TESTEd

Integrating cross-cutting issues in teacher education.

The European TESTEd Syllabus.

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TESTEd Consortium

Table of Contents

What do the icons mean?

? What is it?

How does it relate to teachers?

Preamble

We live in a highly globalized world in which complex themes are best tackled in international teams. Working internationally seems to be the key to success in dealing with major challenges. Many of these challenges are global in nature: They certainly do not stop at individual national borders and can only be sensibly processed and solved in a cooperative network.

Challenges in our education systems are, however, often only addressed at the national level. This is surprising because many countries, schools and individual teachers started to work on the integration of cross-cutting issues such as sustainability, digitalisation or democratic education, in their school communities. classrooms, and instruction practices. These efforts yield interesting examples, which other systems could use to gain insights and adapt their own systems. It would, therefore, be desirable to have closer cooperation between the more national stakeholders of the education systems to learn from one another and work together through the continuous exchange and discussion of best practice examples and worst-case scenarios.

International and intersectoral cooperation is especially needed, when it comes to the integration of cross-cutting issues in schools. Preparing (future) teachers for classrooms that address the green and digital transition, prepare students to become active citizens as well as foster education equity is at the heart of the European agenda.

Our ERASMUS+ Teacher Academy "TESTEd — Towards a European Syllabus in Teacher Education: Facing future challenges together" has pursued exactly this goal. During the project period, we were able to work together on the present Syllabus and I think I can speak for everyone that we not only learned a lot from each other but also had a lot of fun. At times we could perhaps imagine ourselves as an international team of space travellers in strange galaxies, navigating together towards a far-away destination: internationalised teacher education that promotes interdisciplinary teaching in intersectoral communities of practice across the phases from initial teacher training to induction up to continuous professional development. We think that our Syllabus could be used as fuel, propelling this spaceship forward towards this target. We, thus, very much hope that the TESTEd Syllabus will find its way into European teacher education, supporting other galactic travellers on their missions.

I am deeply grateful to have been part of our international space team and want to thank the European Commission and ERASMUS+ for the support and funding for our journey.

Björn Rothstein
Project Principal Investigator

About the Syllabus

Teachers across Europe strive to support students in acquiring the knowledge, skills, and attitudes necessary to support their well-being, as well as living sustainable, fruitful, and meaningful lives. With challenges such as climate change, the rapid evolution of technologies, the deterioration of European values such as equality or diversity, and the general uncertainty circling over European democracies, teachers find themselves in a key position to address these pressing issues in their classrooms.

These complex issues are, however, very demanding and require highly competent teachers. The pressure to quickly adapt to a changing world is reflected in teacher education practices. Teachers, thus, need support in **initial teacher education (ITE)** and their **continuous professional development (CPD)** in acquiring relevant competencies to address five key cross-cutting issues:

1. Education on sustainability
2. Democratic education and fostering active citizenship
3. Diversity and equality in gender and sexual identity
4. Multilingualism in teaching and learning
5. Digitalization of learning environments

These cross-cutting issues are highlighted in frameworks and initiatives from the EU. This Syllabus wants to address **teacher educators** to foster teacher competences in these cross-cutting issues.

Reviewed guidelines and reports focus on teacher education from each partner country, the European Commission, the Council of the European Union and other organizations. Similarities and differences among the partner countries were identified as well as overarching competencies to be developed in 21st century education.

Each chapter of the Syllabus focusses on one of the cross-cutting issues, first giving a definition and then elaborating on emerging key topics that indicate the gaps between current practices in schools and societal needs. Also, relevant teacher competencies are described and linked to activity examples.

[1] *For more details on the conception of the Syllabus, please refer to the TESTEd Discussion Paper (2023), online here: https://doi.org/10.13154/294-10561*

The TESTEd project: Towards a European Syllabus in Teacher Education: Facing future challenges together. The **ERASMUS+ Teacher Academy** project TESTEd was conceived with the idea in mind that education systems, and especially teachers across Europe, all face common environmental, sociodemographic as well as digital challenges. To develop a cohesive international response and establish widely accepted **European solutions**, the TESTEd consortium developed this **European Syllabus** to support (student) teachers in acquiring relevant competencies to integrate **cross-cutting issues**, such as sustainability, digitalization or democracy education, in their classrooms.

The **TESTEd consortium** consists of five universities, Ruhr University Bochum, University College Cork, University of Oulu, Universidad de Sevilla and Universidade Católica Portuguesa, the CPD provider AKADEMIE der Ruhr-Universität, 11 schools and critical friends from education administration, government agencies, teachers' unions and other stakeholders.

TESTEd is **co-funded by the European Union** as a Teacher Academy. Its funding period was from June 2022 to May 2025. Further information can be found online.

Education on Sustainability

The urgency with which societies would have to adapt to meet the challenges of climate change, and a more sustainable living are outlined in the 2015 Paris Agreement, signed by 195 countries (United Nations Framework Convention on Climate Change, 2015). The EU itself is unambiguous about the importance of a green transition calling upon all member states to strengthen Education for a Sustainable Development (ESD) as a key priority in education (Council of Europe, 2022).

Education for Sustainable Development (ESD) is a comprehensive and integrated approach to education that seeks to **empower individuals and organizations** with the knowledge, skills, values, and attitudes necessary for **building a sustainable future.** Sustainability is a highly complex issue with multiple interdependent dimensions, including economic, social, cultural, political, and environmental facets. However, ESD is sometimes conceptualised through a narrower lens, which considers sustainability as primarily an environmental issue and focuses chiefly on human development and immediate, remedial actions. This Syllabus understands sustainability as a systemic issue that considers aspects of social justice and equity, while still placing ecological sustainability at the centre as it remains fundamental to achieving all other dimensions. It, therefore, follows the definition proposed by "GreenComp: The European sustainability competence framework" (European Commission, Joint Research Centre, 2022), which is aligned with the United Nations Sustainable Development Goals (UN SDGs).

> ESD is an educational practice that "empower(s) learners to **embody sustainability values**, and **embrace complex systems**, in order to take or request action that restores and maintains ecosystem health and **enhances justice**, generating **visions** for sustainable futures" (GreenComp, 2022 p. 12).

This definition emphasises the importance of empowerment and taking action, instead of a more passive approach that would focus on merely learning about sustainability. This emphasis is also reflected in the key emerging topics identified in ESD: (1) complexity as part of sustainability, (2) bridging the knowledge-action gap, and (3) envisioning possible sustainable futures.

Complexity as part of Sustainability

Sustainability is a complex and multi-faceted challenge that requires a comprehensive and integrated approach to address its environmental, social, democratic, political, cultural, and economic dimensions. Attaining sustainability in any one of those dimensions in isolation would have a very limited real-world impact when all the other interconnected factors are not addressed. Therefore, ESD must **mirror this complexity** while also providing **scaffolding** for students to support them on their path to understand the interconnectedness of the different aspects, challenges and obstacles.

Effectively incorporating sustainability into classroom education requires an understanding of the multiple perspectives involved, and an ability to **analyse complex systems** and related processes. ESD must therefore equip individuals with the skills not only to navigate these complexities, but also to **bear the uncertainty**, anxieties, and system-wide challenges that come with it.

As young people learn about the world and develop their own competence in schools, teachers have a crucial, and privileged position, to shape students' attitudes towards their own capacity for action and sustainability. For teachers, this means that — while they cannot be expected to take on the challenge alone —, they nevertheless must recognize their own role in facilitating this type of systemic change and **embody a sustainable mindset** to their students.

Furthermore, they must be equipped to guide their students on their path to understanding the complexities of sustainability without overwhelming or discouraging them to **keep students motivated** to engage in sustainable actions and help shape communities. This requires careful **selection of content** that allows for specific case studies as well as transfer exercises to support concrete competence building, without hiding the deeper connections and questions the topics raise.

