referral pathways.

Training materials

Please check the "**Module 3**" support materials on the LeadHER Teaching Framework webpage.

Additional resources

The following resources may help participants explore the topics of this module further or support their practice after completing the training:

- European Commission. (n.d.). Action plan against cyberbullying. European Commission Digital Strategy. https://digital-strategy.ec.europa.eu/en/library/action-plan-against-cyberbullying
- European Commission. (n.d.). Guidelines on the protection of minors online. European Commission Digital Strategy. https://digital-strategy.ec.europa.eu/en/library/commission-publishes-guidelines-protection-minors
- European Commission. (n.d.). Protecting young people online. European Commission Digital Strategy. https://digital-strategy.ec.europa.eu/en/policies/protecting-young-people-online
- European Schoolnet. (2017). How to address cyberbullying in school? https://www.eun.org/news/detail?articleId=11464679
- Thompson, A. (2024). *Bullying: A Comprehensive Guide to Bullying Prevention, Consequences, and Prevalence for Students, Parents, Educators, and Mental Health Practitioners*. OVK Publishing.
- UNESCO. (2009). *Policy guidelines on inclusion in education*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000177849
- UNESCO. (2017). Cracking the code: Girls' and women's education in science, technology, engineering and mathematics (STEM). UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000253479
- UNESCO. (2020). Building girls' interest in STEM education: A resource guide. UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000372310
- UNESCO. (n.d.). Advancing gender equality in STEM education: Inspiring girls to pursue science. https://www.unesco.org/en/articles/advancing-gender-equality-stem-education-inspiring-girls-pursue-science
- UNESCO. (n.d.). Girls' and women's education in STEM. https://www.unesco.org/en/gender-equality/education/stem

Module 4. Gender-Responsive Pedagogy and Inclusive ICT Teaching Practices

General description of the module

1. Module number and title

Module 4. Gender-Responsive Pedagogy and Inclusive ICT Teaching Practices

2. Primary purpose and objective of the module

This module equips educators with evidence-informed pedagogical methods to address structural and interactional gender inequalities in ICT education by transforming classroom practice, participation structures, instructional design, and learning environments.

Primary goal: To enable teachers to design and implement gender-responsive ICT teaching practices that promote equitable participation, meaningful access to technical learning opportunities, confidence development, and a stronger sense of belonging in ICT learning environments.

3. Module summary

This module operationalises gender-responsive pedagogy (GRP) within ICT education. It examines how classroom interaction, task allocation, feedback, and teaching materials shape participation, confidence, and students' sense of belonging, often reproducing gender inequalities when left unstructured. Participants explore how established theories of self-efficacy, expectancy-value, and identity development help explain patterns of engagement and disengagement in ICT learning. Building on this theoretical foundation, teachers learn to redesign ICT activities, manage participation through structured methods, apply bias-aware feedback strategies, and critically review teaching materials. The module translates gender equality principles and research-based theory into concrete classroom interventions supported by practical tools, checklists, and measurable outputs that can be applied in everyday teaching practice.

4. Duration

Total duration: 6 hours

Guided learning: 4 hours

Structured self-learning: 2 hours

Suggested delivery format: Blended (synchronous workshop + asynchronous individual work).

5. Prerequisites

Completion of Module 1 (Foundations of Gender-Responsive ICT Education) and Module 2 (Confidence, Identity and Stereotypes as Barriers to ICT Participation) is recommended. Familiarity with key concepts related to gender equality, participation, confidence, and stereotypes will support engagement with the content of this module.

Learning objectives

By the end of this module, participants will be able to:

1. explain the principles of gender-responsive pedagogy and their relevance to ICT education
2. analyse how participation patterns, classroom interactions, and teaching practices influence confidence, engagement, and skill development
3. identify and diagnose barriers that may limit girls' participation, sense of belonging, and visibility in ICT learning environments
4. apply structured strategies to ensure equitable access to ICT tools, technical roles, and learning opportunities
5. implement bias-aware feedback, communication, and interaction techniques that support participation and persistence
6. design and justify a gender-responsive ICT lesson or classroom intervention using evidence-informed pedagogical approaches

Core content

This module is organised in three units:

1. Designing Gender-Responsive Pedagogy in ICT
2. Managing Participation and Interaction in ICT Classrooms
3. Feedback, Language and Representation in ICT Teaching

1. Gender-Responsive Pedagogy in ICT

Gender-responsive pedagogy (GRP) refers to teaching approaches that actively address differences in participation, confidence, and learning experience among students (UNGEI, 2020). In ICT education, "gender-neutral" teaching does not produce neutral outcomes; instead, it often

reproduces existing inequalities through subtle classroom mechanisms such as task distribution, interaction patterns, and feedback styles.

GRP did not emerge as an isolated set of classroom tips. It draws on several decades of research in educational and developmental psychology that explain why structurally identical learning opportunities can produce unequal outcomes for different groups of students. Two theoretical frameworks are particularly useful for understanding ICT participation specifically.

Self-efficacy theory

Bandura's (1997) concept of self-efficacy describes a person's belief in their own capacity to succeed at a specific task. Self-efficacy is built through four main sources: mastery experiences (succeeding at a task), vicarious experiences (seeing similar others succeed), social persuasion (encouragement and feedback from others), and physiological states (how confident or anxious a task makes someone feel). In ICT classrooms, when girls are systematically given fewer mastery experiences with hands-on technical tasks, see fewer role models who resemble them in technical roles, and receive feedback that emphasises effort over competence, their self-efficacy in ICT develops more slowly than that of boys with equivalent ability. This is not a matter of actual skill, but of accumulated belief about one's own skill, and it directly predicts whether a student volunteers for technical tasks, persists through errors, or avoids them.

Expectancy-value theory

Eccles and Wigfield's (2002) expectancy-value theory proposes that motivation to engage with a task depends on two judgements: "Can I succeed at this?" (expectancy) and "Is this worth doing?" (value). Both judgements are socially shaped. A student's expectancy of success in ICT is influenced by prior feedback, visible role models, and the messages they receive about who "belongs" in technical fields. The value a student attaches to ICT tasks is influenced by whether the tasks feel relevant to their interests and identity. Gender-responsive task design (Section 4 below) works directly on the value side of this equation, while structured interaction and feedback (Sections 4b and 4c) work on the expectancy side.

All in all, these theories explain why "small instructional decisions accumulate into structural learning advantages or disadvantages": each decision about who is invited to manipulate a device, who is asked follow-up questions, and whose mistakes are treated as learning opportunities feeds directly into a cycle of self-efficacy and expectancy that compounds over the course of a school year, not just a single lesson.

Sense of Belonging and ICT Identity Development

Research on participation in STEM and ICT increasingly highlights the importance of students' sense of belonging. Sense of belonging refers to the perception that one is accepted, valued, and recognised as a legitimate participant within a learning environment. Students who feel they belong are more likely to participate actively, persist through challenges, and develop positive attitudes towards learning.

In ICT education, belonging is influenced by classroom culture, peer interactions, representation in learning materials, and opportunities to contribute meaningfully to technical tasks. When students repeatedly experience exclusion, invisibility, or limited access to technical roles, they may begin to perceive ICT as a space where they do not fully belong.

Closely related to belonging is ICT identity development. Students gradually develop beliefs about whether technology is relevant to who they are and who they might become. These beliefs are shaped through repeated classroom experiences, participation opportunities, role models, and feedback. Gender-responsive pedagogy supports positive ICT identity formation by ensuring that all learners experience themselves as capable contributors, problem-solvers, and creators of technology rather than passive observers of it.

In ICT contexts, this means that inclusion is not achieved through access alone, but through:

- frequency of hands-on engagement
- cognitive demand of assigned tasks
- visibility of contribution within group work
- quality and type of feedback received

Even minor adjustments, such as rotating keyboard control or explicitly assigning debugging roles, can significantly alter participation trajectories and confidence development, particularly for learners who are systematically underexposed to technical practice.

2. Mechanisms of Unequal Participation

Equal Access Does Not Guarantee Equal Participation

Over the past decade, many education systems have made substantial progress in providing equal access to digital technologies. However, equal access does not automatically result in equal participation. Students may have access to the same devices, software, and learning opportunities while still experiencing very different levels of engagement, visibility, and technical practice.

For this reason, gender-responsive pedagogy focuses not only on whether students have access to technology, but also on how they participate once access is provided. Questions such as who handles the equipment, who makes technical decisions, who speaks during discussions, and who receives technical feedback are often more important than access alone in shaping confidence and competence development.

Unequal participation in ICT classrooms is produced through identifiable mechanisms:

a. Task Allocation Bias

Students are not equally involved in technical tasks. Girls are more frequently positioned in passive or supportive roles, limiting skill acquisition (EIGE, 2017). This pattern is consistent with what is sometimes called the participation gap: in mixed-gender groups, technical roles such as coding, hardware handling, and debugging are disproportionately taken up by boys, often through informal self-selection rather than explicit assignment. Because technical fluency is built through repeated

hands-on practice, students who are repeatedly placed in organisational or documentation roles accumulate far fewer opportunities to develop the very skills the activity is meant to teach.

Without structure	With structured allocation
A teacher says "get into pairs and build the app". Roles emerge informally; one student keeps the keyboard for the whole activity.	The teacher assigns explicit, time-boxed roles (e.g. coder, tester) before the activity starts, with a fixed rotation point.
Girls are more often found taking notes, organising the presentation, or checking instructions rather than writing or debugging code.	Each student is required to perform every technical role at least once during the project, tracked on a simple class checklist.
The same few students answer technical questions and explain results to the class.	The teacher rotates who presents results and who fields technical questions, independent of who "finished first".

b. Interaction Bias

Teacher attention, questioning, and feedback may be unevenly distributed, reinforcing participation imbalances. Interaction bias typically operates below the level of conscious intention: teachers may call on the same confident students for technical questions, give boys more wait-time before redirecting a question elsewhere, or address technical difficulties to the student perceived as most likely to know the answer. Over time, these patterns send a consistent, if unintended, signal about whose technical contributions are expected and valued.

c. Confidence Feedback Loop

Reduced participation leads to lower confidence, which further reduces engagement, creating a self-reinforcing cycle (UNESCO, 2017). This cycle is consistent with expectancy-value theory (see Section 1), where perceived competence influences willingness to engage in future tasks. In ICT, early exclusion from technical manipulation accelerates disengagement trajectories.

Step	What happens
1. Reduced access	A student is given fewer opportunities to handle technical tasks directly (often through informal role allocation, see 2a).
2. Fewer mastery experiences	With less hands-on practice, the student has fewer chances to build genuine competence and see tangible evidence of their own progress.
3. Lower perceived competence	In line with self-efficacy theory, the absence of mastery experiences lowers the student's belief in their own ability, regardless of actual aptitude.

4. Reduced expectancy of success	Lower perceived competence reduces the student's expectation of succeeding at the next technical task (expectancy-value theory).
5. Avoidance or withdrawal	The student is less likely to volunteer for, or persist with, technical roles, reinforcing the original pattern of reduced access in Step 1.

3. Classroom-Level Barriers

Barriers affecting participation include:

- unequal access to digital tools
- dominance patterns in group work
- lack of representation in learning materials
- implicit expectations about ability

These barriers must be addressed through structured pedagogical intervention. Importantly, they rarely operate in isolation. Classroom participation is shaped by the interaction between students, teachers, learning materials, and peer dynamics. A classroom may appear inclusive because all students have access to the same resources, yet participation can remain unequal due to subtle processes such as expert positioning, dominance patterns in group work, unequal questioning practices, or assumptions about technical ability. Gender-responsive pedagogy seeks to identify and address these processes before they become persistent barriers to participation and confidence.

4. Pedagogical Intervention Framework

Effective gender-responsive ICT teaching requires coordinated intervention across four interconnected domains. These domains correspond to the mechanisms described earlier in the module and provide teachers with a practical framework for promoting equitable participation, confidence development, and inclusive learning experiences. While each domain can be addressed individually, the greatest impact is achieved when they are implemented together as part of a coherent pedagogical approach.

a. Task Design

- introduce real-world relevance
- provide multiple entry points
- integrate collaborative problem-solving

b. Interaction Design

- assign explicit roles
- enforce rotation
- monitor participation

c. Feedback Design

- prioritise process-based feedback
- distribute feedback equally
- support problem-solving persistence

d. Material Design

- include diverse role models
- remove stereotypical representations
- ensure inclusive examples

Pedagogical Challenge	Potential Impact on Learners	Gender-Responsive Response
Unequal participation	Reduced confidence and engagement	Structured participation protocols
Informal role allocation	Unequal technical skill development	Explicit role assignment and rotation
Limited representation	Reduced sense of belonging	Diverse examples and role models
Ability-focused feedback	Lower self-efficacy	Process-oriented feedback
Dominant classroom voices	Reduced visibility and participation	Inclusive discussion strategies
Low task relevance	Reduced motivation and persistence	Real-world and socially relevant ICT activities

Unit 1. Designing Gender-Responsive Pedagogy in ICT

Duration

80 minutes guided learning

Purpose

To enable teachers to redesign ICT activities so that participation is distributed equitably and all learners engage in meaningful technical practice.

Core content

Principles of Gender-Responsive ICT Task Design

Gender-responsive ICT activities are guided by a number of core pedagogical principles. These principles help teachers move beyond equal access towards equitable participation and meaningful engagement.

Equity rather than identical treatment

Students may require different forms of support, encouragement, or participation structures to achieve comparable learning opportunities.

Active participation

ICT competence develops through direct engagement with technical tasks. Students should have opportunities to manipulate tools, solve problems, and test solutions rather than observe others doing so.

Visibility and recognition

All learners should have opportunities to contribute ideas, demonstrate skills, and receive recognition for their work.

Representation and belonging

Activities should help students see ICT as relevant to their interests, experiences, and future possibilities.

Reflection and adaptation

Teachers should regularly review participation patterns and adapt activities when inequities emerge.

