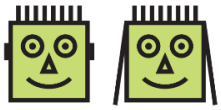
Deconstruction of Gender Stereotypes in a Digitalised World?!

The perspective of young people, career guidance counsellors and companies. Joint research report as part of the 'DigiTyps' project

Nadja Bergmann, Marcel Fink, Ronja Nikolatti, Claudia Sorger

Co-Authors:
Hannah Steiner, Gerlinde Titelbach



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L&R Sozialforschung GmbH, Liniengasse 2A/1, 1060 Vienna

www.lrsocialresearch.at

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1 Introduction: Objectives and questions of the present study

The research project 'DigiTyps' – De-Stereotyping of Occupational Profiles and Training Concepts in the Digital Shift'[1] is essentially concerned with the question of whether the current upheavals taking place in the working environment around digitalisation (can) represent an opportunity to weaken the clearly pronounced gender-specific educational and occupational attributions in Austria.

The research project is set against the background of the pronounced educational and labour market segregation in Austria: The majority of employed women (just under 60%) in Austria still work in a so-called women's jobs and just under 60% of employed men in a men's jobs (Fritsch 2018). There are clear structural and substantive differences between them: Women's jobs are predominantly in the fields of social, nursing, healthcare, education and office occupations, while men's jobs are more focused on manual labour and technical fields (Leitner & Dibiasi 2015).

The core objective of the research project is to explore whether the change in the working environment due to digitalisation can be an opportunity to question and change stereotypical perceptions of professions and competences. Since increasing digitalisation is changing professional requirements as well as the competences needed for them, it could stimulate momentum for breaking down gender stereotyping. For example, digital and social competences are becoming more important for all professions – does this create opportunities to break down traditional gender-based attributions?

To find an answer to this question, the perspectives of teenagers and young adults, selected company representatives as well as educational and career guidance counsellors were collected within the research project and presented in three independent volumes:

- the perspective of adolescents and young adults who are about to make a training or career decision (the results are presented in Volume 1 of the 'DigiTyps Research Report Series', see Bergmann et al. 2022)
- the perspective of companies (the results can be found in volume 2 of the research series, see Fink 2022)
- the perspective of educational and vocational guidance counsellors. The counsellors' attitudes regarding digitalisation, the labour market, gender and the practice of career guidance and counselling are the focus of Volume 3 (Nikolatti et al. 2022)

These results were used to answer the question of what the digital future could offer regarding gender stereotypes and which design approaches are considered. This consolidation is the subject of this research volume.

The 'DigiTyps' project is being implemented by L&R Sozialforschung in cooperation with the social and economic research institute IHS, bab Unternehmensberatung GmbH and the network of Austrian counselling centres for women and girls. The team is supported by strategic project partners from the Office of the Lower Austrian Provincial Government, the Vienna Employee Promotion Fund, the Women's Service of the City of Vienna, the Chamber of Labour for Vienna, the Chamber of Labour for Lower Austria and the Austrian Labour Market Service.

[1] See https://digityps.ihs.ac.at/

2 Literature-based background: Gender stereotypes – Gender-segregated labour market – Digitalisation

Existing empirical studies show persistently high gender-specific structuring of the employment system. Among other things, this structuring manifests itself in a numerical dominance of women or men in certain occupations or occupational groups, which is referred to as 'horizontal labour market segregation'. The numerical dominance of women or men varies along specific occupational sectors of the labour market. Horizontal gender segregation is particularly evident in the STEM[2] and EHW[3] sectors. In an international comparison, Austria shows a particularly low share of women in STEM occupations with a total of less than 10%, while the share of men in EHW occupations is pretty average at slightly over 27% (EIGE 2018, p. 57). The higher proportion of men in EHW occupations is due in particular to men in skilled jobs in the health sector and men working in the education sector (ibid.). The proportion of women is particularly low in selected manual labour or technical occupations, in the ICT [4]sector, and in the field of science, mathematics and engineering (Leitner & Dibiasi 2015). Over the last ten years, there has been almost no change. In this period, the share of women only doubled in the ICT sector from 10% to 20% (Fink 2022).