Bridging the knowledge-action gap

A recurrent criticism that is made in reference to ESD practices points to a lack of educational projects with strong links to taking action (Council of Europe, 2022; Mykrä, 2023). This apparent desideratum of **action-led learning** is understandable considering that most teachers have not been educated to design, implement or assess this type of action learning (European Commission: Directorate-General for Education, Youth, Sport and Culture et al., 2023). Furthermore, linking learning processes inside schools with taking action outside is in itself very challenging, due to:

- school curricula overemphasising **cognitive learning processes**, to the detriment of socio-emotional or action learning (ibid.; Phelan, 2004; Sipos et al., 2008),
- added organisational obstacles in finding and **engaging out-of-school partners**, and
- the **lack of materials**, methodologies, and assessment instruments that focus on action learning.

However, if ESD is to empower students to take actions it must act as a catalyst, transforming acquired knowledge into lasting and meaningful actions both at the individual and at the collective level (European Commission. Joint Research Centre, 2022).

GreenComp emphasizes the importance of values such as responsibility, empathy, and respect for the environment and for future generations (ibid.). The link between these values and the logical con-

sequence of taking action needs to be highlighted more directly by teachers. There is a need to promote the skills necessary to transform isolated ESD projects into **everyday practices** both at the individual and school level through teaching practices that connect student learning to wider context, for example →**Service Learning**. Offering students a means to transform their learning into positive experiences in their daily lives and wider communities, is also an opportunity to face the phenomenon of **"eco-anxiety"**, understood as the feeling of stress, helplessness, and fear young people experience as a result of learning about the impending sustainability crises. Teacher education, therefore, needs to provide training for (student) teachers to practice action learning, and the importance of establishing collaboration networks with other teachers, their students, parents, school community, governmental decision-makers and other stakeholders.

Envisioning possible sustainable futures

Envisioning possible sustainable futures refers to the ability to creatively imagine and visualize alternative possible scenarios. In the context of ESD, this may, for example, involve exercising exploratory thinking and imagination to come up with sustainable alternatives to our current way of living. This approach highlights not only the uncertainty inherent to the idea of the future but most importantly and in relation to ESD, the idea that the future is open and dependent on our actions.

Envisioning possible sustainable futures requires system-thinking, that is, the knowledge, skills, and attitudes necessary to consider simultaneously many interdependent levels (for instance, the local, national, and global levels), and dimensions (e.g. environmental, social, economic and cultural). Moreover, envisioning concrete possible scenarios is fundamental to prompt collaboration with others for creative problem solving and catalysing the needed actions. It also helps involved individuals to identify and understand the implications of their actions and to consider the long-term impacts of their own decisions.

Teachers and schools must provide students with the support and tools to understand sustainability in its complexity and to facilitate their imagination of the type of preferred futures that they would want to live in. Suitable approaches for this can include methodologies that promote the use of creativity processes of continuous prototyping, such as in →Design Thinking or →Challenge-Based Learning. These approaches strengthen the sense of agency in students, highlighting their own role in shaping the future towards their preferred visions.

As the phenomena surrounding sustainability are constantly changing, the importance of **Lifelong Learning** to keep pace with developments also must be stressed. Teachers need to understand their own limitations when envisioning possible sustainable futures and, therefore, need to develop an attitude that sees collaboration with others, CPD training, and **integrating expertise** from their own students and outside partners into their classrooms as beneficial for ESD.

Teacher Competencies

	Complexity as part of Sustainability	**Bridging the knowledgeaction gap**	**Envisioning possible sustainable futures**
Knowledge	**Understanding sustainable development principles** **Activity example: debating forest management** Students role-play stakeholders (e.g., officials, farmers) in a debate on forest management, balancing social, economic and environmental impacts.	**Knowledge of current and emerging sustainability issues** **Activity example: reporting on sustainability issues** Students act as reporters investigating sustainability issues, creating news reports on real-world issues and initiatives. They connect local, national, and global efforts.	**Understanding the role of personal values and attitudes** **Activity example: consumerism vs. sustainability reflection** After watching a video on consumerism vs. sustainability, students analyze their habits in a "Values vs. Actions" chart and discuss how personal choices connect to broader systems.
Skills	**Systems thinking** **Activity example: mapping a product's impact** Students map a product's life cycle (e.g., a plastic bottle), creating flowcharts to show its environmental, economic, and social impacts. They explore ways to make it more sustainable.	**Facilitation skills** **Activity example: historical role-play negotiations** In a historical role-play, students embody key figures in major events, negotiate based on their perspectives, and reflect on how different choices could have changed outcomes.	**Future literacy** **Activity example: designing a sustainable future** In a design-thinking workshop, student envision a sustainable future, creating visual prototypes and discussing practical steps and challenges in achieving their ideas.
Attitude	**Promoting nature & self-aware systems** **Activity example: exploring nature and infrastructure** On a guided walk, students document interactions between nature and human infrastructure. They reflect on ecosystems' role in human life and discuss ways to create a more sustainable balance.	**Harnessing agency** **Activity example: community engagement** Students collaborate with a local elderly home, identifying residents' needs and implementing solutions. They reflect on their impact and explore applying their agency to other issues.	**Openness to dialogue and deep listening** **Activity example: debating future environmental policies** In a role-play debate on future policies (e.g., carbon tax) students represent different perspectives, reflect on fairness in decision-making, and consider its emotional impact.

Democratic Education and Fostering Active Citizenship

At a time when democratic societies face pressure from populism, disinformation, and social division, it is vital that students develop the competencies necessary for participation in democratic societies. Democratic education is a pillar for nurturing these skills. As highlighted by the Council of Europe (2018a), education plays a crucial role in empowering learners for democratic participation, safeguarding human rights, and contributing to the sustainability of democratic societies.

The European **goals of education** (ibid.; European Parliament. Directorate General for Parliamentary Research Services, 2021) — democratic citizenship, personal development, social cohesion, and economic independence — align strongly with democratic education. In a democracy, citizens are not only granted the right to participate in public decision-making processes but are also expected to **take responsibility** for doing so. In this context, **citizenship** refers to the active practice of rights and responsibilities.

Schools act as **embryonic microcosms** of democratic societies, where values such as respect for others, responsibility, and self-determination are practiced through classroom activities like student councils, class discussions, and collaborative decision-making. Schools, therefore, play an important role in helping students **engage with democratic processes** beyond periodic elections, fostering a deeper sense of ongoing civic responsibility, and preparing students with the competence to be active citizens in their communities.

A key to democratic education is also to recognize its deep connection to other cross-cutting issues. It is central for **Education on Sustainability**, as it emphasizes the need to equip learners with the skills to transform their knowledge into actions. It also emphasizes →**digital and data literacy**, as informed decision making is central to democratic processes. Furthermore, its foundation in human rights underscores the importance of **respecting diversity** and fostering **inclusive societies**. The emerging topics align with these concepts, focussing on: (1) democracy under treat through mis- and disinformation in digital spaces, (2) human rights and peace education, and (3) active citizenship.

Democracy under threat

Online platforms, especially social media, have become powerful tools for marketing, advertising, and political campaigning. However, traditional rules and laws for maintaining transparency and integrity are not designed for this digital environment. Furthermore, **algorithms** and artificial intelligence (AI) **recommendation systems** can manipulate user experiences, making certain content more visible and influencing people's thoughts and decisions (European Commission, Secretariat-General, 2020).

One growing threat to democracies is the spread of **disinformation**, which aims to manipulate voters (ibid.). Disinformation can be defined as false or misleading information that is created, published and disseminated to intentionally mislead the public (European Commission, 2018, 2022a). It **erodes trust**

Education for democratic citizenship aims to equip learners with the knowledge, skills and attitudes to **empower and engage citizens** to critically think about our impact on society, and about how to systematically resolve crises through democratic and informed choices (European Students' Union, 2020), while fostering a commitment to upholding **human rights** and **respecting diversity**.

in media, impairs individuals' ability to make informed decisions, and weakens freedom of expression (European Commission, 2022a).

For today's youth, the internet and social media are an integral part of life. While they face risks such as exposure to disinformation and harmful content, these platforms can also **increase youth participation** in politics and social debates (European Commission, Secretariat-General, 2020). Recent studies even suggest that AI-driven discussions can effectively challenge beliefs in conspiracy theories (Costello et al., 2024). Instead of limiting access, we should, thus, empower young people fostering media and information literacy to support competent navigation of digital spaces.