Traditional ICT tasks often prioritise abstract or purely technical problem-solving. Gender-responsive task design introduces relevance, accessibility, and varied engagement pathways (UNESCO, 2017).

Gender-responsive task design works by:

- lowering unnecessary entry barriers (without lowering cognitive demand)
- increasing contextual relevance
- ensuring multiple legitimate entry points into the same task

Distributed Cognitive Access

A key goal of gender-responsive task design is to ensure distributed cognitive access. This means that all learners engage with multiple dimensions of a task rather than being confined to a single role. In ICT projects, participation often becomes divided between "thinking roles" (planning, decision-making, debugging) and "doing roles" (typing, assembling, executing instructions). When these roles become fixed, some students gain significantly more opportunities to develop technical competence than others.

Gender-responsive activities deliberately distribute planning, execution, debugging, testing, and reflection across all participants. This ensures that technical expertise is developed through participation rather than concentrated in a small number of students.

Mini Classroom Scenario

Before redesign:

A teacher assigns: "Create a simple website in pairs."

Observed pattern:

- one student controls the computer
- the other observes or takes notes
- roles remain fixed throughout

After redesign:

The teacher structures the task as:

Phase 1: planning (both students)

Phase 2: coding (role rotation every 12 minutes)

Phase 3: debugging (navigator leads error analysis)

Phase 4: documentation (shared output)

Instruction becomes: "Both students must perform each technical role at least once."

Result:

- increased hands-on exposure
- improved confidence in technical manipulation
- reduced implicit gendered role segregation

Mini Classroom Scenario: Small-Group Robotics Task

Before redesign:

A teacher assigns: "In groups of four, build and program a robot to complete the obstacle course."

Observed pattern:

- two boys take turns at the laptop running the programming software
- one girl holds the robot and reports on its physical movement
- one girl records results in a notebook but never opens the code editor

After redesign:

The teacher introduces four explicit, rotating roles, each with a fixed time block and a one-line job description displayed on the board:

- Programmer (writes and edits the code)
- Builder (assembles and adjusts the robot's physical components)
- Tester (runs trials and times the course)
- Recorder (logs results and prepares the summary)

Roles rotate every 10 minutes on a visible timer, and the instruction is explicit: "Everyone takes the Programmer role at least once before the end of the lesson."

Result:

- all four students gain direct experience writing and debugging code
- the link between physical building and code logic becomes visible to everyone, not just the "programmer"
- the teacher can verify equitable participation simply by checking the rotation log

Why Structured Task Design Matters

Structured task design is not simply an organisational strategy. It is a pedagogical intervention aimed at increasing participation, confidence, and competence development. Research suggests that students build self-efficacy through repeated mastery experiences and opportunities to contribute meaningfully to learning activities (Bandura, 1997). When participation is concentrated among a small number of learners, these opportunities are distributed unequally.

By intentionally structuring roles, participation expectations, and task progression, teachers can ensure that all students gain access to the experiences that support confidence development and long-term engagement in ICT learning. This creates a direct bridge back to the theoretical section on self-efficacy and expectancy-value theory.

Implementation Process

Analyse the existing task:

- Identify cognitive vs procedural demands
- Determine who performs "doing" vs "thinking" roles

Identify participation barriers:

- Who engages actively
- Who is excluded
- Who decides?
- Who corrects errors?

Redesign the task:

- add real-world context
- include collaborative elements
- diversify themes and outcomes

Example transformation:

From: "Develop a simple game"

To: "Develop a digital solution addressing a community or social need"

Reflection elements

> **Reflection insights**
>
> Review two recent ICT activities and identify:
>
> - type of engagement promoted
> - potential participation imbalance

Application to practice

Task: Redesign one ICT lesson.

Output must include:

- learning objective(s)
- revised task description
- participation and role allocation strategy
- inclusion strategy
- method for monitoring participation
- expected learning outcomes for students

Inclusive Task Design Checklist

Before finalising a redesigned ICT task, check that:

- the task includes at least one element of real-world or social relevance, not only abstract technical practice;
- all students will rotate through planning, execution, debugging, and documentation roles at some point in the task;
- no single role can be occupied by the same student for the entire activity;
- the instructions explicitly state the rotation requirement (it is not left to informal negotiation);
- there is a simple way to verify that rotation actually happened (e.g. a checklist, log, or rotation chart).

Follow-Up Reflection

> 💭 **Reflection insights**
>
> After implementing the redesigned activity, consider:
>
> - Which students participated more actively than usual?
> - Were technical roles distributed as planned?
> - Did any unexpected participation patterns emerge?
> - What would you modify in the next iteration of the activity?

Suggested materials/resources

- Lesson redesign template
- Inclusive task checklist
- Case examples

Unit 2. Managing Participation and Interaction in ICT Classrooms

Duration

80 minutes guided learning

Purpose

To establish structured classroom practices that ensure equitable participation and access to technical experience.

Core content

Unstructured group work often produces informal hierarchies of competence, where students perceived as more skilled dominate device interaction and decision-making. These hierarchies are rarely explicit but become self-reinforcing over time. Students who are repeatedly positioned as "experts" gain further opportunities to practise and demonstrate competence, while others become associated with supportive or peripheral roles. This process can create unequal learning experiences even when students begin with similar levels of ability.

Structured interaction models aim to:

- redistribute epistemic authority
- ensure equitable access to technical manipulation
- prevent "expert/assistant" fixed roles

Why Participation Structures Matter

Participation is not simply a matter of classroom organisation. Participation determines who gains access to the learning experiences through which competence, confidence, and identity develop. Students who regularly engage in technical tasks have more opportunities to practise, make mistakes, solve problems, and experience success. Over time, these experiences contribute to self-efficacy and a stronger sense of belonging in ICT learning environments.

Conversely, students who are repeatedly positioned as observers, organisers, or assistants may receive fewer opportunities to develop technical competence, regardless of their potential. For this reason, participation structures should be viewed as pedagogical tools rather than administrative procedures. They help ensure that learning opportunities are distributed equitably and that all students can develop confidence through active engagement.

Structured Role-Based Collaboration Model

Driver (operational role): controls the device and executes tasks

Navigator (strategic role): reviews actions, provides guidance, plans next steps

This model separates procedural execution from strategic decision-making, ensuring that learning is distributed across both roles. The Driver develops technical fluency through direct interaction with tools and software, while the Navigator develops analytical and problem-solving skills by reviewing decisions, identifying errors, and planning next steps. Because both roles contribute to learning, role rotation becomes essential. Without rotation, opportunities for competence development may become concentrated in a small number of students.

Mini Classroom Scenario

Before:

Group of 3 students working on coding task:

- one student types continuously
- others disengage or wait for instructions

After introducing role rotation:

- every 10–15 minutes roles switch
- navigator must explain reasoning before execution continues
- teacher uses checklist to ensure compliance

Outcome:

- increased verbalisation of thinking processes
- improved equity in technical engagement
- reduced passive participation patterns

Mini Classroom Scenario: Whole-Class Technical Q&A

Before:

During a whole-class debugging demonstration, the teacher asks "Who thinks they know what's wrong with this code?". The same three confident students (all boys) raise their hands within two seconds each time; the teacher calls on whichever hand goes up first.

After introducing structured questioning:

- the teacher uses a name-card system so that every student is called on roughly the same number of times across a unit
- after asking a question, the teacher waits a minimum of ten seconds before calling on anyone
- the teacher occasionally asks the class to discuss in pairs for thirty seconds before any hands go up, so quieter students arrive at the question with a rehearsed answer

Outcome:

- a wider range of students, including girls who previously stayed silent, begin answering technical questions
- the teacher can see from the name-card tally that participation is becoming more balanced over the unit

Structured Questioning and Inclusive Participation

Participation inequalities are not limited to group work. Whole-class discussions can also reinforce visibility gaps when the same students consistently answer questions or receive teacher attention. Structured questioning techniques, such as extended wait-time, random selection systems, think-pair-share activities, and targeted invitations to quieter students, help broaden participation and ensure that technical thinking becomes visible across the classroom rather than concentrated among a few confident learners.

Execution Protocol

- assign roles explicitly at the start of the activity
- enforce role switching every 10–15 minutes
- monitor participation continuously
- intervene when imbalance occurs

Teacher Responsibilities

Teachers play an active role in shaping participation patterns. Gender-responsive classroom management requires teachers not only to deliver content but also to monitor how learning opportunities are distributed. Teachers should:

- identify emerging dominance patterns
- interrupt unequal participation when necessary
- reassign roles when imbalance is detected
- ensure that technical tasks are shared equitably
- create opportunities for quieter students to contribute
- avoid interpreting silence as evidence of disengagement or lack of ability

By actively managing participation, teachers help create the conditions through which confidence, competence, and belonging can develop.

Reflection elements

> **Reflection insights**
>
> Analyse a previous classroom session:
>
> - who performed technical tasks
> - how roles were distributed

Application to practice

Task: Develop participation management plan.

Output must include:

- defined roles
- rotation schedule
- monitoring method
- intervention rules
- criteria for identifying participation imbalance
- strategy for responding to unequal participation

Participation Monitoring Checklist

During or immediately after a group ICT activity, check whether:

- every student has occupied the Driver/operational role at least once during the activity;
- questions and technical explanations are coming from more than two or three students;
- any student has remained in a purely organisational or note-taking role for the entire session;
- wait-time of at least ten seconds is being given before calling on a volunteer;
- one intervention (role reassignment, redirected question, or explicit invitation to a quieter student) has been used if imbalance was observed.

Follow-up reflection

> **Reflection insights**
>
> After implementing the participation management plan, consider:
>
> - Which students participated more actively than expected?
> - Were technical roles distributed as intended?
> - Which intervention strategies were most effective?
> - Did participation become more balanced over time?
> - What adjustments would improve the process in future activities?

Suggested materials/resources

- Participation tracking template
- Role assignment sheet
- Observation checklist

Unit 3. Feedback, Language and Representation in ICT Teaching

Duration

80 minutes guided learning

Purpose

To improve feedback practices, classroom communication, and representation in teaching materials.

Core content

information. They shape how students perceive their own competence, how they interpret success and failure, and whether they see themselves as legitimate participants in ICT learning. Research suggests that students' beliefs about their own ability are influenced not only by performance outcomes but also by the messages they receive from teachers, peers, and learning environments (Bandura, 1997; UNGEI, 2020).

In ICT education, these influences are particularly important because students often encounter stereotypes about who is expected to be technically competent. As a result, classroom communication and representation can either reinforce or challenge existing participation patterns.

Feedback in ICT is not neutral, it shapes:

- risk-taking behaviour
- persistence during error resolution
- self-efficacy in technical domains

Research shows that **ability-based feedback reinforces fixed mindsets**, while process-based feedback supports growth-oriented engagement (UNGEI, 2020).

1. Feedback practices

Feedback and Self-Efficacy

Feedback plays a central role in the development of self-efficacy. Students build confidence when they receive feedback that helps them understand how success was achieved and how challenges can be overcome. Feedback that focuses on strategies, effort, problem-solving, and persistence encourages students to view competence as something that develops through practice.

By contrast, feedback that emphasises fixed ability may unintentionally reinforce the belief that technical competence is something people either possess or do not possess. This can discourage risk-taking and reduce persistence when students encounter difficulties.

In ICT learning environments, where experimentation and error resolution are essential parts of the learning process, feedback should help students interpret mistakes as opportunities for learning rather than evidence of inability.

Effective ICT feedback must target *strategies, not identity*.

Bias-Aware Feedback Adjustment Model

Non-productive feedback	Gender-responsive feedback
"You are good at this"	"Your problem-solving approach was effective and structured"
"Let me correct this"	"What does the error indicate? Explain your reasoning"
"This looks nice"	"Your design improves functionality and usability"

These adjustments:

- reinforce effort and strategy
- support confidence development
- reduce gender-based differences in self-perception

Mini Classroom Scenario

Before:

Teacher says: "Well done, this is very good."

Effect:

- reinforces fixed ability perception
- unclear learning signal

After:

Teacher says: "Your solution works because you tested each variable systematically. That testing approach is what solved the error."

Effect:

- reinforces transferable skill
- increases procedural awareness
- builds confidence through clarity

Mini Classroom Scenario: Representation in Teaching Materials

Before:

A lesson on the history of computing focuses exclusively on well-known male innovators. Examples of contemporary technology companies and technical leadership positions are also predominantly male.

Observed effect:

Students receive a narrow picture of who contributes to ICT innovation and leadership.

After:

The teacher integrates examples of women working in software development, cybersecurity, artificial intelligence, data science, and digital entrepreneurship. Historical examples include pioneers such as Ada Lovelace and Grace Hopper, while contemporary examples reflect diverse technical careers.

Observed effect:

Students encounter a broader range of ICT identities and career pathways, helping strengthen belonging and future aspirations.

Language Use

Teacher language influences:

- participation
- risk-taking
- engagement

Balanced interaction requires:

- equal questioning
- equal response time
- consistent feedback distribution

Teacher language acts as a **distribution mechanism of attention**.

Key risk:

- consistently addressing the same students for technical questions
- inadvertently reinforcing perceived expertise gaps

Key strategy:

- structured questioning distribution
- equal wait-time enforcement
- intentional inclusion of less vocal learners

Teacher Expectations and Implicit Bias

Teachers rarely intend to treat students differently; however, expectations can influence classroom interactions in subtle ways. Research has shown that students often receive different opportunities, feedback, and levels of challenge based on assumptions about their abilities or interests.

In ICT classrooms, implicit expectations may affect:

- who is asked to solve technical problems
- who receives follow-up questions
- who is trusted with complex tasks
- whose mistakes are interpreted as learning opportunities

Over time, these small differences can influence students' confidence and participation. Gender-responsive pedagogy encourages teachers to reflect on interaction patterns and ensure that opportunities for technical engagement are distributed equitably.

Representation in Teaching Materials

Representation is not symbolic only, it influences **perceived legitimacy of participation** in ICT domains. Representation influences learners' sense of belonging in ICT (EIGE, 2017).