From the 1970s onwards, the scientific debate on explaining the formation and rigidity of gender segregation intensified internationally. This resulted in a broad portfolio of different theoretical explanations from various disciplines such as economics, sociology and social psychology (for an overview, see e.g. Achatz 2018; Busch 2013; Bettio & Verashchagina 2009; with a focus on the STEM area Thébaud & Charles 2018).

These theoretical explanations show, to varying degrees, points of reference that draw on gender-specific stereotypes and role models as explanatory factors. In a broad sense, stereotypes can be understood as 'general expectations about members of particular social groups' (Ellemers 2018, p. 276) or 'qualities perceived to be associated with particular groups or categories of people' (Schneider 2004, p. 25). Regarding gender stereotypes, the results of empirical studies show that attributes that can be bundled in concepts such as 'warmth', 'expressiveness', 'community orientation', or '*communion*' are more likely to be ascribed to women, while attributes like '(task-related) competence', 'instrumentality', 'assertiveness' or '*agency*' are more likely to be ascribed to men (Ebert & Steffens 2013; Eagly 2018). According to the findings, these attributions correlate with other stereotypes about 'typically' male or female knowledge and skills and stereotypical ideas about which knowledge and skills are particularly important in which occupational areas. Ultimately, this type of thinking manifests itself in *occupational gender stereotypes* (for an overview: Clarke 2020; for specific studies: e.g.: White & White 2006; Glick et al. 1995; Miller & Hayward 2006).

Concerning the supply side of the labour market, these correlations were conceptualised in more detail – with a view to the educational and occupational decisions of children and young people – by Gottfredson (1981; 1996; 2002) in her '*Theory of Circumscription, Compromise, and Self-Creation'.* More strongly (but not only) focused on the demand side is the 'theory of expectation states' (*Expectation State Theory*, heart & Ridgeway 2006). Both approaches agree that selection decisions on the labour market are strongly influenced by gender stereotypes. This affects young people's preferred choice of education and occupation, but it also affects the recruitment habits of employers. According to the 'theory of social roles' (Eagly

[2] STEM stands for 'Science, Technology, Engineering and Mathematics' – in German, it is referred to as MINT ('Mathematik, Informatik, Naturwissenschaft und Technik').

[3] EHW stands for 'Education, Health and Welfare'; no common German-language equivalent has (yet) emerged for it, but it could be translated as 'Erziehung, Gesundheit und Soziales'.

[4] ICT stands for information and communication technologies

1987; Eagly et al. 2000), existing labour market segregation reproduces gender stereotypes, which in turn contribute to continuing labour market segregation. These relationships have been widely studied, especially for the STEM sector (summarised by Thébaud & Charles 2018), showing a strong influence of gender stereotypes on labour market segregation (with further literary references also Clarke 2020).

There are contradictory arguments and hypotheses in the literature on the question of whether digitalisation can be expected to contribute to reduction of gender inequalities in the labour market or to reduction of gender stereotypes (summarised by e.g. Dengler & Matt, Dengler et al. 2019, Kutzner 2018; 2019; 2021 and Kutzner & Roski 2019). There seems to be some agreement that the pushed changes bring both risks and opportunities that need to be addressed through active and inclusive design. Accordingly, the digital transformation – as a process of change – offers the opportunity to renegotiate gender relations in the working environment and to break down stereotypical expectations (Kutzner 2021; Master et al. 2017; 2020). Among other things, gender-sensitive career guidance is likely to be of particular importance (Franzke & Rohman 2015; Iseler 2013; Gehrau 2020).