The European Commission has published the updated **EU Code of Practice on Disinformation** (European Commission, 2022b) with the aim to strengthen monitoring and fact-checking systems. Nevertheless, schools must prepare the youth to critically and ethically engage with the content they consume, create, and share online (Suarez-Alvarez, 2021; Vartiainen et al., 2023).

Media and information literacy refers to the ability to critically engage with content, the institutions producing it, and the technologies delivering it (UNESCO, 2021). By developing the knowledge and skills to distinguish fact from opinion, and disinformation from truth, individuals can mitigate the harm caused by misinformation. Media and information literacy is a **life-long skill** essential for democratic participation, social engagement, and responsible citizenship (ibid.). It is, therefore, crucial for teachers to be able to create learning settings that develop media literacy, teaching students how to assess the **credibility of online sources** and identify **disinformation tactics**.

Human rights and peace education

In democratic societies, peace is not just the absence of conflict but the presence of justice, equality and active dialogue. Peace education and human rights education are essential to cultivate these values.

Peace education (PE) and human rights education (HRE) are complementary pedagogical approaches that aim to foster democratic engagement, social justice, and sustainability in education. Peace education promotes non-violence, critical engagement with conflicts at interpersonal, societal, and global levels, and the skills necessary for dialogue and conflict resolution (Cook, 2014). It goes beyond the absence of violence (negative peace) to actively address structural inequalities and build sustainable, just relationships (Galtung, 2012). At its core, peace education privileges considering multiple perspectives before settling on a viewpoint, encouraging inquiry-based and participatory learning (Pike & Selby, 2000).

Human rights education (HRE) expands upon these principles by promoting awareness of human rights norms and fostering critical consciousness and active engagement in struggles for justice (Abu Moghli, 2020). HRE involves learning **about** human rights principles, teaching **through** participatory and rights-respecting practices, and educating **for** active citizenship and the development of agency in upholding human rights (UNDHRET, 2011). To be meaningful, HRE must be contextually grounded, acknowledging local struggles and lived experiences rather than following a standardized, decontextualized model imposed from above (Abu Moghli, 2020). Together, these approaches support teacher education in equipping future educators with the knowledge, skills, and attitudes to foster democratic, inclusive, and critically engaged learning communities.

This connection between democratic education and human rights education has been at the centre of European educational policy for a long time (Council of Europe, 2010, 2018a, 2021b; United Nations Educational, Scientific and Cultural Organization, 2024) with many **national curricula** already reflecting this link. However, increased polarization and climate of confrontation in our societies calls for schools to promote competencies needed to engage respectfully and constructively with different opinions, values and worldviews. Young people in Europe rely on schools to prepare them to participate as **active agents** in democratic societies, not only to be aware of their rights and European values, but to defend them as well. Part of this preparation can come through peace education in schools.

At the same time, when promoting critical thinking and freedom as core democratic values, schools need to establish limits to **freedom of expression**, when it directly undermines the rights of individuals as established by the Universal Declaration of Human Rights (Council of Europe, 2018a). Teachers play a central role in balancing these freedoms while ensuring that students understand and respect the boundaries established by human rights frameworks.

Active citizenship in communities

Active citizenship refers to the meaningful involvement of young people in civic and social life, both within and outside formal democratic structures. This concept is central to the European Union Youth Strategy 2019-2027 (Council of the European Union, 2018), which stresses the importance of youth participation in decision-making and community action. Active citizenship can take many forms, from involvement in school governance and youth organizations to participation in digital activism and single-issue movements (EACEA Eurydice, 2012). The

Reference Framework of Competences for Democratic Culture (Council of Europe, 2021b) highlights civic-mindedness, responsibility, and cooperation as key competencies that enable young people to contribute to democratic life.

According to the *International Civic and Citizenship Education Study*, participation in civic-related school activities correlates with future civic engagement, demonstrating the lasting impact of practice-oriented democratic education (Schulz et al., 2022). Additionally, the connection to real-world issues increases students' sense of self-efficacy (European Parliament, 2022) and engaging with diverse perspectives and social challenges fosters a sense of belonging and responsibility toward their communities (Council of Europe, 2021a). Subsequently, the importance of education as a lever to promote active citizenship has "become one of the main objectives for education systems throughout Europe" (EACEA Eurydice, 2017, p. 17).

Teachers are instrumental in shaping active citizens by providing students with opportunities to apply democratic principles. Studies show good results to achieve this by using some pedagogical methods, such as →**Service Learning**, →**Challenge-Based Learning**, or Project-Based Learning, to name a few (Jerome et al., 2024). →**Service Learning** involves students engaging in community service while reflecting on their experiences to deepen their academic and civic understanding. →**Challenge-Based Learning** empowers students to solve real-world problems, guiding them through the process of identifying a challenge, investigating solutions, and taking action. Both approaches provide students with tools to become active citizens while reinforcing democratic competencies such as critical thinking, responsibility, and cooperation.

Teacher Competencies

	Democracy under threat	Human rights and peace education	Active citizenship in communities
Knowledge	**Understanding the impact of digital disinformation on democracy** **Activity example: comparing historical and modern propaganda** Students analyze historical (e.g., from WWII) alongside modern digital disinformation. Guided by the teacher, they compare tactics, discuss similarities, and explore how social media amplifies and obscures disinformation.	**Understanding the role of civic engagement in democratic participation** **Activity example: empathy and perspective-taking through literature** After reading a story on peace and human rights (e.g., The Kite Runner by Khaled Hosseini), students take on character perspectives in dialogues or letters, then discuss its societal relevance.	**Understanding civic participation and community engagement** Activity Example: investigating **local civic engagement with guest speakers** Students research local civic organizations, learning about their role in community engagement. Guest speakers share insights, and students present findings on social impact on posters.
Skills	**Fostering media literacy, critical thinking, and fact-checking** **Activity example: analyzing news and environmental claims** Students analyze news articles on an environmental issue, evaluating bias and credibility. They fact-check claims and discuss how media literacy combat disinformation.	**Facilitating dialogue on human rights and conflict resolution** **Activity example: school dress code dialogue** Students examine school dress codes, debating their impact on freedom, equality, and diversity. Groups present their views, followed by a class discussion on inclusivity.	**Facilitating community-based learning and projects** **Activity Example: historical preservation initiative** Partnering with a local historical society, students research and propose ways to preserve a local historical site or event, connecting history to civic responsibility.
Attitude	**Confidence in handling discussions on controversial topics** **Activity example: discussing free speech and disinformation** Students debate ethical dilemmas of free speech and disinformation, using case studies to explore the balance between expression and harm prevention.	**Valuing peaceful coexistence and respect for diversity** **Activity example: Dialogue Tokens** Students receive tokens for a class discussion, each tied to a specific action: Build: add to or expand on a peer's idea, Challenge: respect-fully disagree and present an alternative view-point, Bridge: connect different perspectives or find common ground. Students are encouraged to use all their tokens. A reflection follows on when disagreement felt productive and how diverse perspectives enriched the discussion.	**Fostering a sense of civic responsibility and ownership** **Activity Example: our school** Students organize a school-wide vote on a school-relevant issue (e.g. theme of the next project week), managing promotion, logistics, and tallying results. Reflective journals document their experience with democracy in action.

Diversity and Equality in Gender and Sexual Identity

Diversity and equality in gender and sexual identity addresses critical issues of equality, inclusivity, and well-being. Recognizing gender as a complex social construct that intersects with biological sex, →gender identity, expression, and →sexual orientation, this chapter examines the need for educators to create safe, supportive, and inclusive learning environments for all students.

There is a wide consensus that issues related to gender and sexual identity are linked to **human rights and equality**. In many EU countries, legislation mandates non-discrimination and protection for gender-diverse individuals in educational settings, reinforcing the legal and ethical responsibility of schools to foster inclusive environments that recognize and support all →**gender identities and sexual orientations**. This view has been repeatedly expressed by the European Commission, Civil Society Organizations and other key international organizations. Nevertheless, data consistently shows **inequality in relation to gender and sexual identity** regarding factors, such as educational choices and trajectories (European Commission, Directorate General for Education, Youth, Sport and Culture & EENEE, 2021), pay (Eurostat, 2024), well-being (WHO & Regional Office for Europe, 2016), representation and participation (Prpic et al., 2019).