Learners are more likely to persist when they see:

- diverse technical roles (not only "users" but also "designers", "engineers", "problem-solvers")
- women and girls engaged in debugging, coding, and system design
- real-world ICT applications beyond stereotypical domains

Representation contributes not only to awareness but also to identity formation and sense of belonging. When students repeatedly encounter examples of people who resemble themselves participating successfully in ICT, they are more likely to view technological learning and careers as relevant and attainable.

Conversely, when ICT is consistently presented through narrow or stereotypical images, some learners may struggle to see a place for themselves within the field. For this reason, representation should be embedded throughout teaching materials, examples, classroom discussions, and project activities rather than treated as an occasional addition.

Material Review Criteria

Materials should:

- present women as active participants in ICT
- include examples of technical problem-solving
- reflect diverse ICT applications (e.g. health, environment, society)
- represent multiple career pathways

Reflection elements

> **Reflection insights**
>
> Review recent teaching practice:
>
> - type of feedback used
> - representation in materials

Application to practice

Task: Conduct a teaching audit.

Output must include:

- analysis of recent feedback practices

- evaluation of teaching materials using the material review criteria
- identification of one potential source of bias or underrepresentation
- one concrete improvement action
- short reflection on expected impact on participation and belonging
- clarifying reporting pathways within the school.

Follow-up Reflection

> **Reflection insights**
>
> After implementing the identified improvement:
>
> - Did student participation change?
> - Did different students contribute during technical discussions?
> - Did learners engage differently with the materials?
> - Were there any changes in confidence or willingness to take technical roles?
> - What further adjustments could strengthen inclusion?

Suggested materials/resources

- Feedback checklist
- Material audit tool
- Inclusive content examples

Final Application Task

The final application task is designed to help participants translate the principles of gender-responsive pedagogy into a concrete and context-specific teaching practice. Participants should draw on the theoretical concepts, classroom strategies, and practical tools explored throughout the module. Participants should select one of the following options.

Option 1: ICT Lesson Redesign

Redesign an existing ICT lesson or create a new lesson that incorporates the principles of gender-responsive pedagogy. The lesson plan should include:

- learning objective(s)
- description of the ICT activity
- participation and role-allocation strategy
- feedback and questioning strategy
- approach to representation and inclusiveness
- method for monitoring participation
- expected learning outcomes for students

Reflection Component

Include a short reflection explaining:

- which participation barriers the lesson seeks to address
- how the lesson supports confidence and belonging
- how the chosen strategies align with gender-responsive pedagogy principles

Option 2: Classroom Intervention Plan

Design a structured intervention aimed at improving participation, confidence, and inclusion within an ICT learning environment. The intervention may focus on:

- participation imbalance
- unequal role allocation
- classroom interaction patterns
- feedback practices
- representation in learning materials
- sense of belonging and engagement

The intervention plan should include:

- identified challenge or barrier
- rationale for intervention
- proposed actions and implementation steps
- timeline or implementation sequence
- method for monitoring progress
- expected outcomes

Reflection Component

Include a short reflection explaining:

- why the selected challenge is important
- how the intervention is expected to influence participation, confidence, or belonging
- how success will be evaluated

Output requirement:

Submit a written plan of approximately 1–2 pages. The submission should demonstrate:

- understanding of gender-responsive pedagogy principles
- application of module concepts and strategies
- consideration of participation, confidence, and belonging
- practical relevance to the participant's educational context

Self-Learning Activities (2h)

This module includes 2 hours of autonomous learning activities designed to help participants deepen their understanding of gender-responsive pedagogy and translate theoretical concepts into practical classroom actions. The activities encourage teachers to analyse their own teaching practices, identify opportunities for improvement, and apply the principles explored throughout the module. While the suggested activities can be completed independently, they may also be adapted by trainers as individual assignments or reflection tasks within a facilitated training programme.

The activities below complement the exercises and application tasks included in the individual units.

Activity 1: Connecting Theory to Practice

Read a short summary of either:

- Self-Efficacy Theory (Bandura, 1997), or
- Expectancy-Value Theory (Eccles & Wigfield, 2002).

Write 3–4 sentences explaining how one concept from the selected theory relates to a specific ICT teaching practice you currently use. Possible prompts:

- How does your feedback influence students' confidence?
- How does task design influence motivation?
- How might participation opportunities influence self-efficacy?

Suggested output: Short reflection note (approximately 100 words).

Activity 2: Reviewing Representation in Teaching Materials

Select one ICT teaching resource (e.g. slides, worksheet, textbook chapter, project brief, online learning resource).

Using the Material Review Criteria from Unit 3:

- identify how women and girls are represented;
- identify examples of technical and non-technical roles;
- consider whether multiple ICT career pathways are visible;
- identify one area for improvement.

Suggested output: Short material audit and one proposed modification.

Activity 3: Analysing Participation Patterns

Observe, or recall, one recent ICT learning activity and complete the Participation Monitoring Checklist from Unit 2. Consider:

- Who handled technical tasks?
- Who made decisions?
- Who remained in organisational or support roles?
- Who contributed during technical discussions?

Identify one participation imbalance and describe one intervention you would introduce in a future lesson.

Suggested output: Completed checklist and short action note.

Activity 4: Reflecting on Feedback Practices

Review a recent example of feedback provided during an ICT lesson. Identify:

- one example of ability-focused feedback;
- one example of process-focused feedback;
- one opportunity to improve feedback practices.

Rewrite the original feedback using the Bias-Aware Feedback Adjustment Model from Unit 3.

Suggested output: Before-and-after feedback examples with a brief explanation.

Activity 5: Auditing an Upcoming ICT Activity

Select an upcoming ICT lesson or project and review it using the Inclusive Task Design Checklist from Unit 1. For each criterion:

- indicate whether it is currently addressed;
- identify any missing elements;
- propose modifications where necessary.

Suggested output: Completed checklist and revised lesson notes.

Activity 6: Equal Access versus Equal Participation

Write a short explanation (approximately 150–200 words) suitable for a colleague who is unfamiliar with gender-responsive pedagogy.

Your explanation should describe:

- the difference between equal access and equal participation;
- why equal access alone may not produce equitable learning outcomes;
- how the confidence feedback loop described in Section 2c helps explain this difference.

Suggested output: Short professional reflection or briefing note.

Suggested Use for Trainers

Trainers may use these activities as:

- formative assessment tasks;
- reflective learning exercises;
- evidence of module completion;
- discussion starters during facilitated sessions;
- inputs for the final application task.

The outputs generated through these activities can also help participants prepare their final lesson redesign or classroom intervention plan by providing evidence from their own teaching practice.

Training materials

Please check the "**Module 4**" support materials on the LeadHER Teaching Framework webpage.

Additional resources

The following resources may help participants explore the topics of this module further or support their practice after completing the training:

- UNESCO (2017). Cracking the code: Girls' and women's education in STEM
- UNGEI (2020). Gender-Responsive Pedagogy Toolkit
- European Institute for Gender Equality (EIGE) (2017). Gender in education and training

References

Bandura, A. (1997). Self-Efficacy: The Exercise of Control. New York: W. H. Freeman.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. Annual Review of Psychology, 53, 109–132. https://doi.org/10.1146/annurev.psych.53.100901.135153

European Institute for Gender Equality (EIGE). (2017). Gender in Education and Training. Luxembourg: Publications Office of the European Union.

UNESCO. (2017). Cracking the Code: Girls' and Women's Education in Science, Technology, Engineering and Mathematics (STEM). Paris: UNESCO.

United Nations Girls' Education Initiative (UNGEI). (2020). Gender-Responsive Pedagogy: A Toolkit for Teachers and Schools. New York: UNGEI.

Module 5. Inclusive ICT projects, career orientation & role models

General description of the module

Module 5 addresses the relevance, motivation and future pathways for girls in ICT. It supports teachers in Portugal, Spain and Bulgaria to design inclusive ICT projects, integrate career orientation, and intentionally use diverse role models. The module focuses on connecting ICT learning to real-world applications, introducing transversal skills, and countering stereotypes about ICT careers. It aligns with the LeadHER Teaching Framework and contributes to gender-responsive and inclusive ICT education.

1. Module number and title

Module 5. Inclusive ICT projects, career orientation & role models

2. Primary purpose and objective of the module

The purpose of this module is to equip teachers with practical strategies to design inclusive ICT learning experiences that connect digital skills to real-world relevance, career pathways and positive role models, strengthening girls' confidence, participation and aspirations in ICT.

3. Module summary

This module explores how teachers can integrate a gender perspective into ICT projects and activities, design socially relevant digital projects, introduce ICT career pathways and transversal skills, and use diverse role models in teaching. Participants learn how communication and classroom messaging can counter stereotypes about ICT careers and how these strategies prepare the ground for LeadHER mentoring circles

4. Duration

Total duration: 4 hours

Guided learning: 2 hours

Structured self-learning: 2 hours

Suggested delivery format: Suitable for face-to-face, online or blended delivery. Guided learning is delivered synchronously; self-learning activities are asynchronous.

5. Prerequisites

No specialised ICT knowledge is required. Participants should have basic teaching experience and an openness to applying gender-responsive strategies in ICT-related learning.

Learning objectives

By the end of this module, participants will be able to:

6. Identify gender-related barriers and opportunities in ICT project design;
7. Design inclusive and socially relevant ICT learning activities;
8. Apply strategies that integrate diverse female and male role models into ICT lessons;
9. Explain ICT career pathways and transversal skills in accessible, stereotype-free ways;
10. Plan improvements that strengthen gender-responsive ICT teaching and support the LeadHER mentoring circles.

Core content

Unit 1. Integrating a Gender Perspective into ICT Projects and Activities

Duration

20 minutes (guided learning)

Purpose

To help teachers identify gender-related barriers in ICT learning environments and redesign ICT projects and activities to ensure equitable participation, confidence-building, and meaningful engagement for all students.

Core content

Girls' participation in ICT is shaped by a combination of psychological, social, and pedagogical factors. Integrating a gender perspective into ICT projects means intentionally designing learning environments that reduce barriers and ensure equitable opportunities for all students. While many teachers aspire to treat students equally, research shows that without explicit structures, ICT activities often reproduce existing gender norms and participation patterns.

1. Key Mechanisms Influencing Girls' Engagement

The Confidence Gap: Girls frequently underestimate their ICT abilities despite strong performance. This can reduce their willingness to try technical tasks, volunteer answers, or persist when debugging is difficult. Normalizing mistakes and highlighting effort-based strategies helps counter this pattern.

The Participation Gap: In many ICT projects, boys gravitate toward technical roles (coding, robotics, hardware), while girls are more often assigned design, organization, or presentation tasks. These patterns limit girls' exposure to essential skills. Structured participation systems—rather than self-selection—are crucial for giving all students access to technical learning.

The Pedagogical Gap: Teacher practices, materials, and examples may unintentionally reinforce a narrow view of ICT as male-dominated or talent-based. This can discourage some students from engaging fully. Using gender-inclusive language, varied role models, and collaborative learning routines helps broaden the image of who "belongs" in ICT.

2. Principles for Integrating a Gender Perspective in ICT Projects

Make gender considerations explicit: Review instructions, examples, and group arrangements to ensure they do not push girls toward less technical roles. Highlight diverse ICT creators and ensure examples show both women and men using ICT in meaningful ways.

Ensure equitable access to technical tasks: Use rotation systems so every student experiences coding, debugging, testing, and problem-solving roles. Provide scaffolds—such as step-by-step guides or pair programming—to build confidence and ensure all students can participate at a technical level.

Promote intentional visibility: Showcase female and diverse ICT professionals in everyday teaching. Select images, stories, and examples that humanize ICT, highlight collaboration, and illustrate the social impact of technology.

3. Inclusive Project-Based Learning Structures

Role Rotation: Assign rotating roles (Lead Coder, Debugging Lead, UX Tester, Project Presenter) to prevent gendered task distribution and ensure broad skill development.

Inclusive Collaboration: Use structures such as "everyone speaks before coding" or "think-pair-share" to give each student equal space to contribute. These routines reduce dominance patterns and support quieter students.

Safe Participation Protocols: Create a classroom atmosphere where experimentation, failure, and questioning are normal parts of ICT learning. Girls often thrive in environments where risk-taking is supported and evaluation focuses on strategies rather than speed.

4. Tips for designing socially relevant digital projects that increase motivation and real-world connection:

- Connect ICT tasks to real-world issues students care about (environment, wellbeing, accessibility, community).
- Emphasise meaningful purpose: Girls often show higher engagement when projects address tangible problems.
- Support creativity and agency: Allow students to tailor project goals around community needs and personal interests.

5. Tips for communication strategies that counter stereotypes in ICT careers:

- Use neutral and inclusive language when describing ICT roles.
- Highlight ICT as a creative, collaborative and problem-solving field rather than purely technical.
- Reinforce growth mindset: Emphasise effort, learning process, and strategy rather than "innate talent".

Reflection elements

> 💭 **Reflection insights**
>
> Reflect on a past ICT activity: Which students took on technical roles? Which students avoided them?
>
> Identify moments when stereotypes (e.g., boys doing coding, girls doing design tasks) may have influenced participation.

Application to practice (can be used for self-learning)

Teachers select one existing ICT project from their practice and redesign it, using gender-responsive principles. The redesign must include clear technical roles for all genders, equitable task distribution, and socially relevant project themes. Suggested steps:

1. Think about one ICT activity/project you did with your students. Review participation data and identify any gendered participation patterns.

2. Redesign project roles to ensure every student rotates through technical, creative, analytical and leadership roles.

3. Write a short outline of a socially relevant ICT mini-project (e.g., digital wellbeing, community mapping, environmental issue) that embeds inclusive strategies.

4. Draft communication messages that counter stereotypes about ICT (e.g., "ICT is for creative problem-solvers of all genders").