3 Empirical approach: Method mix

Building on the comprehensive literature review, various social science methods – both qualitative and quantitative – were combined to empirically collect the views of the three selected target groups. We conducted a total of three online surveys – one for each target group. In addition, we conducted interviews with employees from the selected sectors, held focus groups with adolescents and young adults, and carried out exploratory observations at career fairs/career information centres as well as short surveys at girls' counselling centres.

At this point we would like to thank the project partners who were able to provide us with ample support in accessing the various target groups.

Exploratory focus groups and online survey of young people

In order to focus on the views and opinions of young people, nine focus groups with a total of 62 participants between 14 and 24 years of age were held in Vienna and Lower Austria in an explorative and open-minded approach. There were 41 young women and 21 young men in mixed and same-sex groups of seven people on average. All nine focus groups took place on site at the respective facilities or at our institute, in compliance with COVID-19 regulations and hygiene regulations. The duration of each focus group was approximately two hours. In eight out of nine focus groups, participants agreed to being recorded. These recordings were transcribed and analysed qualitatively using the analysis software MAXQDA.

A quantitative online questionnaire (Limesurvey) was created based on this process. The survey was conducted between the beginning of February and the end of March 2022 among people in Vienna and Lower Austria between the ages of 14 and 21. A total of 857 adolescents and young adults completed the questionnaire in full; partially completed questionnaires were not included in the analysis. The collected data was analysed using the statistics programme SPSS. We analysed whether statistically significant group comparisons (significance test: Chi^2) could be found in the data. In the sample, about 42% report being female and about 57% report being male; 2% report being diverse. Almost 60% of the respondents are of school age (18 and below), and about 40% are older. Regarding place of residence, about one third say they live in Vienna and about two thirds in Lower Austria. The majority of the participants stated that they were doing an apprenticeship or cross-company apprenticeship at the time of the survey

(57%). 20% are in a labour-market-specific project, 14% are in school, 4% are employed. Thus, primary and secondary school pupils are underrepresented in the sample.

Online survey and guideline-based interviews in selected sectors

The primary quantitative research instrument is an online survey of companies and institutions in Vienna and Lower Austria, whereby the survey was primarily directed at people in management positions as well as works councils and staff representatives. The return of evaluable questionnaires amounts to n=784, with a varying willingness to participate along the four sectors. By far the most questionnaires were received from the sector 'education and training' (n=556), followed by 'health and social work/care' (n=110), the 'production sector: manufacture of goods' (n=43) and 'ICT: provision of information technology services' (n=51). The share of women in all respondents is about 65%. More women than men answered the questionnaire especially in the sectors 'Education' (72% vs. 28%) and 'Health and social work/care' (69% vs. 31%), while the ratio is reversed in the ICT sector and in the production sector.

The central qualitative research instruments are guided qualitative interviews with representatives (company/institutional management level, works councils and staff representatives) of companies or institutions in the four sectors mentioned above. Two interviews were conducted per sector, recorded in digital audio documents, transcribed verbatim and analysed using a category scheme.

Quantitative survey, explorative observations and expertise from gender-sensitive career guidance

A quantitative online survey (Limesurvey) was conducted among educational and vocational counsellors in Vienna and Lower Austria in order to collect their views and perceptions. When distributing the questionnaire, thanks to the support of the project partners, we were able to reach a total of 263 educational and career counsellors who completed the questionnaire in full. The collected data was processed for statistical analysis. The evaluation was carried out using the statistics programme SPSS. Primarily, descriptive evaluations (frequencies) were calculated; in addition, group comparisons (significance test: Chi^2) were analysed based on socio-demographic characteristics. In the survey, 79% of the respondents report that they are female; the remaining respondents are/see themselves as male. Almost 60% are working in a project within the setting of 'AusBildung bis 18' (Education until 18); 12% work in a BerufsInfoZentrum (BIZ; career info centre) and 6% at a school (24% 'other'). 54% say they work in Vienna and 46% in Lower Austria.