Both the European Commission (2020) and UNESCO (2016), therefore, highlight the essential role of education in promoting human rights, reinforcing that an inclusive approach to gender and sexual identity is vital not only for minorities but for all students to **cultivate self-awareness**, challenge **stereotypes**, and foster a respectful **understanding of diversity**. Through this, an education that acknowledges gender and sexual diversity directly contributes to the well-being of all students and supports sustainable societal development by empowering youth to confront biases and embrace diversity.

Despite progress, recent reports reveal **substantial gaps** in addressing gender diversity and inclusion in educational curricula across the EU (IGLYO, 2022), criticising that these topics are rarely incorporated as mandatory elements in teacher training. This chapter emphasizes the responsibility of educators to bridge these gaps. The key emerging topics addressed are: (1) diversity of →**gender identity** and →**sexual orientation**, (2) promoting equality and inclusion related to gender and sexual identity in school environments, and (3) gender and sexual identity awareness in digital media and career choices.

Diversity of gender identity and sexual orientation

Studies show that children can recognise their own gender, and the expected roles for different genders, as early as the age of two (European Commission. Directorate General for Education, Youth, Sport and Culture & Viraengo, 2021). Thus, when children come to school, they already have ideas about gender roles and norms. Exclusionary behaviour and violence towards gender-diverse children can already occur in primary school (ibid.), which

Gender sensitive learning and teaching is a process that reflects the **multifaceted layers of gender and identity** and recognises the importance of providing safety, and active support, to foster a **sense of belonging** for everyone regardless of their gender identity or their sexual orientation. Gender sensitive learning and teaching encourages everyone, not just gender minorities, to **critically reflect** on gender, stereotypes, and their own identity, linking these reflections to wider themes of diversity, human rights, sustainability, study-path and career choices.

highlights the importance of having →**gender identity** addressed sensitively in schools, and in teacher education.

Gender minorities are understood as persons who are, one way or another, non-conforming with society's traditional assumptions and expectations around women and men. This might relate to their gender expression or their →**sexual orientation**, or both. While it is common to refer to gender minorities with the acronym LGBTQIA+ (lesbian, gay, bisexual, transgender, queer, intersex, asexual, others), an all-encompassing categorization under a set of letters is very challenging because of the complex, transient and fluid nature of →**gender identities** and →**sexual orientation**. This Syllabus, thus, uses the term **rainbow** (rainbow people, -youth, -students, etc.) to refer to all gender and sexual minorities.

Recognition of one's →**gender identities** and →**sexual orientation** is a fundamental human right (European Union Agency for Fundamental Rights (FRA), 2020). However, the LGBTQI European Education Index shows that in some countries, LGBTQI students have been excluded from extracurricular activities or the establishment of LGBTQI student groups was prohibited (IGLYO, 2022). Moreover, a FRA report (2016) shows evidence that, for fear of being the target of bullying, violence and discrimination, rainbow students often suppress their identity or gender expression. The stigma, discrimination and violence based on →**sexual orientation** and gender diversity can be caused by many reasons including →**heteronormativity**, homophobia, biphobia, and transphobia, impacting the individual's physical, emotional, mental, and social wellbeing (WHO, 2024). Therefore, a **school culture** in which everybody — not just gender minorities — critically examine questions of gender to help tackle issues of biases, prejudices and stereotypes, would be needed to support safe and open environments for diversity.

Teachers play a key role in promoting gender equality at schools and creating a safe space since they are considered the most immediate **role models** for students. At the same time, school leadership must be involved to go beyond the commitment of individual teachers who, on their own, often "face particular difficulties from families and prejudiced communities" (FRA, 2016). Teachers must, therefore, be empowered to work with **school leadership** in developing clear policies, model inclusivity and advocate for gender-sensitive practices.

Promoting equality and inclusion related to gender and sexual identity in the school environment
Studies show persistent **gender imbalances in academic and career pathways** (Council of Europe, 2018b). Additionally, the challenges faced by rainbow individuals in career and social environments often go unrecognized, underscoring the need for schools to actively support diverse identities.

Gender-based stereotypes influence students' perceptions of themselves and others and limit their engagement, participation, and sense of belonging. Promoting equality in gender and sexual identity also includes creating inclusive physical spaces and materials, such as ensuring gender-neutral restroom options and using textbooks that represent diverse gender identities and roles. These everyday elements contribute to a school environment where all students can feel recognized and valued.

Stereotypes and biases in gender identity and sexual orientation can have a negative impact on students' wellbeing, for example in connection with **violence** based on gender or sexual identity, or higher rates of (attempted) suicides (European Commission. Directorate General for Education, Youth, Sport and Culture & Viraengo, 2021). This type of violence can include online or in-person psychological violence, sexual violence and physical violence (UNESCO et al., 2018). The European Institute for Gender Equality (EIGE), therefore, emphasize the importance of teacher training and gender-sensitive teaching materials to foster unbiased views on gender and sexual identity, preventing gender-based violence.

Teachers are key in fostering a school culture that values diversity, challenges →**heteronormativity**, and reduces gender-based violence and exclusions. Especially, →**heteronormativity** often steers students into gendered activities and interests (Euro-

pean Commission, 2021), reinforcing stereotypes and gender roles. It can be found in the curriculum, school routines and school activities (European Commission. Directorate General for Education, Youth, Sport and Culture & Viraengo, 2021), as well as everyday use of gendered language, behaviour, and assumptions based on gender expression or sexual identity. Recognizing and addressing these moments allows teachers to **model inclusive language and behaviours**, making gender sensitivity a part of school life.

Although gender-sensitive education may face parental, religious, or political resistance, teachers have a responsibility to provide science-based, comprehensive information on →**gender identity** and orientation, recognizing students' right to unbiased information. Teachers can promote equity by encouraging students to question stereotypes, reflect on gender norms, and develop respect for diverse identities. Educators, therefore, must develop competencies to design learning activities and materials following an assumption of diversity.

Gender and sexual identity awareness in digital media and career choices

As digital media increasingly shapes young people's perceptions of gender roles and identities, educators play a key role in fostering **critical media literacy** to help students recognize and challenge gender stereotypes and biases online. Studies show that gender bias and stereotypes can be reinforced by algorithms in search engines as increasing exposure to media content leads to alignment between own thoughts and the belief and culture depicted in the

media (Fabris et al., 2020; Kay et al., 2015). Furthermore, the Council of Europe (2018b) and European Commission (2021) report that gender biases in digital and educational spaces have a direct impact on students' academic choices and self-esteem, e.g. through the underrepresentation of women, gender, or sexual minorities in content and material on STEM. Additionally, exposure to online content that reinforces stereotypes can lead to **internalized biases**, limiting students' professional aspirations.

Gender sensitivity in digital media involves equipping students with the ability to critically engage with digital content and promoting gender diversity in **career pathways**. Teachers can help students understand how online representations may reinforce traditional gender roles, limiting perceptions of who "belongs" in certain fields. They can introduce activities that **analyse gender portrayal** in digital media, helping students recognize harmful stereotypes and explore how these affect career aspirations. Through gender-sensitive media literacy and career guidance, students are encouraged to see all career options as accessible and to pursue paths that align with their interests rather than societal expectations. The EIGE (2017) suggests that teachers utilize gender-sensitive materials to reduce biases and promote a broader understanding of available career options, particularly in STEM. Moreover, teachers can act as **role models and allies**, encouraging students' career interests free from stereotypical constraints. With digital spaces evolving rapidly, teachers may need to adopt an open and adaptive approach, remaining aware of new trends in digital media and fostering students' critical thinking to navigate them.