Suggested materials/resources

- UNICEF – Gender-Responsive Digital Pedagogies: A Guide for Educators: Provides practical tools, checklists, and concrete strategies for equitable digital teaching—especially useful to address confidence, participation, and pedagogical gaps in ICT learning.
- ITU – Girls in ICT Toolkit: Offers activity templates, role-model integration ideas, and classroom-ready examples for creating supportive ICT environments that foster girls' motivation and participation.
- Graduate Women International – Girls in ICT Advocacy Toolkit: Includes clear explanations of gender barriers, gender-sensitive programme examples, and best practices for designing inclusive ICT learning experiences.
- Commonwealth of Learning – Guide to Gender-Responsive Learning Materials: Helps teachers evaluate and adapt ICT instructions, visuals, examples, and classroom materials to eliminate hidden stereotypes and promote balanced representation.
- LeadHER WP2 Needs Analysis findings: Insights on the confidence gap, socialization influences, teacher bias patterns, and recommendations for building gender-responsive classroom routines as outlined in the LeadHER key-results.
- World Bank – Digital Gender Toolkit: Provides practical guidance on addressing digital gender gaps, including diagnostic tools and strategies relevant to ICT inclusion and stereotype-free technology engagement.
- Short introductory videos or mini-interviews with diverse ICT professionals: From sources such as ITU, UNESCO, EU Code Week, or national STEM role-model platforms; these help make ICT careers relatable and support Unit 1's principle of "intentional visibility"

Unit 2. Designing Inclusive & Socially Relevant Digital Projects

Duration

25 minutes (guided learning).

Purpose

To support teachers in designing ICT projects that engage all learners—especially girls—through social relevance, real-world applications, inclusive teamwork structures, and clear links to transversal and ICT career skills.

Core content

Designing socially relevant and inclusive ICT projects is a powerful strategy for increasing girls' interest, confidence, and sustained engagement in ICT. Research across education systems consistently shows that girls are more motivated by purpose-driven, collaborative, and socially meaningful forms of digital learning. In many classrooms, ICT activities still focus on abstract technical exercises (e.g., programming a robot to move in a square), which can be valuable but often lack personal relevance for many learners. When ICT projects instead address real-life challenges, connect to students' experiences, or contribute to their communities, girls' participation tends to increase not only in frequency but also in depth and leadership.

Integrating social relevance into ICT projects is not about reducing technical challenge. Instead, it enriches learning by giving students a "why" behind the skills. Purpose sustains motivation, and motivation sustains persistence: a crucial factor for girls, who may be more sensitive to perceived relevance and belonging in ICT. Teachers across countries report that girls often excel in ICT tasks when they see the tangible impact of their work (e.g., creating a wellbeing digital poster, designing a simple environmental data dashboard, developing a safety campaign website). This illustrates that inclusive ICT projects can help shift ICT from a purely technical domain into a creative and social problem-solving space, where all students can belong.

1. Characteristics of Socially Relevant ICT Projects

A socially relevant project connects ICT skills to meaningful issues. It may include:

- Environmental challenges (e.g., tracking recycling data, creating awareness posters)
- Digital wellbeing & online safety (e.g., cyberbullying awareness, healthy screen habits)
- Community engagement (e.g., mapping useful local resources)
- Accessibility (e.g., designing materials for visually impaired users)
- Human rights, equity, inclusion (e.g., campaigns or micro-websites raising awareness)

Such themes not only allow for creativity but also promote empathy, critical thinking, and collaboration. Importantly, they counter the stereotype that ICT is only about "coding for the sake of

coding". Instead, they present ICT as a tool for real change, aligning with girls' reported preferences for purpose-oriented learning.

2. Ensuring Students See Themselves Reflected in Project Themes

Representation matters not only in role models, but also in the problems ICT projects aim to solve. When designing projects, teachers should ask:

- Do these themes reflect the diversity of students' backgrounds?
- Do students have opportunity to integrate personal experiences or interests?
- Are examples and narratives balanced across genders, cultural groups, and abilities?

Teachers can invite students to propose problems they would like to solve or explore. This fosters ownership and increases engagement. Moreover, when girls contribute to defining project goals, their sense of agency increases—an important factor in countering biases about "who belongs in ICT".

3. Integrating Transversal Skills Into ICT Projects

Transversal skills (collaboration, creativity, communication, critical thinking, digital citizenship) are essential in all 21st-century careers, including ICT. In inclusive design:

- Collaboration roles should rotate.
- Communication should be emphasized through presentations, peer feedback and co-creation.
- Creativity should be framed as an ICT skill, not an "art skill".
- Critical thinking should guide data analysis, debugging, and problem-solving.
- Digital citizenship can be integrated by discussing responsible, ethical technology use.

These skills make ICT projects engaging and inclusive because they broaden the range of competences valued—not only speed, coding, or technical intuition. This allows students with different strengths to contribute meaningfully.

4. Connecting ICT Projects to Real ICT Careers

Teachers can deepen the impact of projects by making explicit links to ICT professions. For example:

- A data collection mini-project mirrors roles in data analysis.
- Debugging work resembles the problem-solving of software testers or AI model trainers.

- Designing an app interface relates to UX/UI design.
- Collaboration and communication reflect skills valued across all ICT careers.

By making these connections explicit, teachers help students—especially girls—see that their classroom work already aligns with the expectations of real ICT roles, making the pathway feel less abstract and more attainable.

5. Universal Design for Learning (UDL) Principles

Ensuring accessibility means:

- Providing multiple ways to interact with content (videos, diagrams, step-by-step guides)
- Offering varied output formats (visual, written, recorded)
- Allowing flexible roles and pathways within projects
- Ensuring tools and instructions are understandable for different learners

Girls benefit particularly from UDL because it reduces barriers related to confidence or perceived preparedness.

Reflection elements

> **Reflection insights**
>
> Which ICT projects in your classroom currently feel socially meaningful to students?
>
> Do all students (especially girls) see how ICT connects to everyday life and future careers?
>
> Are your projects accessible to different learning preferences and abilities?

Application to practice (can be used for self-learning)

Teachers select or create a new ICT project theme and redesign it to maximise relevance, inclusion, and opportunities for transversal skill development. Projects must include at least one real-world challenge and integrate inclusive teamwork structures.

Suggested steps:

1. Draft a socially relevant ICT project idea that addresses a real need (e.g., digital wellbeing, environmental data collection, anti-bullying campaigns).

2. Identify which transversal skills the project will strengthen and how.

3. Map the project's connection to at least two ICT career pathways.

Suggested materials/resources

- UNICEF – Gender-Responsive Digital Pedagogies: A Guide for Educators: Includes practical frameworks and examples for designing inclusive digital projects, integrating collaboration, creativity, and equitable participation—fully aligned with Unit 2's focus on transversal skills and inclusive project-based learning.
- ITU – Girls in ICT Toolkit: Offers activity templates such as socially relevant coding challenges, community-impact mini-projects, robotics tasks with real-world problem framing, and guidelines for designing empowering ICT experiences for girls. 2
- Graduate Women International – Girls in ICT Toolkit: Provides resources on gender-sensitive programme design and examples of ICT learning experiences that promote motivation, relevance, and digital citizenship, supporting the creation of socially meaningful ICT projects.
- Commonwealth of Learning – Guide to Gender-Responsive Learning Materials: Helps teachers review and adapt ICT project descriptions, examples and materials to ensure representation, accessibility, and UDL-aligned design, making ICT projects more relevant for diverse learners.
- World Bank – Digital Gender Toolkit: Offers frameworks for addressing digital inclusion, designing gender-responsive digital activities, and integrating transversal skills—useful for planning ICT projects with authentic societal impact.

Unit 3. ICT Career Pathways, Professions & Transversal Skills

Duration

25 minutes (guided learning).

Purpose

To help teachers guide students—especially girls—towards understanding the breadth of ICT career pathways, the transversal skills needed in digital professions, and the connection between classroom ICT projects and future opportunities.

Core content

Creating awareness about ICT careers and the skills needed to pursue them is critical for countering stereotypes and helping girls imagine themselves in future digital pathways. Many girls do not reject ICT because of lack of ability—they reject it because they lack a clear mental picture of what ICT professionals actually do. Without career visibility, ICT is often perceived as "coding alone in a dark room", which does not resonate with many students. This unit helps teachers demystify ICT professions and communicate the creativity, teamwork, social impact, and diversity present in modern ICT work.

1. Overview of ICT Career Families (Aligned with European ESCO Framework)

(Note: we opted by relating this part to the European classifications as a way to ensure and promote alignment among LeadHER countries with potential to expand to other EU countries. There are several resources, e.g. training resources, career profiles that refer to the ESCO Framework. Teachers do not have to master specifics of ICT careers or topics; the idea of this part is to convey the idea that there are diverse options for ICT careers that can be further explored by ICT teachers or students themselves).

The ESCO (European Skills, Competences and Occupations) classification groups ICT professions into families such as:

- Software & Application Development and Analysis
- Data Science, Big Data & AI
- Cybersecurity & Network Administration
- Digital Media, UX/UI, and Web Design
- Telecommunications & Infrastructure
- Robotics, Automation & Industry 4.0
- EdTech, Digital Training & Tech Support

Each family contains multiple roles with different skill profiles. This diversity allows students with different interests to find a match. For example:

- Students who enjoy storytelling or aesthetics might thrive in UX/UI.
- Students who like puzzles or logic may enjoy software development.
- Students who value safety and strategy might be drawn to cybersecurity.
- Students who enjoy math or patterns could excel in data science.

When teachers present ICT as a broad ecosystem instead of a monolithic field, student engagement—especially girls' engagement—increases.

2. Transversal Skills as Critical Drivers of ICT Employability

Across all ICT professions, employers consistently emphasize transversal skills:

- Collaboration
- Communication
- Problem-solving
- Creativity
- Adaptability
- Ethical thinking
- Digital citizenship

These skills are developed naturally in well-designed ICT projects. When teachers highlight this connection, students begin to appreciate that ICT is not about coding alone; it is also about teamwork, empathy, planning, and communication.

3. Classroom Strategies That Help Girls Visualize Themselves in ICT Roles

Teachers can help girls build ICT identity through:

- Talent-spotting: Noticing and naming strengths ("You're really good at structuring logical steps")
- Value-based conversations: Asking students which problems they want to solve
- Role rotation: Giving girls leadership in technical roles
- Identity-safe feedback: Reinforcing effort, strategies, and problem-solving
- Connecting personal interests to ICT roles

For example:

- A student who enjoys art could be encouraged toward game design or UX/UI.
- A student passionate about the environment could explore data visualization for climate topics.
- A student who likes helping others could be guided toward digital accessibility or tech support.

4. Mapping Classroom ICT Tasks to Real Professional Tasks

Teachers can use simple statements to help students connect classroom learning with careers. For example:

- "When you debug your code, you're doing exactly what a software tester does."
- "Your teamwork in this project mirrors how cybersecurity teams operate in real companies."
- "Creating surveys and analyzing results is what data scientists do."
- "Your design choices reflect what UX designers think about every day."

These mappings help students—especially girls—see ICT not as distant but as already within their reach.

5. Stereotype-Free Language Around ICT Careers

Teachers must avoid language that reinforces:

- ICT as "for the naturally gifted"
- ICT as requiring exceptional talent
- ICT as better suited for boys
- ICT as purely technical rather than creative

Instead, teachers should emphasize:

- ICT as a tool for improving society
- ICT as interdisciplinary
- ICT roles varying widely in required skills
- ICT pathways being open to all learners who enjoy problem-solving

Reflection elements

> **Reflection insights**
>
> • Which ICT careers do your students typically mention? Which ones do girls mention less often?
>
> • Do students understand the transversal skills they are building during ICT activities?
>
> • Which messages about ICT careers might unintentionally reinforce stereotypes?

Application to practice (can be used for self-learning)

Teachers choose one ICT career area (e.g., data science, cybersecurity, digital design) and create a short classroom activity linking a project task to a professional responsibility in that field.

Alternative exercise/assignment: Prepare a 10-minute mini-lesson introducing students to at least three ICT professions. Highlight transversal skills and avoid gendered assumptions.

Possible exercise for teachers to do themselves or with their students:

- Create a visual map linking ICT project tasks to transversal skills (e.g., coding → problem-solving; presenting → communication).
- Ask students to reflect on which ICT tasks they enjoy and connect these to possible ICT career pathways.
- Draft three stereotype-free messages to describe ICT careers to students.
- Identify transversal skills strengthened in a recent ICT activity and explain them to students.
- Develop a short "career spotlight" activity featuring multiple ICT professions without gendered examples.

Suggested materials/resources

- ESCO (European Skills, Competences, Qualifications and Occupations): Use ESCO's searchable database of ICT occupations to introduce students to digital job families, emerging tech roles, and transversal competences linked to each ICT profession.
- UNESCO & ITU – Digital Skills Frameworks (e.g., Digital Skills for Jobs Campaign): Provides teacher-friendly charts showing which skills (problem-solving, data literacy, cybersecurity fundamentals) map to different ICT pathways.
- EU Code Week – Career Spotlight Videos & Classroom Materials: Offers short videos of digital professionals explaining their work in accessible, student-friendly language, plus teacher packs linking activities to real ICT roles.
- European Schoolnet (EUN) – Future Classroom Lab Resources: Contains scenarios and lesson ideas that show how classroom ICT tasks can be connected to real-world digital jobs.
- OECD – 21st Century Skills and ICT Work Briefings: Useful for showing transversal skills required across the digital sector (collaboration, creativity, resilience, communication).

- Women in Digital Scoreboard (European Commission): Provides data visualizations on women's participation in digital careers; helpful for stereotype-free discussions rooted in evidence.
- Industry Career Maps (e.g., Cisco Networking Academy, IBM SkillsBuild): Provide free, beginner-friendly career pathway maps for networking, cybersecurity, AI, design thinking, cloud computing — ideal for classroom career exploration.

Unit 4. Using Female Role Models & Real-World Examples in ICT Teaching

Duration

25 minutes (guided learning).

Purpose

To equip teachers with strategies to integrate diverse, stereotype-free ICT role models and real-world examples into teaching, helping girls visualise themselves in ICT fields, strengthen their confidence, and understand the social relevance of ICT professions.

