DRITTER GLEICHSTELLUNGSBERICHT

Education

Fact Sheet 9

Digitalisation-related competence

At the latest since the outbreak of the COVID-19 pandemic, digitalisation has permeated all areas of life. Pupils learn at home on their tablets, teachers post learning materials in school clouds, employees connect to their virtual office from home, and grandparents install video conferencing tools on their computers to be able to talk to their grandchildren.

All people must be enabled to navigate this digitalised society and to help shape the corresponding processes of change. For this, they need the ability to use digital tools and to move confidently and self-assuredly in the digital space – regardless of their gender, age, or social background.

Promoting gender equality through sensitisation

To achieve such equal participation abilities, they need – besides the technical equipment – digitalisation-related competence. Teachers and educators have a key role to play in imparting such competence in all phases of education. Furthermore, if they combine gender equality knowledge with digital skills, they can contribute to reducing gender inequalities.

For instance:

Dissolving stereotypes in technology issues: From an early age, boys are more likely to be introduced to technology than girls. For example, toy manufacturers offer technology-oriented building block sets for boys – and sets with a focus on role play for girls. Educators and teachers in day-care centres and primary schools can counteract such attributions if they are aware of their own position as role models and challenge the stereotypes already adopted by the children.

Designing technology development in a gender-responsive way: The proportion of women in technical study programmes or vocational training is low. As a result, digital products such as apps or computer software are often developed by all-male teams. Teachers can motivate young women to also take up technical professions, among other things by introducing female role models into their teaching, e.g. Ada Lovelace, the first female programmer.

Protecting against violence and discrimination in the digital space: Many factors can exclude women from equal participation in business, politics, and society, e.g. discriminatory algorithms or violence in the digital space. Courses and teaching units offer the opportunity to address these dangers. Teachers should integrate the topic of gender-based digital violence into their lessons and inform course participants about potentials for discrimination.

Teachers and educators can reduce inequalities by teaching digitalisation-related skills in a gender-sensitive way.

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The **socio-technical perspective** is an approach towards considering and assessing technological developments in their respective social context and towards actively shaping this context – for example, with a view to structural gender inequalities.

Digitalisation-related competence – more than just using technology

Digitalisation-related competence is not limited to the ability to operate certain computer programs or connect the PC in the office to the WiFi printer.

The Expert Commission for the Third Gender Equality Report explicitly uses the term digitalisation-related competence, in contrast to digital competence or media competence. This emphasises that the focus is also on adopting a socio-technical perspective on digitalisation and taking into account the interconnectedness of technology and gender.

Digitalisation-related competence includes, for example:

» the ability to communicate via digital channels or to produce digital video and audio formats. This also entails knowledge regarding copyrights, rights of use, and personal rights;
» the competence to search for information online and to assess it with regard to its seriousness and credibility. Users must be able to reflect on images and profiles in social media in the context of economic, social, and political interests;
» a basic understanding of the functioning, programming, and limitations of information technology systems;
» knowledge of data and privacy protection and how to deal with respective dangers in the digital space.

Such competence should be taught as basic education for all people across all subjects in school lessons, in lectures at universities, or also in courses of vocational training and non-vocational further education, e.g. at adult education centres ("Volkshochschulen"). Such competence could be deepened in computer science lessons or in technology-related courses of study and (vocational) IT training courses.

Conveying digitalisation-related competence – but in a gender-responsive way

An example from the Open Education Research teaching unit on "Gender & Computer Science Teaching" at Humboldt University of Berlin shows that a gender-responsive design of computer science teaching is only possible if teachers possess gender competence. This also includes reflecting on and avoiding gender-related attributions that continue to persist in computer science.

"Computer science students [are] said to have to be exceptionally mathematically and technically gifted in order to pass this course of study, which is considered 'difficult' and 'hard'. At the same time, they are often portrayed as socially awkward young men who seek refuge from an 'unpredictable' world of interpersonal relationships by passionately coupling with IT systems."

Teachers of computer science who consciously reflect on their own gender-related attribution patterns have the opportunity to inspire also those students for the subject and its content who do not feel addressed by this common image of "the IT professional".

To this end, teachers can, for instance, highlight the diversity within computer science (e.g. mention significant women in the history of computer science again and again "in passing"), use gender-neutral material (e.g. animals instead of pictures of people/images of roles), and choose diverse professional and real-life teaching topics.

Knowledge – Skills – Abilities: A question catalogue for educators

In order to make your teaching gender-responsive, you as a teacher can use the following list of questions as a guide. The questions were developed based on concepts and instruments of gender-sensitive didactics (e.g. checklist for gender- and diversity-conscious teaching) and digital education (e.g. the "Education in the Digital World" strategy of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder). They are oriented towards the competence levels of knowledge/skills/abilities. The individual fields should not be seen as separate domains. Rather, the questions can be expanded by educational institutions and teachers, or adapted for their respective context.