Teacher Competencies

	Diversity of gender Identity and sexual orientation	Promoting gender equality in the school environment	Gender sensitivity in digital media and career choices
Knowledge	**Understanding gender diversity as a human right** **Activity example: human rights and gender identities workshop** Students explore human rights and gender identity, discussing inclusivity in a safe space to build understanding of gender diversity.	**Recognizing the impact of gender stereotypes in schools** **Activity example: role-playing scenarios** Through role-play, students experience gender biases and reflect on their impact on confidence and choices.	**Understanding media influence on gender perceptions** **Activity example: media analysis project** Students analyze gender portrayals in digital media and present findings on their influence on career aspirations and self-perception.
Skills	**Facilitating inclusive discussions on gender identity** **Activity example: Stop-go case-studies** Students develop case-studies or scenarios and role-play them using the stop-go method: The teacher or a student says „stop" at critical moments and the class can develop the story in an inclusive respectful way using gender sensitive language. Then the role-play continues with the students' impulses (go). A discussion on the role-play follows.	**Identifying and addressing gender biases** **Activity example: gender audit of learning materials** Students conduct a "gender audit" of textbooks and media, identifying biases and discussing ways to promote balanced representation.	**Fostering critical media literacy** **Activity example: career and media influence debate** A classroom debate explores how media shapes career choices, using STEM examples to analyze exposure and interest.
Attitude	**Openness to learning from student perspectives** **Activity example: student-led diversity panels** Students lead a panel on gender diversity, sharing insights while the teacher facilitates and learns alongside them.	**Commitment to an inclusive classroom culture** **Activity example: creating a class charter on inclusivity** Students create a class charter defining inclusivity, self-expression and gender equity, committing to a respectful classroom culture.	**Supporting inclusive career exploration** **Activity example: exploring gender-diverse career pathways** Lead an activity where students research professionals in fields that challenge gender norms (e.g., women in engineering, men in nursing). Have them present these careers, promoting open-mindedness and encouraging students to see all paths as accessible.

Multilingualism in Teaching and Learning

Multilingualism reflects the linguistic diversity quintessential for Europe's identity. The EU encourages all citizens to speak at least two additional languages alongside their →**mother tongue** (Council of the European Union, 2002) and multilingual competence is recognized as one of the key competences for **lifelong learning**, stressing its importance for participation and inclusion in diverse societies (European Commission. Directorate General for Education, Youth, Sport and Culture, 2019).

Cultural and linguistic diversity is increasingly common in classrooms across Europe. While international migration remains a driver of human development and economic growth (McAuliffe & Oucho, 2024), it amplifies a need for teacher education and training to prepare teachers to become responsive to diverse demographics in the classroom (Akin-Sabuncu et al., 2024). Thus, this section of the Syllabus mainly focusses on **students with multilingual backgrounds**.

While multilingual learners share some attributes, they otherwise constitute a **highly diverse group** that varies, e.g. regarding their lived experiences, personal or familial migration history, socioeconomic background, etc. For multilingual learners, language is not only a tool for academic success but a key element of their **cultural identity** and personal resilience, making inclusive support systems in schools essential for the well-being and social integration of those students.

Sadly, international studies regularly highlight the **unequal standing of multilingual learners**. A variety of factors can have a compounding negative effect on multilingual learners, especially those with a recent migrant background, or those coming from low-prestige language communities. On average, they attain lower test scores in mathematics, science, and reading (Mullins & Irvin, 2000; Mullis et al., 2017; OECD, 2019; Wendt et al., 2020), drop out of education at a higher rate than their peers (European Commission, 2018), are more likely to report being bullied (Mullis et al., 2017), and are at significantly higher risk of living, or ending up, in poverty (European Commission, 2020).

Teachers often feel unprepared to address the **linguistic or cultural challenges** they face in their classrooms (Heikkola et al., 2022; Lucas & Villegas, 2013). Schools **lack resources** for integrating regional and →**minority languages** and often operate with inadequate or inconsistently implemented policies (Nilsson & Bunar, 2016) and no time to adapt materials — especially in content subjects. Teachers need support through training, time and resources tailored for diverse linguistic needs. Furthermore, schools should view **multilingualism as an asset** that enriches a learning environment rather than as a deficit, and work to recognize students' full →**linguistic repertoires**. This chapter, thus, addresses the key emerging topics: (1) language sensitive teaching, (2) supporting →**heritage languages** and (3) implementing trauma-informed teaching.

Language sensitive teaching as a whole-school approach

Language-sensitive teaching is a whole-school approach that integrates l**anguage support across all subjects**. Every school subject has their own specific language or discourse (Dalton-Puffer, 2013). Descri-

In the context of this Syllabus, **multilingual learners** are defined as students who regularly use a **heritage language** other than the primary language of instruction. A heritage language is a language tied to a person's familial or cultural identity. Depending on the individual's upbringing, a heritage language may or may not be a →**mother tongue**, and the speaker may or may not be fluent in it.

bing an experiment in biology, for example, requires specific language and knowledge that the language teacher may not be able to provide. Thus, foreign language teachers cannot be the only point of reference for multilingual learners. Instead, all teachers need to understand that language learning does not occur in isolated →**second language** (L2) classes but in meaningful, authentic contexts, including their subjects. Such integration helps multilingual students learn content while developing language skills and supports native speakers who may otherwise struggle with **academic language acquisition**, because they lack the parental support system for academic language learning.

Through language-sensitive teaching, prolonged separation in so-called **"welcome" classes** and grade retention for multilingual learners can also be avoided. While there is evidence for the initial benefits of such intensive language classes, long separation and not engaging students in coursework that is grade- and age-level appropriate can have **detrimental long-term effects** including overall lower academic performance (Wang & Goldschmidt, 1999). Earlier integration into mainstream classrooms provides multilingual learners with a richer environment to practice the →**majority language** through an exposure to **authentic learning** situations.

Each subject area has its own specific discourse and vocabulary. Therefore, careful **scaffolding** and **differentiation** are needed to make linguistically complex, subject-specific content accessible and comprehensible. However, to implement language learning across the curriculum, additional resources are needed for **professional development**, to give →**L2** teachers time to co-design and co-teach subject classes, and to create materials that foster lan-

guage learning for speakers of different languages (Jaekel et al., 2024). In addition, all teachers should have a basic training in **multicultural differences.** This would help to promote cultural awareness and avoid stereotyping.

Providing heritage language support and promoting cultural identity

A students' →**heritage language** is an essential part of their cultural identity, with evidence suggesting that teaching the →**heritage language** can strengthen both the personal and cultural identity of individuals and families (European Commission: Directorate General for Education, Youth, Sport and Culture et al., 2017; Leeman, 2015). Therefore, supporting and maintaining multilingual students' proficiency in their →**heritage languages** have a positive impact on their **well-being**, their successful integration to society, while at the same time fostering **social and cultural diversity** (European Commission: Directorate General for Education, Youth, Sport and Culture et al., 2017). →**Heritage language** proficiency is also linked to →**majority language development** (Cummins, 1979; Edele et al., 2023; Riehl, 2020) and **academic achievement** (e.g. Jang & Brutt-Griffler, 2019; Tegunimataka, 2021). Attending →**heritage language** classes is, therefore, not just important for multilingual learners to improve their →**heritage language** but can also have positive impacts for their school performance.

Traditionally, school education has been designed based on the assumption of a monolingual student body, which has often resulted in limiting the full potential of multilingual learners by denying them the use of their full →**linguistic repertoire** (Cenoz & Gorter, 2022; European Commission: Directorate General for Education, Youth, Sport and Culture et

al., 2017). Challenging this **monolingual assumption** can be considered one of the most important teacher competencies to develop an openness for interventions and further training in supporting multilingual learners.

An approach that has gained prominence is →**translanguaging**, i.e. allowing and using different languages in the classroom for communication and learning, including →**heritage languages**, both by teachers and students. It encourages learners to use their full →**linguistic repertoire** and allows for the coexistence of fluid linguistic processes following the assumption that languages interact in complex ways in the mind of a multilingual learner shaping their language production (García & Wei, 2015). →**Translanguaging** is particularly useful when children lived in different countries and need support to connect different levels of proficiency across their language repertoire (European Commission: Directorate General for Education, Youth, Sport and Culture et al., 2017).

Trauma-informed teaching

? Trauma-informed teaching is an educational approach that recognizes the profound impact that diverse forms of →**trauma** during childhood can have on students' learning, behaviour, and development. There exists strong evidence linking so-called →**Adverse Childhood Experiences** (ACEs) to detrimental long-term consequences for emotional, cognitive, and social well-being (Felitti et al., 1998; Hughes et al., 2021; Zakszeski et al., 2017). In the classroom, these effects can manifest themselves as behavioural challenges, difficulties with focus, and cognitive barriers, all of which can lead to punitive responses, lower academic performance, and an increased risk of early school leaving (Spiteri et al., 2023).