Core content

Role models are one of the most powerful influences on girls' ICT aspirations. They help girls form a mental model of "someone like me" working in ICT—an essential antidote to persistent cultural stereotypes. However, role-model integration must be intentional, relatable, and manageable for teachers. This unit provides practical guidance for embedding women and other diverse ICT professionals naturally into ICT learning. *(Note: this unit can be useful to support planning and preparing implementation for the mentoring circles).*

1. Why Role Models Matter

Exposure to role models:

- Increases girls' confidence and interest in ICT
- Strengthens girls' belief that they can succeed
- Counters stereotypes about ICT being male-dominated
- Humanizes ICT by showing the people behind the technology
- Makes ICT feel more accessible and less abstract

Research shows that **realistic, relatable role models** are often more influential than high-profile figures whose paths feel unattainable.

2. Types of Role Models

Teachers don't need personal connections to female ICT professionals; role models can come from many sources:

- Local professionals (from schools' networks, local companies)
- Older students who have done advanced ICT work
- Alumni from previous years
- Virtual role models via videos, interviews, podcasts
- Social media campaigns featuring women in ICT
- Characters drawn from books, articles, case studies

The key is to ensure diversity in ethnicity, socioeconomic background, interest fields, personality types, and roles.

3. Criteria for Gender-Responsive Role Models

Good role models should:

- Show realistic journeys (success + struggle + perseverance)
- Represent diverse pathways into ICT
- Use accessible, jargon-free language
- Highlight transversal skills and real-world impact
- Avoid portraying ICT professionals as "geniuses" or "exceptional anomalies"

Girls need to hear: "You don't have to be the best in maths to work in ICT. You need curiosity, creativity, and persistence."

4. Embedding Real-World ICT Examples in Teaching

Real-world examples are crucial for connecting ICT concepts to the broader world. These include:

- Case studies of apps designed for social impact
- Examples of ICT used in environmental work, healthcare, journalism, or accessibility
- Stories of ICT solutions created by women
- News articles about AI, cybersecurity, robotics, or digital ethics
- Problem scenarios (e.g., "A hospital needs to store patient data securely—how could ICT help?")

Teachers can use:

- Short videos (1–3 minutes)
- Infographics
- Before/after stories of ICT solutions
- Quotes from ICT professionals

5. Preparing Students to Interpret Role-Model Stories

To maximize impact:

- Avoid technical jargon or overly complex explanations
- Highlight transversal skills ("She collaborated with a team…")
- Connect role-model stories to classroom tasks ("This is like the debugging you do in class")
- Use reflection prompts:
    - "What part of her story surprised you?"
    - "What skills did she use?"
    - "What problem was she trying to solve?"
    - "Can you imagine doing a similar project?"

Students should see ICT as something they *can* do—not something "other people" do.

Reflection elements

> **Reflection insights**
>
> • Which ICT role models have students been exposed to so far? Are they diverse and relatable?
>
> • What implicit messages might girls receive from the ICT examples used in your lessons?
>
> • Do role model stories focus only on success, or do they also normalise challenge, mistakes and persistence?

Application to practice (can be used for self-learning)

Teachers identify at least two female ICT role models:

- Role models from the community/from their network of contacts: Ask them to apply to the LeadHER call for role models or invite them to participate in the mentoring circles to be organised by LeadHER.
- "Virtual" role models (i.e. public figures, someone that teachers don't know personally but who can be a reference): Integrate them into an upcoming ICT lesson. Prepare a short introduction connecting each role model to specific classroom tasks or transversal skills.

Possible additional exercise (for teachers to do themselves or with their students):

1. Select a role model profile and rewrite it to be more inclusive, accessible and motivational for students aged 10–16.

2. Create a short "role model spotlight" slide featuring a non-stereotyped ICT professional and link their work to skills practiced in class.

3. Draft a mini-case study based on a real ICT scenario (e.g., designing an app, cybersecurity challenge, data analysis task).

4. Identify stereotype-free messages to use when presenting ICT role models ("Anyone can develop digital solutions", "ICT careers involve creativity, teamwork and problem solving").

5. Plan a short discussion prompt: "What problems do ICT professionals solve, and how does this relate to our project?"

Suggested materials/resources

- Inspiring Girls International – STEM Role Model Library: Free database of short videos featuring female professionals explaining their career stories in accessible language.
- UNESCO – Cracking the Code: Girls' and Women's Education in STEM: Provides evidence-based explanations of what makes role-model interventions effective and how to avoid "superhero" stereotypes.
- European Institute for Gender Equality (EIGE) – Gender & ICT Indicators: Offers data insights and narratives about women in the digital economy, useful to contextualize role-model stories.
- EU Code Week – "Meet the Digital Makers" Stories: Short, student-friendly profiles of creators, designers, coders, and innovators across Europe.
- Tech She Can – Tech She Can Classroom Videos: Professionally developed videos showing young women in varied tech roles, designed for school use.

Unit 5. Communication & Messaging that Counter Stereotypes About ICT Careers

Duration

25 minutes (guided learning).

Purpose

To help teachers use communication strategies that counter gender stereotypes, present ICT careers in inclusive ways, and strengthen girls' sense of identity, confidence, and belonging in ICT learning and future digital pathways.

Core content

Teacher communication—the words, tone, and micro-messages used in the classroom—has a profound influence on girls' ICT identity, confidence, and long-term choices. Many stereotypes are not openly expressed; instead, they appear subtly in feedback, task assignment, reactions to mistakes, and the way ICT careers are described. This unit helps teachers recognize and reshape communication habits to build identity-safe ICT environments.

1. Understanding Stereotype Formation

Stereotypes about ICT begin early in childhood and may include beliefs such as:

- Coding is for boys
- Boys are "naturally better" at technology
- ICT is too difficult, too mathematical, or too abstract
- ICT professionals work alone and have limited social impact

These stereotypes shape:

- Who volunteers
- Who takes technical risks
- Who chooses ICT subjects
- Who persists after failure

Teachers play a central role in interrupting this cycle.

2. Language Patterns That Reinforce or Counter Gender Bias

Unintentional micro-messages include:

- Calling on boys first during technical questions

- Praising boys for technical competence but praising girls for neatness or effort
- Saying "He can fix it" when a technical issue arises
- Allowing students to self-select tasks that reproduce gender patterns

Inclusive alternatives include:

- Rotating who answers questions
- Praising problem-solving strategies
- Encouraging girls to take the keyboard during coding tasks
- Using neutral examples ("A programmer recently designed…")

3. How Teacher Communication Shapes ICT Identity

Identity-safe communication:

- Normalizes mistakes
- Emphasizes growth mindset
- Frames ICT as creative and collaborative
- Highlights diverse strengths ("You explained that very clearly," "Your idea is original," "You approached this logically")
- Encourages belonging ("Everyone can learn ICT skills")

Teachers must ensure that girls hear messages that align them with ICT, not distance them from it.

4. Practical Messaging Strategies for Inclusive ICT

Teachers can use phrases such as:

- "ICT is about solving problems that matter."
- "Every project need collaboration, creativity, and persistence."
- "We are all still learning debugging is part of the process."
- "Your perspective is important in this project."

Avoid messages like:

- "This is easy—why can't you do it?"
- "This task is more technical—maybe someone else can try."
- "Boys usually enjoy this part more."

5. Using Classroom Narratives, Framing & Micro-Messages

Narratives are powerful:

- Describe ICT professionals as collaborative problem-solvers
- Share stories of diverse teams building meaningful solutions
- Highlight empathy, creativity, and social purpose

Micro-messages should convey:

- High expectations for everyone
- Assurance that discomfort or confusion is part of learning
- Recognition of diverse talents
- Encouragement to persist

Reflection elements

> **Reflection insights**
> • Which other phrases or reactions might unintentionally reinforce ICT stereotypes?
> • What messages do students hear about "who is good at ICT" in your classroom?
> • How can communication strengthen girls' motivation and agency?

Application to practice (can be used for self-learning)

Teachers review their communication patterns and redesign instructions, feedback phrases, and project framing to ensure inclusive, stereotype-free messaging in ICT lessons. Suggested steps:

1. Record (audio or notes) a segment of ICT teaching.
2. Identify examples of inclusive and non-inclusive communication.
3. Rewrite common teacher feedback statements with non-inclusive examples and/or gender bias.

Possible additional exercises (for teachers to do themselves or with their students):

- Develop three short classroom messages that present ICT careers as diverse and socially relevant.
- Analyse a lesson plan/resources to identify hidden stereotypes and revise it.

Suggested materials/resources

- UN Women – Gender Stereotype Toolkit for Educators: examples of stereotype- reinforcing vs. stereotype-challenging language in educational contexts.
- OECD – The ABC of Gender-Sensitive Education: Offers behavioural, communication, and language strategies teachers can apply to reduce unconscious gender bias.
- Institute of Physics (UK) – Improving Gender Balance in Schools Resource Pack: Contains classroom communication strategies proven to reduce stereotype-driven participation gaps in STEM subjects.
- Project Implicit – Implicit Bias Self-Assessment Tools: Helps teachers understand how unconscious bias influence communication, expectations and micro-messages.
- European Schoolnet – Digital Citizenship & Online Identity Modules: Supports teachers in framing ICT as collaborative, ethical, and creative rather than stereotypically "technical."

Self-learning activities (2h):

This module includes 2 hours of autonomous learning activities to deepen teachers' understanding of inclusive ICT projects, career orientation and the role of positive role models. In each Unit of the guided learning presented above, there are suggestions of exercises/practical applications that can be used as self-learning activities. Additionally, the following self-learning activities are suggested for Module 5:

- Review 1–2 inclusive ICT project examples and identify elements that enhance girls' motivation and participation.
- Watch a recorded short talk by a digital professional and note how transversal skills are presented.
- Analyse a recent ICT lesson you taught and identify at least three improvements using Module 5 principles.
- Read a short article or case study about gender-responsive STEM practices and extract five actionable insights.
- Draft a list of ICT career pathways relevant to your students and connect each to one transversal skill.
- Prepare a short role-model introduction script for classroom use.
- Draft a plan for your school's first LeadHER mentoring circle, including objectives, potential mentors, topics and activities for the first session.

These activities can be used by the trainer to create assignments for teachers attending the course. The outputs of these assignments can be used by the trainer as elements of evaluation.

Training materials

Please check the "**Module 5**" support materials on the LeadHER Teaching Framework webpage.

Additional resources

ESCO (European Skills, Competences, Qualifications and Occupations): Provides a comprehensive classification of ICT careers and skills across Europe, supporting alignment with career orientation activities.

European Schoolnet – Future Classroom Lab: Offers innovative teaching scenarios and classroom practices linking digital learning to real-world applications and competencies.

Women in Digital Scoreboard (European Commission): Provides data and visual insights on women's participation in ICT, useful for raising awareness and supporting evidence-based discussions in class.

Inspiring Girls International – STEM Role Model Platform: Features real-life role model stories and resources that help students relate to diverse female professionals and broaden career aspirations.

Institute of Physics – Improving Gender Balance in Schools: Provides research-based strategies to promote gender-inclusive participation and address bias in STEM education.

EU Code Week – Resources and Digital Career Stories: Includes classroom-ready activities, career inspiration materials, and real-life examples of ICT applications developed by diverse professionals.

Module 6. Implementing the LeadHER Mentoring Schemes

General description of the module

1. Module number and title

Module 6. Implementing the LeadHER Mentoring Schemes

2. Primary purpose and objective of the module

This module aims to provide schools and teachers practical guidance for implementing the LeadHER mentoring schemes. It focuses on how to organise mentoring at school level, how to work with mentors and role models, how to prepare safe and meaningful sessions, and how to connect mentoring with ICT learning and career orientation.

The main objective of the module is to help participants plan and facilitate mentoring in a way that is realistic, inclusive, well-structured, and coherent with the wider LeadHER approach. Mentoring is a core component that strengthens girls' self-confidence, sense of belonging in ICT, awareness of future pathways and exposure to women role models in digital fields.

3. Module summary

This module focuses on the practical implementation of the LeadHER mentoring schemes in schools. It introduces the two mentoring models: *Flexible Interactive Groups* for basic education and *Dialogical Spaces* for secondary education, and explains their purpose, target groups, and expected outcomes. It also addresses roles and responsibilities, mentor and teacher preparation, session planning, safe spaces, ethical considerations, links to ICT learning and career orientation, and simple approaches to reflection, monitoring, and follow-up.

4. Duration

Total duration: 3 hours guided learning

Suggested delivery format: Because this module is focused on planning, coordination, facilitation, and school-level implementation, it works best as a guided workshop rather than as an independent self-learning module. It can be delivered face to face, online, or in blended format, but the preferred option is a synchronous workshop in which participants can discuss roles, compare the two mentoring schemes, and begin outlining their own mentoring structure.

5. Prerequisites

No prior mentoring experience is required. The module is suitable for teachers, school staff, mentors, guidance staff, and school leaders who will support or facilitate the LeadHER mentoring schemes. Participants do not need specialist expertise in ICT or gender studies, but they should have a basic understanding of the school context in which the mentoring will take place and a willingness to plan and coordinate mentoring as part of a wider inclusive ICT approach.

Learning objectives

By the end of this module, participants will be able to:

- explain the purpose of the LeadHER mentoring schemes and describe how they support girls' confidence, sense of belonging, and engagement in ICT;
- distinguish between Flexible Interactive Groups and Dialogical Spaces, including their target groups, aims, and interaction styles;
- define the roles and responsibilities of mentors, teachers, and schools in the implementation of mentoring activities;
- outline a basic mentoring structure for their school, including session rhythm, interaction format, safe-space conditions, and key ethical considerations;
- outline a first mentoring session and a simple approach to reflection, monitoring, and follow-up for later improvement.

Core content

Unit 1. The LeadHER mentoring schemes: purpose and expected outcomes

Duration

40 minutes

Purpose

To give participants a clear understanding of the two LeadHER mentoring schemes, their shared purpose, and the differences between them.