The L&R research team also visited the BeSt fair[5] in March 2022 and conducted a participant observation there. In order to find out more about how the visitors to such a fair are advised, we pretended to be interested in a job or study for ourselves or our children. Moreover, an open participant observation was conducted at a BerufsInfoZentrum [6](BIZ) in Vienna in May 2022 and online interest tests were completed. The impressions are presented in the form of subjective assessments and differentiated from the rest of the results in the report. They are not included in this summary.

The views of female experts were collected in collaboration and with the support of the network of the Women's and Girls' Counselling Centre. An oral interview was conducted and short questions were sent out to be answered openly and in writing. Thanks are due to the girls'

[5]Job, Training and Education Fair: Messeprofil - BeSt³ (bestinfo.at)

[6] https://www.ams.at/arbeitsuchende/aus-und-weiterbildung/berufsinformationen/biz---berufsinfozentren

counselling centres Equaliz (Klagenfurt), Mafalda (Graz) and Amazone (Bregenz). In the oral interview we discussed the questions in more depth. The answers were collected and processed by the women's and girls' counselling centre network. In the report, they are presented in the results in addition to the questionnaire survey.

4 How adolescents and young adults assess the digital future

Based on the labour market situation, we wanted to focus on selected professions (manual labour and technical professions, ICT professions, healthcare and nursing as well as teachers) in our discussion with adolescents and young adults. It is crucial to ask the target group about their opinion and understanding of digitalisation and to obtain an assessment of the degree of digitalisation. Furthermore, we are interested in how these professions are perceived by the trainees and young professionals. Of course, the central question is whether professions are attributed to one gender.

The adolescents and young adults have a very comprehensive and detailed view of topics related to digitalisation; they observe very closely where digital technologies are used. Overall, it is noticeable that highly qualified professions tend to be assessed as more digitalised. Digitalisation thus seems to be more of a class issue than a gender issue. Professions in which more women tend to be employed (e.g. retail, office) are also perceived as digitalised; the manual labour and technical sector and care, on the other hand, are perceived as less so. This is justified by the fact that ‘manual work’ (related to the manual labour or technical area) or ‘work on and with people’ in healthcare and education professions represent opposites to digitalisation.

Social media are an essential part of young people’s everyday life. They also see a potential in it in all professions, especially in the form of online marketing. They are hardly ever taught the skills associated with it at school.

The selection of a desired occupation (from predefined occupations) is made along gender differences. The first choice for young men is computer scientist, for young women the medical field (nurse followed by doctor). Among self-stated desired professions, only a few mention the ICT sector or professions in the digital transformation (e-commerce, etc.). A strong gender gap is particularly evident in the manual labour and technical field: Young men name this area more frequently in the open-field answers. Female respondents also feel most strongly addressed by the presentation of professions in the social and healthcare sectors and least by manual labour and technical professions. The opposite is true for male respondents.

The attribution of aptitude to an occupation reflects gender segregation in the labour market. For example, about half of the respondents stated that women are more suited to care for the elderly and the sick. A stronger gender attribution to men is obvious for manual labour or technical occupations. Teachers have the least gender connotations among young people. According to the young people, social skills are most important in nursing and for teachers; however, they are necessary in all occupations. In ICT, for example, they emphasise interdisciplinary communication, collaboration, networking and self-promotion.

Personal interest is considered the primary ‘cause’ of gender segregation in the labour market. Personal interest is also at the top of the list when it comes to choosing one’s own career. Interest in digital technologies tends to be attributed more to men.

Young people rate themselves relatively well in terms of basic digital skills and social skills. The respondents feel less competent in mathematics and programming. The strongest

differences between young women and young men are found in mathematics (young men rate themselves better).

On the other hand, the attribution of competences to one gender is particularly strong in programming and empathising with others. For both skills, young women respond more strongly in terms of gender attribution – for programming to men, for empathising with others to women. This does not correspond to the differences in personal assessment. Thus, the attribution of competences shows stronger gender bias than self-assessment.