→**Trauma** is often intertwined with the experiences of **asylum-seeking families** fleeing conflict, famine, violence, or other large-scale emergencies (Ertanir et al., 2023). However, it is also crucial to note that ACEs are **not exclusive to multilingual students**. ACEs may include things like suffering abandonment, abuse, neglect, witnessing violence, or living with family difficulties such as parental depression or substance abuse. Teachers, therefore, must be prepared to mitigate adverse outcomes of →**trauma** to create inclusive and resilient educational environments.

Trauma-informed teaching shifts the focus away from viewing a student's difficulties as individual failings, and moves towards understanding them as responses to complex, systemic and intersecting challenges. It emphasizes creating safe, inclusive, and supportive learning environments that promote healing, and importantly, avoid re-traumatization (Chafouleas et al., 2019; Substance Abuse and Mental Health Services Administration, 2014).

Schools can provide traumatized students with **safe and stable environments** where they can experience trust and care. Building positive relationships with students and their families is a cornerstone of effective teaching in general, and these relationships are even more critical for children who have experienced →**trauma**. Trauma-informed teachers adopt strategies that create safe and **supportive classroom environments**, recognizing the specific needs of students affected by →**trauma**. They may adjust class structures, interactions, and pedagogical practices to provide space for both learning and healing. By fostering resilience and well-being, educators contribute to improved educational outcomes and long-term social and emotional development.

Teacher Competencies

	Language sensitive teaching as a whole-school approach	Providing heritage language support and promoting cultural identity	Trauma-informed teaching
Knowledge	**Understanding language sensitivity across the curriculum** **Activity example: heritage language research and presentation** Multilingual students use vocabulary support and research in their heritage language, then present in the majority language, strengthening academic skills and cultural connection.	**Recognizing heritage languages as an asset for learning all subjects** **Activity example: exploring scientific concepts through multilingual labels** In class projects, students label important terms in both their heritage and majority languages, highlighting linguistic diversity in science.	**Understanding the impact of ACEs on learning and well-being** **Activity example: understanding trauma in classrooms** During a professional development session, teachers analyze case studies of students impacted by trauma to identify how ACEs may manifest in the classroom and discuss strategies for addressing them.
Skills	**Design and implement language-sensitive instruction and assessment** **Activity example: scaffolding for multilingual learners** Teachers use visual aids, simplified language, and flexible assessments to help multilingual learners demonstrate understanding in various formats.	**Designing and implementing linguistically responsive teaching and assessment strategies** **Activity example: student-built bilingual a subject glossary** Students and teachers create a bilingual glossary in the subject, which students can use during assessments to support understanding.	**Designing and implementing trauma-informed teaching practices** **Activity example: mindfulness for student well-being** A teacher integrates mindfulness exercises at the beginning of the day to help students self-regulate and create a calm classroom atmosphere, paired with flexible assignment deadlines for those experiencing emotional challenges.
Attitude	**Value multilingualism as an asset in the classroom** **Activity example: peer support in content subjects** Multilingual students pair with same-language peers to discuss subject concepts before sharing with the class, enhancing comprehension and confidence	**Fostering a resource-oriented mindset towards multilingualism** **Activity example: multilingual participation in class discussions** During class discussions, teachers encourage students to share ideas in their heritage language, offering translation support to build confidence and participation.	**Fostering empathy and resilience in the classroom** **Activity example: building a culture of empathy** A teacher actively cultivates a culture of empathy by modeling respectful communication, encouraging peer support, and celebrating students' personal growth and resilience.

Digitalization of Learning Environments

The digital transformation has a significant effect on societies and individuals alike, affecting how people consume, produce and engage with information as well as interact with other people with social media platforms playing a central role. This **"digital condition"** affects how we communicate, create, and understand the world (Stalder, 2018) with the acceleration of the use of social media and artificial intelligence (AI) impacting every aspect of society, down to individuals' well-being.

The importance of the digital transformation on education has also been emphasised continuously. For instance, with *The Digital Education Action Plan* (2021-2027) the EU has set out a common vision for high-quality, inclusive and accessible digital education (European Commission, 2020).
With digital tools being increasingly accessible and user-friendly, teachers can use a wide range of resources to enhance their teaching processes and support students in achieving their learning goals. However, digital technologies should always be introduced primarily with **pedagogical considerations** in mind. To accomplish this, the digital competence of teachers is crucial to — in turn — promote students' digital competencies detailed in the *Digital Competence Framework for Citizens* (DigComp 2.2, European Commission. Joint Research Centre, 2022).

The European Framework for the Digital Competence of Educators (European Commission. Joint Research Centre, 2017) highlights **competencies** that educators should acquire as well as the diverse use of digital technologies. However, reports still point to gaps in basic digital skills among the European countries and people with different socio-demographic backgrounds (European Commission, 2022), and recent studies have highlighted a sever lack in →**computer and information literacy** and →**computational thinking skills** in many students (Fraillon, Liaw & Strietholt 2024). Such gaps may result in deepening asymmetries in access to information. Thus, there is a need to advance the integration of digital technologies in education to develop necessary skills, resilience against its more harmful influences, and a mindset for ethical use, as well as to enable equal access to digital media. The key emerging topics in this Syllabus, therefore, are: (1) rethinking education with AI, (2) fostering data literacy and agency, and (3) well-being in digital environments.

Rethinking Education with AI

Recent advancement in AI systems have already started transforming education. AI is defined as computer systems designed to perform specific tasks by mimicking capabilities (e.g. visual perception, speech recognition) and intelligent behaviours (e.g. reasoning, problem solving) that are typically associated with human intelligence (Luckin et al., 2016). While traditional AI has focused on detecting patterns or issues, classifying data, and making predictions, **Generative AI** (GenAI) systems can produce content, such as text, music, images and videos.

To ensure that AI systems are trustworthy, safe, and respectful of fundamental rights and ethical principles, the EU has released its *Artificial Intelligence Act* which categorizes AI systems based on the risks they might have for society and individuals (European Parliament & Council of the European Union, 2024). Yet, the regulation of AI systems is an on-going process, and there is a strong need for educating people in understanding the potential and the

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The **digitalization in learning environments** is defined in this Syllabus as the use of digital technologies, digitized information, and data, to support teaching and learning.

risks of AI. Teacher educators promote the capacity in teachers to **assess the impact** of introducing AI into classrooms and to practice evaluating how the digital tools can enhance or hinder their teaching. With fast-paced advances, teachers need to develop a critical, yet open stance towards the effectiveness of evolving technology and have the competence to **design scenarios of use** for their own classrooms and the students' learning requirements that fosters learning **about** as well as learning **with** and **through** AI.

AI may **assist teachers** in reducing administration tasks, designing lessons, orchestrating learning activities and helping assessment of students through learning analytics. It may **support students** in learning with personalized tutoring systems, automatic formative assessment for creative assignments (e.g., writing and designing), cognitive support in collaborative learning, and tools for inclusive education (e.g., visual aid or audio description to assist reading difficulties, real-time live captioning, real-time multilingual translation). Yet, it is important to keep in mind that AI does not consider the context in which the data is produced. Teachers, therefore, need to develop assessment skills to evaluate AI systems and make decisions based on their pedagogical values, research skills to interpret the data provided by AI systems (e.g. on student performance), and management skills to out-source repetitive tasks to AI assistants (Luckin et al., 2016). Teacher educators, thus, should encourage teachers to think innovatively and critically about the possibilities that AI systems enable as well as the risks that may take place when such technologies are introduced in the classroom.

Fostering data literacy and agency

One of the major risks of the digital transformation concerns data protection, security and privacy. Data is one of the most important and powerful assets in the modern world, with every aspect in our life being converted into data. The purpose of this →**datafication** (Kennedy et al., 2015) is not only to collect, analyse, monitor and track data, but also to provide users with personalized content. While this can be useful, there are risks that the data can be leaked or used in unintended ways.