Core content

LeadHER uses mentoring to strengthen girls' self-confidence, sense of belonging in ICT, visibility of women role models, and awareness of future educational and career pathways. Mentoring is not treated as a one-off motivational activity. It is part of a broader effort to make girls' engagement in ICT more sustained, meaningful, and connected to real people, real stories, and real possibilities. The

project includes two mentoring schemes, both of which are intended to be implemented in schools – Flexible interactive groups and Dialogical spaces.

Flexible Interactive Groups are designed for girls in basic education

They are short, interactive, exploratory, and curiosity driven. Their main aim is to create positive first encounters with ICT through creativity, collaboration, and supportive participation. These sessions should feel welcoming, light, and engaging. The focus is on curiosity, early confidence-building, and showing girls that ICT can be interesting, accessible, and relevant to them.

Dialogical Spaces are designed for girls in secondary education

They are more structured and dialogue based. Their main aim is to create space for reflection on identity, aspirations, stereotypes, choices, and real-life pathways in ICT. These sessions should encourage questions, honest discussion, and connection between school learning and future possibilities. They are especially important for helping girls see how ICT can relate to studies, work, and socially meaningful careers.

Reflection elements

Reflection insights

Practical exercise: Compare the two mentoring models

Ask participants to work in pairs or small groups and give each pair/group a copy of the table below. Their task is to complete the table and then compare their answers.

Aspect	Flexible Interactive Groups	Dialogical Spaces
Target group		
Main goal		
Type of interaction		
Expected tone of the session		

What are girls expected to gain?		
How the role model contributes to the process?		

Application to practice

This unit gives participants a basis for understanding what exactly the school is expected to implement and how the two mentoring schemes differ in purpose, target group, and style. It helps them prepare for mentoring in a way that is age-appropriate and aligned with the aims of the project.

Suggested materials/resources

- one-page summary of the two mentoring schemes;
- comparison table worksheet;
- short slide deck introducing the two models;
- short role model story or example profile.

Unit 2. Roles, responsibilities, and implementation conditions

Duration

50 minutes

Purpose

To clarify what mentors, teachers, and schools each need to do in order to make the mentoring work well. This block helps participants understand the practical conditions needed for implementation, including preparation, coordination, resources, timelines, and safe implementation at school level.

Core content

Mentoring works best when the adults involved know their role and prepare well. A strong mentoring activity does not depend only on a good role model or a motivated teacher. It depends on how well

the different parts of the process fit together: preparation, coordination, facilitation, communication, and follow-up. The goal is to create an experience that helps girls feel confident, included, and able to connect ICT with real people and real pathways.

Role models and mentors bring personal experience, visibility and inspiration. They help make ICT feel more open and relatable by sharing their own stories, decisions, challenges, and successes. Their role is not to deliver a lecture, but to create trust, encourage dialogue, and show that there are different ways of learning, working, and engaging with technology. They may come from ICT, engineering, digital technologies, STEM, entrepreneurship, education, community work, or other areas where technology plays an important role. Schools can identify role models through local companies, universities, vocational and higher education institutions, parents, former students who have built careers in ICT or related sectors, community organisations, career guidance networks, or existing school partnerships. When preparing the mentoring activities, schools should review the profile, communication style, and availability of potential role models in advance, so they can identify who is best suited to a particular age group, mentoring format, session topic, or type of activity. What matters is not only technical experience, but also the ability to communicate, connect, and inspire girls through authentic and inclusive interaction.

Teachers act as facilitators. They prepare the girls, introduce the purpose of the mentoring, help create a respectful atmosphere, support participation during the session and connect the mentoring to classroom learning and later reflection. Their role is especially important in helping girls feel safe enough to speak, ask questions, and take part actively. Teachers also notice group dynamics, silence, hesitation, and moments where participation may become uneven.

Schools provide the conditions that allow mentoring to happen well. This includes planning the target group, choosing a suitable time and space, coordinating with mentors and partners, communicating clearly, and ensuring that sessions are linked to the wider school context.

Schools also need to decide where the mentoring sessions will be integrated in school life. In practice, the most workable options could be:

1. **Within a regular lesson or class period with the same teacher**

For example: a role model joins the regular ICT lesson, where the teacher introduces the session, supports the interaction and returns to the topic afterwards in class.

2. **Linked to a subject that already uses digital tools or discusses future pathways**

For example: the session is integrated into a science, technology, or career education lesson where digital skills, innovation, or future education choices are already part of the learning.

3. **During sessions for tutoring or guidance**

Example: mentoring could take place during a scheduled tutor or guidance session focused on personal development, aspirations, or educational and career orientation.

4. **As part of project-based or cross-curricular activities**

Example: the sessions can be included in a project week or interdisciplinary activity (like career fair) where girls explore a topic that combines digital tools, teamwork, creativity, and real-life problem-solving.

5. **As a clearly planned extra-curricular activity**

Example: the school organises dedicated mentoring sessions after school or as part of a girls' digital club, moderated by an appointed teacher with the active participation of role models.

A practical recommendation is to organise the sessions within existing school time whenever possible, so that participation does not depend only on girls being available after school. When this is not realistic, the sessions can be offered as extra-curricular activities, but they should still be clearly linked to school learning, reflection, and follow-up.

Schools also need to think about safeguarding, continuity, and simple follow-up. A mentoring session is stronger when it is introduced well, supported well, and followed up afterwards, rather than treated as a disconnected event.

Preparation is a key part of implementation. Mentors need a clear briefing before meeting the girls. They should know the age group, the tone of the session, the expected interaction style, and the practical details. Teachers and schools also need preparation: they need to know how girls will be invited, what kind of support may be needed during the session, and how sensitive topics will be handled if they emerge. Clear preparation makes mentoring more focused, safer, and easier to facilitate.

Key Messages

- Good mentoring depends on clear roles, shared preparation, and realistic coordination.
- Role models contribute personal experience, visibility, and trust-building dialogue.
- Teachers facilitate the session, support participation, and connect mentoring to learning and follow-up.
- Schools provide the practical conditions that make mentoring possible, including planning, communication, safeguarding, and continuity.
- Preparation before the session is essential for quality, safety, and meaningful participation.
- Mentoring works best when no one is expected to carry the whole process alone

Reflection elements

Reflection insights

Practical exercise: Responsibility and readiness map (35min.)

Ask the participants to complete the responsibility map (Part A) and then the readiness check (Part B). Finish with a short discussion on which parts are already clear and which still need planning.

Part A. Responsibility map

Write short notes under the three headings below:

1. **Mentor / role model**
   - What should the mentor prepare?
   - How should the mentor contribute to the session?
   - What should the mentor not be expected to do alone?
2. **Teacher / facilitator**
   - What should the teacher do before the session?
   - What should the teacher do during the session?
   - What should the teacher do after the session?
3. **School / coordination team**
   - What needs to be organised so the mentoring can happen well?
   - What needs to be communicated in advance?
   - What follow-up should the school support?

Part B. Readiness check

Mark each point as ready / partly ready / not yet:

	Ready	Partly ready	Not ready
We know who will participate in the mentoring sessions.			
We know who will facilitate the sessions.			
We know how role models will be briefed.			
We have a suitable space and time slots for the sessions.			
We know how the girls will be prepared.			
We have considered safe-space and safeguarding conditions			
We know how follow-up will happen.			

Application to practice

This unit helps participants move from a general idea of mentoring to a clearer picture of how it can be organised in school reality. It supports planning around roles, preparation, coordination, and safe implementation.

Suggested materials/resources

- responsibility map worksheet;
- short readiness checklist;
- mentor briefing note template;
- one-page role model profile summary.

Unit 3. Structuring mentoring sessions and linking them to learning

Duration

60 minutes

Purpose

To provide a practical basis for planning mentoring sessions, including session rhythm, interaction formats, safe-space considerations, and links to ICT learning and career orientation.

Core content

Mentoring sessions need a structure that is clear, realistic, and appropriate for the age group. Schools need to think about how many sessions they want to organise, how often they can take place, how long they should last, and what kind of interaction will work best. A good structure gives enough guidance to support the session, but still leaves room for dialogue, curiosity, and real participation.

For Flexible Interactive Groups…

… the structure should usually be shorter, more exploratory, and more active. A useful session may include a welcome, a simple curiosity-based prompt, a short personal story or example from the role model, one interactive moment, and a short closing reflection. The atmosphere should feel supportive, low-pressure, and confidence-building. These sessions are especially useful for helping younger girls enjoy positive first encounters with ICT and feel that technology is something they can explore.

For Dialogical Spaces…

… the structure can include more reflection and discussion. A useful session may include an opening with clear ground rules, a brief introduction by the role model, guided dialogue on learning, identity, stereotypes, work, or pathways, time for girls' questions, and a short closing reflection. These sessions should give girls space to think, ask, compare, and connect what they hear to their own future possibilities.

The format of interaction matters as much as the topic. Useful forms of interaction may include **storytelling, guided questions, small-group discussion, short prompts, reflection cards, or a simple hands-on or curiosity-based activity.** The mentor's role is to support connection and dialogue, not only to provide information. Sessions are stronger when girls feel that they are part of the conversation and not just listening from the side. It is also helpful to vary the interaction so that participation does not depend only on confidence in speaking in front of a whole group. Pair discussion, written prompts, or short reflection moments can help more girls take part.

Safe-space conditions are an essential part of session design. Girls are more likely to participate when they feel respected, listened to, and free to ask questions without embarrassment. This means paying attention to tone, turn-taking, silence, uneven participation, and the possibility that sensitive topics may emerge. Safe and inclusive facilitation should make it easier for girls to speak, not harder. Before the session, teachers and mentors should think about simple ground rules, how to invite participation without pressure, and how to respond if the discussion touches on confidence, exclusion, stereotypes, or difficult experiences. A well-facilitated session should feel open and supportive, but also clearly bounded and age appropriate.

Mentoring sessions should also connect to **ICT learning and career orientation.** This does not mean turning the session into a technical lesson. It means helping girls connect what they hear to school learning, digital skills, real forms of work, and different future pathways. When girls can see that ICT connects to creativity, teamwork, problem-solving, communication, and social value, the field becomes easier to imagine as relevant and open. Mentoring is especially powerful when it helps girls link present learning to future possibility in a realistic and motivating way. This can happen through examples from the role model's own experience, through questions about how digital skills are used in real life, or through discussion of how school learning may connect to future choices.

The mentoring session structure should also leave space for a simple closing and a next step. Girls should leave the session with one clear idea, one reflection, or one question to think about further. The school should also know how the session will be linked to later reflection, classroom discussion, or the next mentoring step. A good mentoring session is not only well delivered in the moment; it also creates a useful bridge to what comes next.

Key Messages

- Mentoring sessions need a clear, realistic, and age-appropriate structure
- Flexible Interactive Groups should be shorter, more exploratory, and more active
- Dialogical Spaces should allow more dialogue, reflection, and questions about future pathways
- The format of interaction matters as much as the topic: girls should feel part of the conversation, not only listeners
- Safe-space conditions are essential for meaningful participation
- Mentoring is stronger when girls can connect the session to ICT learning, role models, and future study or career possibilities
- A simple and well-planned session is more effective than a long or overloaded one

Reflection elements

💭 Reflection insights

Practical exercise: Mentoring session and cycle planning CANVAS

Ask participants to work in pairs or school teams. Each pair/team chooses Case A or Case B and their task will be to prepare the outline of one real mentoring session for their school. After they are done, they briefly present their session outline to the group.

Case A. Flexible Interactive Groups

A primary school wants to organise its first mentoring session with a group of girls in basic education. The school has 35 minutes, one teacher-facilitator, and one role model. The girls have some experience using digital tools at school, but they have not taken part in mentoring before.

Case B. Dialogical Spaces

A secondary school wants to organise its first mentoring session with a group of girls in secondary education. The school has 50 minutes, one teacher-facilitator, and one role model. The girls are old enough to discuss stereotypes, confidence, future choices, and ICT careers. Participants have to complete the planning sheet below:

Place in the school programme:

Where will the mentoring session take place in practice? (regular lesson / tutor or guidance session/ project-based work / extra-curricular activity / other)

Session goal: What should the girls gain from this session?

Length of the session: How long will it last?

Resources: What is needed to organise the session successfully?

Opening: How will the teacher introduce the session and help girls feel comfortable?

Role model contribution: What kind of personal story, experience, or example will the role model share?

Main interaction: What will the girls do during the session?

Teacher support during the session: What will the teacher do to support participation and keep the session inclusive?

Safe-space condition: What could be the simple rules or conditions that will help girls feel respected and able to speak?

Link to ICT learning: How does this session connect to what the girls learn in school?

Link to future pathways: How will the session help girls think about possible future study or career options?

Closing: How will the session end? What one question, reflection, or short follow-up will be used?

Application to practice

This unit aims to help participants prepare the outline of a first mentoring session for their own school context. It brings together the main practical elements of mentoring design — age group, session goal, interaction type, role model contribution, teacher support, safe-space conditions, and links to ICT learning and future pathways — and turns them into a realistic first step for implementation.

Suggested materials/resources

- first-session planning sheet with Case A and Case B;
- short one-page overview of the two mentoring schemes;
- session outline template

Unit 4. Reflection, monitoring and follow-up

Duration:

30 minutes

Purpose:

To help participants think about how mentoring will be reviewed, improved, and connected to school follow-up over time.

Core content

Mentoring becomes more useful when schools give some attention to what happens after the session, not only during it. A good mentoring activity may create interest, confidence, or reflection in the moment, but its value becomes stronger when schools take a little time to notice how the girls responded, what was meaningful for them, and what should be kept or improved next time. Reflection and follow-up help mentoring become part of an ongoing school process rather than a one-time event.

Follow-up does not need to be complicated. Schools do not need long reports or heavy evaluation procedures. What is more useful is a short and regular practice of noticing, recording, and adjusting. This may include a brief teacher reflection after the session, a short exchange with the mentor or role model, one simple response from the girls, and one follow-up step linked to learning, discussion, or future orientation. These small actions help schools understand whether the mentoring format is working well and how it can be strengthened over time.