From the discussions with the young people about occupational segregation based on gender, no uniform picture can be derived. Personal observations seem to play a relevant role here. Sometimes, stereotypical ideas regarding ‘female’ and ‘male’ competences and interests also emerge. Especially problematic is the observation that the overrepresentation of men in higher positions is used as an ‘objective’ confirmation of ‘better performance’.

With regard to career guidance offers at school, the picture is disillusioning. The majority of the respondents had practical vocational days; other offers were provided by a maximum of only 36% (e.g. visiting career fairs, competence and interest tests, counselling at school, etc.). The most important source of information about occupations is the internet. The second most frequent source of information for adolescents and young adults is their family. There is a tendency for female respondents to obtain information more frequently from all the specified information channels. In general, the desire for more support is high. Specifically, the young people want more time, they want to learn about more job descriptions and gain insight into practice or a realistic presentation of occupations.

5 Digitalisation, gender stereotypes and gender-specific labour market structuring in four selected sectors

Work package 3 of the ‘DigiTyps’ project deals with perceptions and positions in companies and institutions in various sectors, namely in the production sector, in information and communication technology, in school education, and in the health care sector. The focus of the research is on perceived changes and challenges associated with digitalisation, the knowledge and skills considered necessary, the formation of a possibly gender-specific attribution of the knowledge and skills, the gender-specific structuring of fields of activity and future expectations regarding the effects of digitalisation on labour market segregation.

Digitalised tools and processes are becoming increasingly important in all sectors. Consequently, professional activities and competence requirements are also changing. Apart from certain differentiations, basic digital skills and advanced user skills are of high or rather high importance in all surveyed sectors, giving the sense that an overwhelming majority of employees need these skills. ICT knowledge and skills that go beyond it are considered necessary for a larger proportion of the workforce, especially in the ICT sector, but to some extent also in production. In the healthcare sector as well as in the education sector, skills, competences and responsibilities for planning, development and maintenance of systems (often based on tools from external providers) are usually concentrated on a few people. The vast majority of employees primarily need user skills (but often also for sector-specific software and/or hardware).

At the same time, the skills required for increasingly digitalised work processes are not limited to ICT and technical skills. On average, different social communication skills and specific personal skills (such as ‘problem-solving and optimisation skills’, ‘creativity in finding solutions’ and ‘personal responsibility’) are rated as even slightly more important. This perception is evident across sectors and among both men and women.

Different types of competences and skills continue to be attributed relatively strongly on a gender-specific basis according to the available results. Despite variations, this is largely true regardless of the respective sector or individual characteristics of the respondents, including gender. Social communication skills (with the exception of 'leadership competence') and a few personal skills (such as 'creativity in finding solutions', 'personal responsibility', 'interdisciplinary thinking' and 'conduct') are more likely to be attributed to women. By contrast, men are predominantly associated with ICT and, in a broader sense, technical knowledge and skills ('comprehensive knowledge of information and communication technology (ICT)'; 'ability to handle technical devices/machines'; 'general technical understanding'. Furthermore, men are generally believed to have a somewhat higher interest in digital technologies than women. It is noticeable that women are increasingly associated with the types of knowledge and skills that are considered to be particularly important in connection with digitalised work processes. This could be interpreted as an opportunity to reduce labour market segregation.

On the other hand, with regard to digital technologies, the gender-specific structuring of activities in companies or institutions often follows the pattern that women use digital technologies just as often as men, but that the latter outnumber women in planning, development and maintenance. This points in the direction of a dominant influence – for these activities – of technology-related stereotypes.

Expectations about the impact of digitalisation on gender-specific labour market segregation and income inequality are divided, with pessimistic expectations outweighing optimistic ones.

Overall, the results of this study point in the direction that there are no strong indications that increasing digitalisation will lead to a substantial reduction of horizontal and vertical gender segregation. Conversely, there is also no strong indication that it will lead to a substantial increase in labour market segregation.