Studies show that young people are especially **vulnerable in digital environments** as their cognitive capacities are still evolving and often lack awareness and the skills to identify the risks (O'Neill, 2023). However, even though laws and regulatory frameworks have been developed, legal protections are still under development. With DigComp 2.2 listing safety as one of the five competence areas, students must be equipped to use digital technologies safely.

Being **data literate** means not only having a foundational understanding of data, but also demonstrating the skills, critical thinking abilities, and ethical considerations necessary to navigate, analyse, and utilize data effectively in various aspects of life. **Teacher** →**data literacy** (Lee et al., 2024), thus, includes:

1. knowledge about data (e.g. benefits of using data, data culture, regulations),
2. skills in using data (e.g. data collection, analysis),
3. dispositions towards data use (e.g. confidence, values),
4. data applications across purposes (e.g. using data for enhancing teaching and learning), and
5. data-related behaviours in school (e.g. using data for communication, engagement to enhance data use).

This concept of literacy then leads to →**data agency** which aims to foster an active participation in creating and shaping our digital worlds through taking ownership and control of one's own data making

decisions on what, how and why data should be produced (Tedre et al., 2020).

Teachers must be aware and prepared that every interaction a teacher and student makes with a digital device leaves a digital trace and such data can be combined to capture an individual's behaviour. **Educational data** is increasingly used for learning analytics, which is often presented as a beneficial tool for educators. However, teacher educators should develop teachers' knowledge and awareness not only regarding the benefits, but also of the risks of educational data (European Commission, Directorate-General for Education, Youth, Sport and Culture, 2022).

Teachers should also be trained to foster students' →**data literacy** and →**agency**. As the digital world is shaped by the information flows, it becomes crucial that they know the advantages and limitations of using digital technologies and how their personal data is collected and used in different programmes and applications so that they are empowered to make informed decisions.

Well-being in digital environments

With most children using their mobile devices 'daily' or 'all the time' (Smahel et al., 2020), adolescents' experience of digital environments is becoming an increasingly important determinant of their →**well-being** (Holly et al., 2021). Even though data is not consistent, especially social media use might have effects on adolescents' →**well-being**, with reviews and studies finding correlations with **mental health problems** (Keles et al., 2020) or linking it to loneliness and depression (Ellis et al., 2020). Additionally, a UNICEF survey (2019) found that, globally, more than a third of young people reported being a victim of **cyberbullying**.

However, no causal relationship between using digital media and a decline in adolescent well-being has been established in research. Instead, digital media — as any tool — can both support and under-

mine well-being, depending on students' engagement, attitudes, and behaviours (Keles et al., 2020). Therefore, it is important "to prioritize and actively promote the mental health and well-being of school children within safe and inclusive contexts" (European Commission. Directorate General for Education, Youth, Sport and Culture, 2021, p. 10).
As students are highly heterogeneous, they experience digital spaces differently according to a range of **intersecting factors**, including education level, gender, sexual orientation, abilities, socio-economic status, prior experiences etc. (Holly et al., 2021). Thus, their perception of →**well-being** in digital environments varies making this a complex issue that must be tackled with empathy and care.

Teachers need to acquire the **diagnostic skills** to identify and support students at risk and to take (preventive) measures against cyberbullying, online harassment, addiction or radicalisation, working together with school therapists, parents, or other caretakers. Moreover, teachers should **empower** students providing strategies to (re-)frame digital media as a tool for self-expression, creative experiences, social and civic engagement. Using **constructivist pedagogy** that actively involves students can foster these skills by role-modelling positive digital experiences (European Commission. Directorate General for Education, Youth, Sport and Culture., 2021). Lastly, teachers can use digital media to create more inclusive learning environments. Through assistive learning technologies, teachers can tailor their lessons for students with disabilities or impairments. Online communication platforms can provide opportunities for students — especially from marginalized groups — to connect with others that share similar interests and experiences, but also to get in touch with new communities and viewpoints, increasing positive values such as respect, tolerance, and empathy (Holly et al., 2021). This could foster well-being through a sense of belonging as well as interesting emotional, cognitive, and creative learning experiences.

Teacher Competencies

	Rethinking education with AI	Fostering data literacy and agency	Well-being in digital environments
Knowledge	**Understanding on AI systems** **Activity example: developing own classifier** Students build an AI classifier (e.g., mushrooms, dog breeds) to explore machine learning, then discuss AI's role in daily life. Example of the tool: *https://tm.gen-ai.fi/image/general*	**Recognizing the significance of data and importance of data security** **Activity example: profiling game** **In a detective game, students** analyze social media footprints to profile a person, then discuss how online data is collected and used. Example of a profiling game: *https://classroom.gen-ai.fi/start*	**Understanding intersectionality in digital well-being** **Activity example: case study exploration on digital well-being** Students analyze case studies of digital well-being, exploring how identity and social factors influence online experiences.
Skills	**Applying AI systems into teaching and learning** **Activity example: AI-enhanced project-based learning** Students use AI tools to solve project challenges, such as designing a sustainable city, while fact-checking AI-generated content.	**Handling the data safely and ethically** **Activity example: data in edtech tools** Teachers verify app privacy policies and encryption when using tools that collect student data, ensuring secure handling of personal information.	**Fostering safety in digital environments and the use of digital media** **Activity example: role play on digital risks** In a role-play, students practice responding to digital risks, acting as both those affected and those providing support.
Attitude	**Taking control of orchestrating the classroom with AI systems** **Activity example: flexible project-based learning** Students research, discuss, and present on a topic, with teachers deciding whether to integrate AI tools like ChatGPT or translation software.	**Being responsible and taking ownership of own data** **Activity example: social media simulator** A social media simulator shows how user data shapes recommendations and social dynamics, sparking discussions on data control. Example of a social media simulator: *https://somekone.gen-ai.fi/*	**Promoting inclusive attitudes in digital environments and positive digital engagement** **Activity example: creating digital well-being action plan** Students reflect on real digital challenges, creating personal and collective action plans for fostering safe and supportive online spaces.

Methodology

As the cross-cutting issues interconnect and affect each other, this brochure highlights three approaches that can foster interdisciplinarity, critical thinking, problem-solving, reflection on learning processes as well as connect students with the wider community and real-life contexts.

Service Learning is a methodology that is gaining in importance in school as well as in non-formal educational spheres (Sotelino-Losada et al., 2021). There is "sufficient scientific support to indicate that it is a route to acquiring relational and cooperative skills while not diverting attention from the curriculum or educational project of reference" (ibid., p. 2). The European Observatory of Service-Learning in Higher Education defines Service Learning as an educational method in which "students engage in community service, reflect critically on this experience and learn from it personally, socially and academically" (online: www.eoslhe.eu/what-we-do). Service Learning, thus, combines service to the community and learning through experience (ibid., 2021) integrating theory and practice to affect societal changes (Vieira Da Silva et al., 2024). It requires an explicit connection to curricula or educational plans, must be meaningful to the students and should meet real community needs. This gives agency to the students, who engage in the community to find solutions. Through reflections, their sense of civic responsibility, respect and empathy can also be deepened. Service learning is, therefore, considered an effective approach to develop students' social, methodological and personal skills (Culcasi & Paz Fontana Venegas, 2023) as well as professional skills (Vieira Da Silva et al., 2024).

Challenge-Based Learning is a collaborative, hands-on teaching and learning approach, in which students find solutions to real life challenges, involving community members and implementing their solutions to make a difference (Nichols & Cator, 2008). It is a problem-based and product-oriented learning methodology that includes three interconnected phases that run iteratively and can repeat depending on the evaluation of the work progress: Engage, Investigate and Act (Gallagher & Savage, 2023; Stahlberg et al., 2022; Vilalta-Perdomo et al., 2022). In the engage phase students examine a big idea (e.g., sustainability, democracy, …) and identify a concrete and actionable challenge. In the investigate phase, students then conduct research as foundation for the creation of a solution to their challenge. Finally, in the act phase students develop and implement their solution and evaluate the outcome. The whole process is accompanied by documentation and reflection tasks. Challenge-Based Learning engages students in learning and improves their performance (Leijon et al., 2022). Through cooperation with out-of-school partners, Challenge-Based Learning can foster a sense of empowerment and can lead communities to a more meaningful involvement of young people.