A useful reflection process can focus on a few practical questions:

> 💭 **Reflection insights**
>
> - Did the session happen as planned?
> - Did the girls participate actively and feel comfortable?
> - What seemed to spark curiosity, confidence, or meaningful discussion?
> - Did the mentor's story and way of interacting fit the age group?
> - What should be changed or clarified before the next session?

These questions are simple, but they help schools move from general impressions to more useful observations. They also make it easier to notice whether the session supported the goals of mentoring: confidence, belonging, role-model visibility, and future orientation.

Monitoring can also help schools see patterns across sessions. For example, it may become clear that girls participate more actively in smaller groups, that they respond more openly to certain types of role model stories, or that they need more preparation before discussing identity, stereotypes, or future choices. Monitoring is therefore not only about "checking results." It is also about learning what format, tone, and follow-up make mentoring more effective in a particular school context.

Follow-up is especially important when mentoring is meant to connect to ICT learning and career orientation. Girls may leave a session with new questions, stronger interest, or a different image of what ICT can be. If the school creates no space to return to those thoughts, part of the value may be lost. A short classroom discussion, a reflection prompt, a link to a digital project, a follow-up question about future pathways, or a later conversation with the teacher can help girls process the experience and connect it to their own learning and aspirations.

This is also where schools can begin improving their mentoring work from one round to the next. A simple note on what worked, what needs adjusting, and what should be repeated is enough to make the next session more focused and more responsive to the girls' needs. In this way, reflection, monitoring, and follow-up become practical tools for quality, continuity, and improvement.

Example of follow-up template for mentoring sessions

1. What do we want to notice after each mentoring session?

Choose 3–5 points, for example:

- girls' level of participation;
- whether the atmosphere felt safe and respectful;
- whether the girls asked questions or engaged in dialogue;
- whether the session helped build confidence, curiosity, or connection to ICT;
- whether the mentor's input matched the age group well.

2. When will feedback be collected?

Choose a realistic timing:

- immediately after the session;
- later the same day;
- in the next lesson;
- after the full mentoring cycle.

3. What simple tools will we use?

Decide which tools are realistic for your school context, for example:

- a short teacher reflection note;
- one quick mentor feedback sheet;
- one short participant prompt for the girls;
- one session log;
- one short follow-up discussion in class.

4. What follow-up will happen after the session?

Write one or two realistic follow-up steps, for example:

- a short classroom discussion;
- a reflection question linked to ICT learning;

- a prompt about future pathways or role models;
- one short school-level note for the next mentoring session.

5. How will we use what we learn?

Write one sentence on how the school will use this feedback:

- to adjust the next session;
- to support future planning;
- to strengthen links to learning and career orientation;
- to improve participation and inclusion.

Key Messages

- Mentoring becomes stronger when schools give attention to what happens after the session, not only during it.
- Reflection and follow-up help schools understand how girls responded, what felt meaningful, and what should be improved next time.
- Monitoring does not need to be complex; short and regular notes are often enough to support learning and adjustment.
- Teachers, mentors, and girls can each offer useful feedback from different perspectives.
- Follow-up is especially important when mentoring is meant to support confidence, belonging, ICT learning, and future orientation over time.

Reflection elements

💭 Reflection insights

Planning discussion questions for reflection, monitoring, and follow-up

Before the mentoring sessions begin, schools and teachers need to agree on how they will review the sessions afterwards, what they want to notice, what kind of feedback they want to collect and how this information will be used to strengthen future implementation. Use the questions below to guide a group discussion and final recap on how reflection, monitoring, and follow-up will be organised in each school context.

- What do we want to notice after each mentoring session?
- What signs would show that the session supported confidence, curiosity, participation, or reflection?
- What should teachers pay attention to during and after the session?
- What kind of feedback would be useful to collect from the girls?
- What kind of feedback would be useful to collect from the mentor or role model?

- When should reflection or feedback be collected: immediately after the session, later the same day, or in the following lesson?
- What simple tools would be realistic for our school context: a short teacher note, a mentor feedback sheet, a participant prompt, or a session log?
- What kind of follow-up would help the girls reflect on the experience afterwards?
- How can mentoring follow-up connect to ICT learning, digital skills, or future study and career pathways?
- How will the school use what it learns from one session to improve the next one?

Application to practice

This block helps participants prepare, in advance, how mentoring will be reviewed and followed up in their school. It supports practical decisions about what to observe, how simple feedback can be collected, and how mentoring can connect to later learning, discussion, and improvement.

In addition to the reflection and monitoring tools suggested in this module for school use, schools and teachers involved directly in the LeadHER project implementation will also be asked to use additional evaluation and impact-assessment tools prepared for the WP4 piloting phase. These project-specific tools are intended to support piloting, evaluation and refinement of the overall Teaching Framework throughout the project cycle and will be used alongside the school-level reflection tools suggested here not instead of them.

Part III.

DigiSphere Programme for Families & Communities

1. About LeadHER and the DigiSphere Programme

This guide presents the LeadHER DigiSphere Programme and offers practical support for planning, adapting, and delivering activities that engage families and communities in promoting girls' digital literacy, confidence, inclusion, and awareness of ICT-related studies and careers. It is written for schools, school clusters, associations, NGOs, youth organisations, municipalities, libraries, makerspaces, and other organisations working with families and young people, and can be used both for stand-alone activities and for more structured local action plans.

The DigiSphere Programme is the family and community strand of LeadHER. It addresses the socialization gap that influences girls' ICT aspirations through family norms, media narratives, community expectations, and uneven access to role models, information, and support. DigiSpheres work on the idea that girls' digital confidence and career choices are shaped not only in classrooms, but also in homes, peer groups, neighbourhoods, and local opportunity structures.

The programme is designed to be flexible. It can be used in two complementary ways:

- As a menu of stand-alone activity models, when an organisation wants to run one or two targeted activities;
- As the basis of an action plan, when a school or community organisation wants to organise a more coherent intervention over a term or a school year.

Although schools are a primary setting, the DigiSphere approach is transferable to other contexts, including youth centres, NGOs, associations, municipalities, libraries, makerspaces, and community projects.

Working definition

A DigiSphere action is any structured activity that involves families and/or the wider community in promoting girls' digital literacy, confidence, inclusion, and awareness of ICT-related studies and careers.

DigiSphere activities should go beyond passive dissemination. They should create opportunities for dialogue, participation, reflection, practical experience, and behaviour change.

2. Objectives and intended users

Objectives	Who can use these guidelines
Raise awareness among parents, caregivers, and community leaders.	Schools and school clusters

Challenge gender stereotypes and common misconceptions about girls and technology.	Associations, NGOs, and youth organisations
Strengthen family support for girls' digital learning and career exploration	Municipalities and local development actors
Promote safe, inclusive, and gender-responsive digital environments	Libraries, community hubs, and makerspaces
Build coherent school-community ecosystems around girls' participation in ICT	Any organisation working with families and young people

3. Design principles for DigiSphere actions

The quality of a DigiSphere action depends less on scale than on coherence. Small, well-designed activities can be powerful when they are inclusive, practical, and connected to the realities of girls and families.

Principle	What it means in practice
Whole-ecosystem approach	Work with girls, families, staff, alumni, employers, and community actors rather than isolating one group
Gender-responsive design	Challenge stereotypes explicitly, use non-sexist language and imagery, and make girls' participation visible and legitimate
Participation over one-way communication	Prefer dialogue, reflection, co-creation, and hands-on activities over lectures alone
Practical relevance	Connect ICT to everyday life, wellbeing, creativity, and real educational and professional pathways
Accessibility and inclusion	Use affordable formats, flexible timing, clear language, multilingual support where needed, and accessible venues
Safety and care	Address digital wellbeing, online safety, and respectful participation; clarify referral routes and school protocols when relevant
Local adaptability	Adapt activities to age group, setting, local labour market, available partners, and cultural context
Continuity	Create bridges between single activities, school routines, and other LeadHER components such as teacher development and mentoring

4. Programme architecture and recommended mix

A balanced DigiSphere action plan should combine four functions. Organisations do not need to use every activity model, but they should aim for a mix that informs, connects, creates practical experience, and sustains engagement over time.

Inform
Share evidence, challenge myths, and introduce ICT opportunities

Connect
Create dialogue between girls, families, staff, mentors, and community actors

Experience
Offer practical, creative, and visible encounters with technology and careers

Sustain
Build regularity, follow-up, and links with school and community systems

Recommended minimum mix for a structured action plan

- At least one awareness-oriented activity for families or caregivers;
- At least one practical or creative activity in which girls and adults do something together;
- At least one career or role-model activity that makes pathways visible;
- At least one follow-up element, such as recurring messages, mentoring, or a public showcase.

Classification by intensity and resource needs

Level	Typical characteristics	Examples
Low	One-off or short actions; limited coordination; easy to repeat; suitable for starting engagement.	A1, A2, A3, A5, A10, A11, A12
Medium	Require facilitation, preparation, or one or two partners; create deeper engagement or visible outputs.	A4, A6, A13, A14, A15
High	Multi-session or multi-actor interventions; stronger planning and coordination needs; high potential for wider impact.	A7, A8, A9

5. Summary of the 15 activity models

The matrix below is intended as a planning aid. Each model can be delivered on its own or combined with others in a broader pathway.

Activity model	Main purpose	Typical format	Level
A1. Parent/ caregiver awareness session on girls and ICT	Raise awareness about gender equality in ICT and the role families play in shaping girls' aspirations.	60-90 minute in-person or online session with myths/facts, examples, discussion, and take-home tips.	Low / Low
A2. Digital content pack for families	Maintain regular contact with families through short, usable content that challenges myths and shares opportunities.	Series of short videos, school social media posts, WhatsApp messages, newsletters, or digital tip cards.	Low / Low
A3. Family dialogue circle on stereotypes and expectations	Create safe intergenerational dialogue about gender norms, school experiences, and family expectations related to technology.	Small-group facilitated conversation using prompts such as favourite childhood toys, career memories, or 'messages I heard growing up'.	Low / Low
A4. Alumni and women role-model testimony session	Provide nearby, believable role models who make ICT pathways visible and relatable.	60-90 minute testimony and Q&A session with former students, women professionals, apprentices, or local entrepreneurs.	Medium / Medium
A5. Career kit consultation and guided exploration	Help girls and families discover the diversity of ICT-related studies, jobs, and progression pathways.	Guided session using printed or digital career cards, profiles, videos, local labour-market examples, and reflection questions.	Low / Low
A6. Family ICT taster workshop	Build confidence through hands-on experience that girls can enjoy together with parents or caregivers.	90-120 minute coding, robotics, maker, app, media, or digital creativity workshop for girls and family members.	Medium / Medium
A7. Vocational guidance week with a dedicated family day	Embed DigiSphere content in a broader school career programme and give families a visible place within it.	Multi-day school event including talks, stands, class activities, and one family-focused afternoon or evening.	High / High
A8. Peer mentoring scheme for basic education girls	Support younger girls through close-to-peer role modelling and early confidence-building.	High school girls mentor younger girls during tutoring time or special sessions, ideally combining a mentoring	High / Medium

		conversation with one collaborative workshop.	
A9. Expert and alumni mentoring pathway for secondary girls	Support identity formation, educational choices, and career planning during a decisive stage.	Series of 3-4 sessions across the year with women professionals, alumni, guided reflection, and optional follow-up tasks.	High / Medium
A10. Digital wellbeing and responsible technology use session for families	Address family concerns about screen time and technology by framing ICT as something to be used critically, safely, and constructively.	Workshop or conversation on digital habits, self-regulation, healthy routines, and the role of adults in modelling balanced use.	Low / Low
A11. Media influence and digital identity workshop	Help families and young people analyse how online content shapes gender roles, self-image, and perceptions of who belongs in tech.	Interactive workshop using examples from social media, videos, music, games, influencers, or advertising.	Low / Low
A12. Digital safety, cyberbullying, and online gender-based violence workshop	Increase awareness of risks while building shared prevention and response strategies between school and families.	Workshop, tutorial session, or parent forum on cyberbullying, hate speech, online harassment, reporting, and support routes.	Low / Low
A13. Creative campaign against bullying and exclusion	Turn awareness into visible collective action and give girls and families a public voice.	Co-created campaign such as T-shirt design, patchwork blanket, posters, photo stories, city walk, or online exhibition.	Medium / Medium
A14. Inclusive game, app, or challenge co-design activity	Show that technology can be used to create inclusive solutions and that girls' perspectives matter in design.	Short challenge or workshop in which students and families co-design a simple game, app concept, storyboard, or prototype about inclusion.	Medium / Medium
A15. Community voices and public showcase event	Open the conversation beyond the school and build a visible school-community ecosystem around girls and ICT.	Street interviews, speed interviews, municipal dialogue, public exhibition, school-community fair, or local showcase of student and family work.	Medium / Medium

6. Detailed activity models

The descriptions below are modular. Organisations can shorten, combine, or expand them depending on age group, time, and available partnerships.

A1. Parent/caregiver awareness session on girls and ICT

INTENSITY	RESOURCES	BEST FIT
Low	Low	Stereotypes, low awareness, limited family encouragement

Purpose: Raise awareness about gender equality in ICT and the role families play in shaping girls' aspirations.

Suggested format: 60-90 minute in-person or online session with myths/facts, examples, discussion, and take-home tips.

Implementation notes: Use accessible language and concrete examples rather than abstract concepts. Include reflection on everyday messages girls receive about technology. Close with 3-5 practical actions families can take at home.

Useful partners: School leadership, counsellor, women-in-tech association, NGO facilitator

A2. Digital content pack for families

INTENSITY	RESOURCES	BEST FIT
Low	Low	Information gap, weak continuity between activities

Purpose: Maintain regular contact with families through short, usable content that challenges myths and shares opportunities.

Suggested format: Series of short videos, school social media posts, WhatsApp messages, newsletters, or digital tip cards.

Implementation notes: Content can include myth-busting messages, role-model stories, local opportunities, and prompts for family discussion. Translate or adapt messages for the communication channels families already use. Treat this as an engagement tool, not as a substitute for interactive activities.