A **checklist** for computer science educators who would like to design their classes/courses in a gender-sensitive way can be found here: https://www.digiducation.de/wp-content/uploads/2021/01/Checkliste_BSpieler.pdf

Knowledge through information

You should yourself possess gender-related knowledge when it comes to technology and digitalisation. This knowledge could cover the following questions:

- What gender relations and what social constructions of gender exist in relation to technology design?
- What role does social media play in the reproduction of gender relations?
- What demands does digitalisation place on personal boundary management?
- What forms of digital violence exist and what protection concepts are required?
- What opportunities do algorithms offer and what risks arise in terms of discrimination?
- What do I need to know about data protection as well as data protection-compliant services and products?

Skills through sensitisation

Teaching digitalisation-related competence requires gender sensitivity in order to recognise and dismantle gender stereotypes with regard to technology. This includes, among other things, reflecting on one's own role and the way one deals with technology. To do this, you can ask yourself the following questions:

- What is my own (gender) role with regard to digital technologies?
- What stereotypical images and perceptions do I hold with regard to digital technologies?
- Who are the participants in my course? How could I potentially target women, marginalised, and underrepresented groups?
- To what extent is my subject/teaching content shaped by male structures?
- What do I want to teach my students beyond the subject matter – e.g. challenges in managing boundaries in a digital world, risks of discrimination, risks in social media?

Abilities through application

In your teaching, you can address heterogeneous groups of learners by using a variety of didactic methods. For example, you could ask yourself:

- Do the images/materials I use reflect the diversity of society? Do they use gender- and diversity-sensitive language?
- Should I try out digital media to reach my students according to their diversity and with their different demands/requirements in mind?
- Where and how can I encourage women, marginalised, and underrepresented groups?
- Have I considered the privacy and personal rights of all participants?
- Are the digital services and products (e.g. learning platforms) I use compliant with fundamental IT rights?

Education policy recommendations by the Expert Commission

The proposals for teachers and educators developed in the Expert Opinion of the Third Gender Equality Report are accompanied by recommendations to education policymakers at various levels. The Expert Commission recommends, for instance:

Supporting teachers in acquiring knowledge

» Offering teachers and educators time, technology as well as further and advanced training so that they can acquire the necessary knowledge to make their teaching gender-responsive. To this end, institutions such as the "Haus der Kleinen Forscher" (House of Little Scientists) – which provides educators with access to technology in further training courses and thus contributes to dismantling stereotypes – should be further promoted.
Likewise, initiatives for the common good that already combine digitalisation-related competence with gender competence are to be supported.
These are, for instance, initiatives such as "Code Curious" or "Django Girls", which offer workshops on programming for women, trans and non-binary people. Moreover, there are associations like the "FrauenComputerZentrumBerlin", which offers counselling, coaching, and further education/training for women in the IT sector and in handling digital media.

The Expert Commission furthermore recommends:

Incorporating digitalisation-related competence and gender competence

» Sustainably linking the teaching of subject-related IT skills in (vocational) schools with gender and diversity competence. To this end, the "Education in the Digital World" strategy of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany is to be expanded and to include a module on gender competence. When developing existing and new IT occupations, the Bundesinstitut für Berufsbildung (BIBB, Federal Institute for Vocational Education and Training) should include gender and diversity competence as a component in its training plans.

» Incorporating the socio-technical perspective into the school subject of computer science across the board. The subject of computer science should include a socio-technical perspective and highlight the role of digitalisation for the realisation of equal capabilities.

Further reading

» Chapter B.III.2 in the Expert Opinion part of the Third Gender Equality Report of the German Federal Government. The Third Gender Equality Report of the German Federal Government is available (in German) at: https://www.bmfsfj.de/gleichstellungsbericht

» Agency for the Third Gender Equality Report of the German Federal Government (2021): Shaping digitalisation in a gender-equitable way. Summary of the Expert Opinion of the Third Gender Equality Report of the Federal Government. Berlin: Agency for the Third Gender Equality Report. Download at: https://www.dritter-gleichstellungsbericht.de/de/topic/50.english.html

» Jeanrenaud, Yves (2021): MINT. Warum nicht? Zur Unterrepräsentation von Frauen in MINT, speziell IKT, deren Ursachen, Wirksamkeit bestehender Maßnahmen und Handlungsempfehlungen. Expert opinion for the Third Gender Equality Report of the German Federal Government.

» Rüber, Ina Elisabeth/Widany, Sarah (2021): Gleichstellung durch Weiterbildung in einer digitalisierten Gesellschaft. Expert opinion for the Third Gender Equality Report of the German Federal Government.

Both expert opinions are available (in German) at: www.dritter-gleichstellungsbericht.de/de/topic/62.expertisen.html

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