The actual medium- to long-term effects will therefore likely depend on a number of structural conditions and the extent to which (occupational) gender stereotypes persist. In this context, it is considered critical to introduce measures for a more equal distribution of reproductive and care work between men and women, along with more intensive teaching of ICT skills within the school education and further expansion of gender-sensitive career guidance and counselling. If this approach makes it possible to contribute to a higher gender-specific occupational parity, it is to be expected that it will conversely have a slowing effect on the perpetuation of traditional gender stereotypes.

6 The practice of career guidance and counselling in the digital transformation

In addition to the previously mentioned target groups, the focus was also on vocational and educational career counsellors. They represent relevant interfaces between the labour market and young people starting their training and careers. In this context, the influence of gender also plays a relevant role in choosing a profession and in career guidance. Specifically, we are interested in the extent to which they perceive the digital change in the working environment and education and what influence this has on the practice of career guidance and counselling, both in terms of content and method in dealing with digital tools. With regard to the strongly pronounced occupational labour market segregation based on gender and the inequalities associated with it, the question of the reproduction of gender stereotypes in the digital transformation on the labour market is crucial. What new challenges and opportunities arise in this context and to what extent do principles of gender-sensitive career guidance play a role or can play a role?

Particularly relevant in career guidance/counselling for young people is highlighting competences and starting with interest. References to professions with a shortage of skilled workers play a lesser role. In the course of changes due to digitalisation, it is particularly important for the career counsellors to address the need for social competences in all professions. Digital skills, changes due to the digital transformation and newly emerged professions are seen as less relevant, although the level of agreement is still high.

Digital tools in guidance and counselling are rated as useful and as well accepted by the young people; however, they cannot replace individual counselling settings. Partially high-threshold access and the lack of inclusion of young people in the development are problematic. Applied gender differences are not perceived or cannot be assessed.

The majority of the interviewed vocational and educational career counsellors consider themselves to be rather well informed when it comes to changes in connection with digitalisation; only 13% state that they are very well informed. This is accompanied by a strong desire for further training. Specifically mentioned in this regard were new developments on the labour market and newly created job profiles. It is their experience that new opportunities and professions in the digital transformation are not discussed all too often by young people. The addressed topics mainly cover well-known and particularly 'visible' professions/activities.

The opinion that traditional gender roles influence the career choice of young people is very popular among young women as well as young men. Equal opportunities for a 'gender-atypical' choice of occupation, on the other hand, are rated differently: according to the respondents, young women are primarily hindered by traditional role expectations and stereotypes, while young men sometimes have better opportunities.

Measures for more equal opportunities are predominantly seen as important and useful. Gender-sensitive presentation and communication of occupations received the highest approval, followed by an early start of career orientation measures to consciously break down traditional role models; next in line were training for career counsellors on gender stereotypes and the use of digital tools/serious games to raise awareness of traditional occupational profiles. In the open answers, it was emphasised that female-dominated professions need to be upgraded in monetary and social terms. They also mention the (lack of) visibility or the influence of 'observational learning' and the need to include many interfaces and social areas.

The career counsellors consider the digital competences of young people relevant to the labour market to be low. Although they are competent in using smartphones and social media, they are less competent in using common computer programmes. Social media skills, however, are also seen as a link to the working environment. To build or improve (digital) skills, it is helpful to recognise existing competences and build on them. It is also important to strengthen young people's self-confidence in dealing with digital technologies.

Competent use of social media is attributed to young women by almost one third of the respondents. Strong gender attributions in more advanced digital competences tend to be 'in favour' of young men. Even if it cannot be clarified to what extent this is based on actual observations or stereotypical ideas, this assessment is nevertheless remarkable.

There is disagreement about the influence of digitalisation on gender segregation. More than half state that an influence is perceived here; 30% of them see an increase in segregation. Although low-threshold access to information is seen as an opportunity in the open answers, the chances of using digitalisation to inspire young women for STEM and young men for the healthcare and education sector are assessed differently, with more potential being attributed to the former.