Useful partners: Communication team, teachers, student media club, community partners

A3. Family dialogue circle on stereotypes and expectations

INTENSITY	RESOURCES	BEST FIT
Low	Low	Family expectations, hidden stereotypes, weak dialogue

Purpose: Create safe intergenerational dialogue about gender norms, school experiences, and family expectations related to technology.

Suggested format: Small-group facilitated conversation using prompts such as favourite childhood toys, career memories, or 'messages I heard growing up'.

Implementation notes: Invite mothers or other caregivers to share how they have broken stereotypes and what support mattered to them. Use simple prompts, visual cards, or sticky notes so adults and young people can contribute equally. Finish with a shared family commitment or a 'one thing we will change' statement.

Useful partners: Teachers, mediators, family associations, parent representatives

A4. Alumni and women role-model testimony session

INTENSITY	RESOURCES	BEST FIT
Medium	Medium	Lack of role models, low self-efficacy, low career awareness

Purpose: Provide nearby, believable role models who make ICT pathways visible and relatable.

Suggested format: 60-90 minute testimony and Q&A session with former students, women professionals, apprentices, or local entrepreneurs.

Implementation notes: Select speakers with diverse profiles, not only high-status technical roles, so girls and families see multiple entry points into ICT. Prepare guiding questions that connect study choices, obstacles, support received, and current work. This model can link naturally with mentoring and vocational guidance activities.

Useful partners: Alumni, local SMEs, universities, professional associations

A5. Career kit consultation and guided exploration

INTENSITY	RESOURCES	BEST FIT
Low	Low	Narrow image of ICT careers, limited decision-making support

Purpose: Help girls and families discover the diversity of ICT-related studies, jobs, and progression pathways.

Suggested format: Guided session using printed or digital career cards, profiles, videos, local labour-market examples, and reflection questions.

Implementation notes: Career kits can be used in tutoring, open days, library corners, family evenings, or community centres. Highlight different profiles: creative, technical, collaborative, social-impact, entrepreneurship, and support roles. Pair the consultation with a simple worksheet on interests, strengths, and next steps.

Useful partners: Career counsellor, VET providers, employers, youth workers

A6. Family ICT taster workshop

INTENSITY	RESOURCES	BEST FIT
Medium	Medium	Low practical exposure, low family confidence, limited positive experiences

Purpose: Build confidence through hands-on experience that girls can enjoy together with parents or caregivers.

Suggested format: 90-120 minute coding, robotics, maker, app, media, or digital creativity workshop for girls and family members.

Implementation notes: Keep activities short, playful, and success-oriented, especially for adults who may feel insecure about technology. Arrange mixed participation carefully so girls remain active doers rather than passive observers. Low-cost options include unplugged coding, storytelling with digital tools, or simple block-based platforms.

Useful partners: Teachers, VET students, makerspaces, libraries, tech volunteers

A7. Vocational guidance week with a dedicated family day

INTENSITY	RESOURCES	BEST FIT
High	High	Fragmented guidance, weak family participation, low visibility of ICT pathways

Purpose: Embed DigiSphere content in a broader school career programme and give families a visible place within it.

Suggested format: Multi-day school event including talks, stands, class activities, and one family-focused afternoon or evening.

Implementation notes: This model can place DigiSphere inside an existing vocational guidance week or school guidance calendar. Use different formats across the week: role-model talks, mini-workshops, career kit consultation, and family dialogue. Strong coordination is needed, but the format can create school-wide visibility and legitimacy.

Useful partners: School leadership, counsellors, employers, higher education, families

A8. Peer mentoring scheme for basic education girls

INTENSITY	RESOURCES	BEST FIT
High	Medium	Low confidence, limited sense of belonging, lack of relatable role models

Purpose: Support younger girls through close-to-peer role modelling and early confidence-building.

Suggested format: High school girls mentor younger girls during tutoring time or special sessions, ideally combining a mentoring conversation with one collaborative workshop.

Implementation notes: A simple model is one mentoring encounter per teaching group plus one collaborative workshop, for example with a shared digital tool. Mentoring should be structured, age-appropriate, and supported by adults; it is not enough to simply pair students informally. This model also builds leadership and communication skills among the mentors.

Useful partners: Tutors, school psychologist, student mentors, youth workers

A9. Expert and alumni mentoring pathway for secondary girls

INTENSITY	RESOURCES	BEST FIT
High	**Medium**	**Career uncertainty, stereotype pressure, weak future orientation**

Purpose: Support identity formation, educational choices, and career planning during a decisive stage.

Suggested format: Series of 3-4 sessions across the year with women professionals, alumni, guided reflection, and optional follow-up tasks.

Implementation notes: A pathway can run across a semester or school year, ideally integrated into tutoring hours. Use a sequence: inspiration, pathway information, obstacles and strategies, and individual goal-setting. Where possible, combine group sessions with one small-group or one-to-one moment.

Useful partners: Alumni, employers, universities, career counsellors

A10. Digital wellbeing and responsible technology use session for families

INTENSITY	RESOURCES	BEST FIT
Low	Low	Technology anxiety, weak home-school coherence, resistance to digital participation

Purpose: Address family concerns about screen time and technology by framing ICT as something to be used critically, safely, and constructively.

Suggested format: Workshop or conversation on digital habits, self-regulation, healthy routines, and the role of adults in modelling balanced use.

Implementation notes: Move from fear-based messages to practical co-responsibility between school and home. Provide concrete routines, conversation starters, and a referral route if families need more support. This activity is especially useful where technology is mainly seen as risky or distracting.

Useful partners: Teachers, psychologists, digital safety NGOs, family mediators

A11. Media influence and digital identity workshop

INTENSITY	RESOURCES	BEST FIT
Low	Low	Media stereotypes, body image pressure, distorted image of ICT

Purpose: Help families and young people analyse how online content shapes gender roles, self-image, and perceptions of who belongs in tech.

Suggested format: Interactive workshop using examples from social media, videos, music, games, influencers, or advertising.

Implementation notes: Use critical questions such as: Who is visible? Who is missing? What kinds of girls are represented? What skills are valued? Encourage reflection without moral panic, and keep the tone constructive. Adapt examples to age group and local media culture.

Useful partners: Teachers, media educators, youth workers, NGOs

A12. Digital safety, cyberbullying, and online gender-based violence workshop

INTENSITY	RESOURCES	BEST FIT
Low	Low	Safety concerns, underreporting, digital withdrawal

Purpose: Increase awareness of risks while building shared prevention and response strategies between school and families.

Suggested format: Workshop, tutorial session, or parent forum on cyberbullying, hate speech, online harassment, reporting, and support routes.

Implementation notes: Clarify school protocols and make adult responsibilities visible. A strong option is to combine information with scenario-based discussion. This activity is particularly relevant where girls report fear, silence, or withdrawal from digital spaces.

Useful partners: Guidance team, safeguarding lead, legal or digital safety experts, NGOs

A13. Creative campaign against bullying and exclusion

INTENSITY	RESOURCES	BEST FIT
Medium	Medium	Normalization of harassment, low public visibility of the issue

Purpose: Turn awareness into visible collective action and give girls and families a public voice.

Suggested format: Co-created campaign such as T-shirt design, patchwork blanket, posters, photo stories, city walk, or online exhibition.

Implementation notes: This model can involve home-made campaign materials and public sharing in the community. Link the campaign to digital citizenship, respect, and girls' right to participate safely in digital spaces. Public sharing can widen the community conversation, provided consent and safeguarding are well managed.

Useful partners: Art teachers, municipality, NGOs, local media, youth groups

A14. Inclusive game, app, or challenge co-design activity

INTENSITY	RESOURCES	BEST FIT
Medium	Medium	Low sense of relevance, low practical creativity in ICT

Purpose: Show that technology can be used to create inclusive solutions and that girls' perspectives matter in design.

Suggested format: Short challenge or workshop in which students and families co-design a simple game, app concept, storyboard, or prototype about inclusion.

Implementation notes: A simple version is to create an ICT game or digital idea about inclusion with support from VET students or mentors. Use a clear design brief, defined time limit, and public sharing at the end. This model works well as a bridge between awareness and practical ICT learning.

Useful partners: VET students, ICT teachers, coding clubs, makerspaces

A15. Community voices and public showcase event

INTENSITY	RESOURCES	BEST FIT
Medium	Medium	Weak ecosystem links, low public awareness, limited local ownership

Purpose: Open the conversation beyond the school and build a visible school-community ecosystem around girls and ICT.

Suggested format: Street interviews, speed interviews, municipal dialogue, public exhibition, school-community fair, or local showcase of student and family work.

Implementation notes: Use this activity to gather community perceptions, present girls' work, and engage local decision-makers or employers. Public events should include a facilitation plan so the message remains focused on inclusion and opportunity. Creative works such as videos, short films, and pictures can become part of the showcase.

Useful partners: Municipality, local press, employers, NGOs, community leaders

7. How to choose and adapt activities

The most effective DigiSphere plans start from locally visible barriers. Before selecting activities, identify what is getting in the way of girls' participation in your setting.

If the main local barrier is...	Prioritise activity models such as...
Low family awareness or low confidence	A1, A2, A3, A10
Persistent stereotypes and narrow expectations	A1, A3, A4, A11
Low awareness of studies and careers	A4, A5, A7, A9
Low practical exposure to technology	A6, A14, A15
Safety concerns, cyberbullying, or withdrawal from digital spaces	A10, A12, A13
Weak school-community links	A7, A15, plus recurring communication through A2

Alignment with other LeadHER components

DigiSphere actions should be aligned with teacher development and classroom practice so that girls receive coherent messages across school and home.

Themes that can be mirrored in family-facing activities include healthy and responsible use of technology, media influence and digital identity, gender perspective in digital education, digital violence and hate speech, and practical design of inclusive digital literacy actions.

Mentoring actions can also be linked to school-based mentoring schemes, alumni engagement, and career guidance work.

8. Steps for developing a DigiSphere action plan

Step 1. Diagnose the context	Review existing data, teacher observations, girls' voices, and family feedback. Identify which groups are least engaged and which barriers appear most urgent.
Step 2. Define a small number of objectives	Choose 2-4 concrete objectives for the period, such as increasing family awareness, improving knowledge of ICT pathways, or strengthening girls' confidence.
Step 3. Select a balanced mix of activities	Use the 15 activity models to create a pathway. Combine at least one awareness, one practical, and one career or role-model activity.
Step 4. Map roles, resources, and partners	Clarify who will lead, who will support, what spaces or materials are needed, and which external partners can add value.
Step 5. Prepare inclusive outreach and logistics	Use communication channels families already trust; offer flexible times where possible; consider translation, childcare, and online alternatives.
Step 6. Implement, document, and adapt	Collect attendance, feedback, and simple evidence of change. Keep a short implementation log and adjust the next cycle on the basis of what you learn.

Suggested timing for a school-year pathway:

- **Launch phase:** A1 or A2, plus a short needs check with girls and families
- **Engagement phase:** A3, A4, A6, A10, A11, or A12, depending on the priority needs
- **Deepening phase:** A8 or A9, and/or A14 for practical creation and confidence-building
- **Visibility phase:** A7, A13, or A15 to consolidate the wider community dimension
- **Reflection phase:** short feedback collection, celebration of participation, and planning of next steps

9. DigiSphere action plan template

The template below can be copied and completed by schools or other organisations. It is intentionally simple so that it can be adapted to local planning tools.

DigiSphere action plan sections

Section	What to include
Organisation / setting	Name of school or organisation; country, municipality, and contact person.
Implementation period	School term, semester, or full year.
Context and needs	Short summary of the local situation, target age groups, and the main barriers identified.
Overall aim	One sentence describing what the plan seeks to change.
Specific objectives	Two to four measurable objectives.
Target groups	Girls, families, caregivers, staff, community actors, and any priority subgroup.
Partners	Internal and external partners, including their roles.
Inclusion and accessibility measures	Timing, venue, translation, transport, child care, hybrid participation, or other practical enablers.
Safeguarding / risk considerations	Consent, photography, online safety, public visibility, and referral routes where relevant.

Planning grid

Objective	Activity model	Target group	When	Lead	Partners	Level	Indicators / evidence

10. Monitoring, evaluation and adaptation

Monitoring does not need to be heavy. A light but consistent approach is usually enough to understand whether the activities reached the intended groups and whether they helped shift awareness, confidence, or support.

Type of indicator	Examples	Possible sources
Outputs	Number of activities, attendance, number of family contacts reached, number of partners involved, products created.	Attendance sheets, communication logs, photos, event reports.
Outcomes	Changes in family awareness, girls' interest, perceived support, awareness of ICT careers, confidence to participate.	Short pre/post forms, exit tickets, reflection prompts, interviews.
Process quality	Diversity of participation, relevance of content, usability of materials, quality of facilitation, barriers encountered.	Facilitator log, observation notes, feedback forms, partner debrief.

> 💭 **Reflection insights**
>
> Which families did we reach well, and which did we not reach?
>
> Which activity formats generated the strongest participation or the richest dialogue?
>
> What seemed to change in girls' confidence, family language, or awareness of pathways?
>
> What should be repeated, adapted, or dropped in the next cycle?

11. Transferability and final notes

The DigiSphere Programme is intentionally transferable. Where the document refers to a school, users may substitute another relevant setting such as a library, youth club, NGO, municipal project, or community hub. The same logic applies: identify the socialization barriers, choose an appropriate mix of activities, and create meaningful interaction between girls, families, and the wider community.

For low-resource settings, a meaningful starting point may be a combination of one awareness session, one recurring digital content strand, one role-model or career activity, and one practical workshop or public showcase. For higher-capacity settings, DigiSphere can grow into a structured annual pathway linked to mentoring, guidance, curriculum projects, and community partnerships.

The most important design choice is not scale but coherence: activities should reinforce one another and help create a local culture in which girls' digital interests are recognised, encouraged, and connected to concrete opportunities.


LeadHER