Phenomenon-Based Learning (PhBL) is a student-lead educational approach firmly rooted in social constructivism, deployed with a broad interdisciplinary focus, and carried out through a series of inquiry-based methods. In practice, this generally means that, in PhBL, students start with a broad, global, complex phenomenon, and they explore the topic by developing questions, conducting research, and thus creating a holistic student-lead understanding of the phenomenon from multiple perspectives. PhBL also provides a framework for teachers to adapt assessment procedures and, more generally, infuse the learning approach with a higher degree of flexibility especially in terms of scheduling, desired learning outcomes, and learning environment arrangements (Marsh et al., 2019). Learning sciences research shows that students develop deeper and more usable knowledge by making connections among ideas (Krajcik & Shin, 2022). This type of meaningful learning experience has the potential to resonate more strongly with the students, leading to a possible change of values and attitudes, a key dimension in all five cross-cutting issues.

TESTEd Material

On our website you can find all TESTEd publications for initial teacher education, CPD and schools.

www.tested-network.eu/publications

Policy Paper
The policy paper outlines policy recommendations for initial teacher education, CPD and school development based on TESTEd actions and the European Syllabus.

Discussion Paper
The discussion paper outlines the TESTEd project's development of a European Syllabus in Teacher Education focused on cross-cutting issues, its integration into initial teacher education, and future plans for implementing the Syllabus in Continuous Professional Development courses and expanding it with good practice examples from across Europe

Teacher Portfolios
The teacher portfolio is a tool for self-directed learning that encourages reflection on cross-cutting issues in personal and professional contexts, helps set priorities, and enables self-assessment of teaching competencies to guide continuous professional development.

Student Portfolios
The student portfolios help students document their engagement with cross-cutting issues, reflect on their learning, and assess personal growth, while also allowing teachers to evaluate student competencies and identify areas for development.

Student Research Papers
The student papers and theses on cross-cutting issues are based on student research conducted during the TESTEd research stay.

Open Educational Resources
The project published lectures from the lecture series, expert interviews as well as lesson plans and classroom materials as Open Education Resources (OER).

Overview of teacher competencies

Cross-cutting issue	Emerging topic	Teacher competencies		
		Knowledge	Skills	Attitude
1. Education on Sustainability	1.1 Complexity as part of Sustainability	Understanding sustainable development principles	Systems thinking	Promoting nature & self-aware systems
	1.2 Bridging the knowledge-action gap	Knowledge of current and emerging sustainability issues	Facilitation skills	Harnessing agency
	1.3 Envisioning possible sustainable futures	Understanding the role of personal values and attitudes	Future literacy	Openness to dialogue and deep listening
2. Democratic Education and Fostering Active Citizenship	2.1 Democracy under threat	Understanding the impact of digital disinformation on democracy	Fostering media literacy, critical thinking, and fact-checking	Confidence in handling discussions on controversial topics
	2.2 Human rights and peace education	Understanding the role of civic engagement in democratic participation	Facilitating dialogue on human rights and conflict resolution	Valuing peaceful coexistence and respect for diversity
	2.3 Active citizenship in communities	Understanding civic participation and community engagement	Facilitating community-based learning and projects	Fostering a sense of civic responsibility and ownership
3. Diversity and Equality in Gender and Sexual Identity	3.1 Diversity of gender identity and sexual orientation	Understanding gender diversity as a human right	Facilitating inclusive discussions on gender identity	Openness to learning from student perspectives
	3.2 Promoting gender equality in the school environment	Recognizing the impact of gender stereotypes in schools	Identifying and addressing gender biases	Commitment to an inclusive classroom culture
	3.3 Gender sensitivity in digital media and career choices	Understanding media influence on gender perceptions	Fostering critical media literacy	Supporting inclusive career exploration

Cross-cutting issue	Emerging topic	Teacher competencies		
		Knowledge	Skills	Attitude
4. Multilingualism in Teaching and Learning	4.1 Language sensitive teaching as a whole-school approach	Understanding language sensitivity across the curriculum	Design and implement language-sensitive instruction and assessment	Value multilingualism as an asset in the classroom
	4.2 Providing heritage language support and promoting cultural identity	Recognizing heritage languages as an asset for learning all subjects	Designing and implementing linguistically responsive teaching and assessment strategies	Fostering a resource-oriented mindset towards multilingualism
	4.3 Trauma-informed teaching	Understanding the impact of ACEs on learning and well-being	Designing and implementing trauma-informed teaching practices	Fostering empathy and resilience in the classroom
5. Digitalization of Learning Environments	5.1 Rethinking education with AI	Understanding of AI systems	Applying AI systems into teaching and learning	Taking control of orchestrating the classroom with AI systems
	5.2 Fostering data literacy and agency	Recognizing the significance of data and importance of data security	Handling the data safely and ethically	Being responsible and taking ownership of own data
	5.3 Well-being in digital environments	Understanding intersectionality in digital well-being	Fostering safety in digital environments and the use of digital media	Promoting inclusive attitudes in digital environments and positive digital engagement

Glossary

Adverse Childhood Experiences (ACE) = traumatic events occurring during, which can have long-lasting negative impacts on individuals' health, behaviour, and well-being.

Challenge-Based Learning = a collaborative, hands-on approach where students identify real-life challenges, research solutions, and implement them with community involvement (see also **Methodology**).

Computational thinking skills = "the formulation of solutions to real-world problems that can be executed by computers" including "understanding digital systems, developing algorithms, and evaluating the outcomes of these algorithms in simulated environments" (Fraillon, Liaw & Strietholt 2024, p. 149).

Computer and information literacy = "practical use of computers to find, evaluate, and manage information, create information products, and facilitate communication" (ibid.).

Data agency = the ability to actively and effectively control, manage, and make decisions about one's personal data, ensuring its ethical use while understanding the implications of data sharing in digital environments.

Datafication = the process of converting aspects of our life into data, which was previously unquantified. Data literacy = a set of competencies that individuals need to effectively engage with and utilize the data they encounter in their daily lives.

Design Thinking = collaborative hands-on activity where students brainstorm creative solutions to real-world problems. They follow steps like identifying a challenge, imagining possible solutions, and creating simple prototypes.

Digital literacy = the skills to find, evaluate, and use information effectively and ethically in digital environments, distinguishing between credible and unreliable sources and avoiding misinformation and bias.

Foreign language = a language primarily learned through formal instruction, with limited or no direct interaction with native-speaking communities.

Gender identity = an individual's deeply felt sense of being male, female, both, neither, or somewhere along the spectrum, regardless of biological sex.

Heritage language = a language tied to a person's familial or cultural identity. A heritage language may or may not be the mother tongue, and the speaker may or may not be fluent in it.

Heteronormativity = the assumption that heterosexuality is the norm and that relationships and identities outside of this norm are abnormal or inferior.

Linguistic repertoire = the full range of languages or language varieties a person uses, reflecting their unique linguistic skills, experiences and identity.

Majority language = the dominant language used in a society, often the primary language of instruction in schools.

Minority language = any language spoken by a smaller group within a society, often linked to specific cultural or regional identities.

Mother tongue (L1/first language) = the first language(s) learned by a person from birth, often through interaction with parents or caregivers.

Second language (L2) = a language learned after the L1, typically acquired in a natural or immersive environment where the language is actively used.

Service Learning = an educational approach that combines learning objectives with community service, providing a pragmatic, progressive learning experience while meeting societal needs.

Sexual orientation = "each person's capacity for profound emotional, affectional and sexual attraction to, and intimate and sexual relations with, individuals of a different gender, of the same gender, or of more than one gender" (European Commission. Directorate General for Education, Youth, Sport and Culture, 2021, p.9).

Translanguaging = an open and flexible instructional approach allowing students to use all their languages for learning, bridging ideas across languages to support comprehension and engagement.

Trauma = psychological or emotional distress resulting from experiences of significant harm, threat, or adverse events, which can have lasting effects on individuals' mental health, behaviour, and well-being.

Well-being = The state of being comfortable, healthy, and happy, encompassing physical, mental, and social aspects of life. Adolescent well-being is defined as having "the support, confidence, and resources to thrive in contexts of secure and healthy relationships, realizing their full potential and rights" (Ross et al., 2020, p. 473).

References

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