7 Summary: Actively shaping the digital transformation

The goal of project ‘DigiTyps’ is to generate an understanding of the correlation between gender stereotypes, the digital transformation of the working environment and structural, gender-related inequalities in the labour market. The empirical investigation to answer the research question was conducted across three groups: Adolescents/young adults, companies and educational and career counsellors.

Digitalisation is changing the working environment

In all three target groups, there was a perception that digitalisation has a strong impact on the working environment. The survey in the companies shows that digitalisation is considered to be relevant across all sectors. Digital tools are increasingly used in educational counselling and career guidance. The adolescents and young adults have a very comprehensive picture of digitalisation and the associated changes in the working environment. They tend to perceive higher-skilled occupations as more digitalised than vocational training and other lower-skilled occupations. Moreover, they assess female-dominated fields such as retail, gastronomy or office work as more digitalised than manual labour and technical professions. Personal experience and visibility seem to have a stronger impact on young people’s perceptions, and the increasing digitalisation is also perceived quite critically.

Gender stereotypes reproduce themselves in the digital space

All three surveys show relatively strong gender-specific attributions of digital technologies: In the case of companies, the use of digital technologies is predominantly attributed to men. The educational and vocational career counsellors mainly see young men as more competent in advanced digital skills (such as programming). A similar picture emerges among adolescents and young adults, with young women tending to show a stronger gender-specific attribution. These results are in line with the findings of feminist technology research, according to which (young) men are ascribed comparatively more digital competencies than (young) women, and (young) men rate themselves better than (young) women. On the other hand, social skills are more strongly associated with women.

The interaction of stereotypical attributions and labour market segregation

These reproductions of ‘gender-typical’ attributions are so disconcerting because they influence the preferred choice of occupation and thus the segregated labour market. The survey of vocational and educational career counsellors shows that they see traditional gender roles as a strong factor in career choice. Young people focus on their personal interest when they are choosing a profession, whereby gender-specific attributions are not questioned much. Moreover, the examination of occupations reflects occupational segregation among adolescents and young adults. A strong gender gap emerges especially in the healthcare sector, the ICT sector as well as in manual labour or technical occupations.

Opportunities in digitalisation to counteract this occupational segregation and structural inequality are largely assessed pessimistically in all target groups. At the sector level, a more optimistic picture emerges in the ICT sector compared to healthcare. The educational and vocational career counsellors also see more opportunities in digitalisation to inspire young women for STEM fields than young men for healthcare and education professions. The unequal evaluation may indicate that digitalisation – connoted as ‘male’ – is relegated more influence in male domains.

Even if a specific momentum for de-stereotyping in the digital transformation cannot be worked out, some **fields of action and opportunities** can be found that can be used to reduce gender attributions in the digital transformation.

Practical relevance and process-oriented, gender-sensitive career guidance

Since the perception of adolescents and young adults is increasingly influenced by personal observations, it would be important to design the offers in a practice-oriented manner in order to convey a realistic image to the young people. The visibility of potential role models and low-threshold access to information are also relevant.

The goal would be process-oriented career guidance to give young people more time, more insight and more support. Career guidance could be offered as a interdisciplinary topic at school with comprehensive information on job profiles, training opportunities and career opportunities.

Moreover, the stereotypical attributions in the choice of occupation should also be reflected more strongly in career guidance. A process-oriented design of career guidance offers could be especially helpful to uncover and solve contradictions regarding gender-specific expectations. In this regard, the knowledge and experience of girls' counselling centres can be helpful, as they combine career choice and guidance with a gender-sensitive and feminist perspective.

The insights into the lives of young people lead to the conclusion that socio-economic background and other social categories sometimes supercede gender. Participatory and realistic involvement of young people in the development of new (digital) tools could lead to a better target group fit of some tools. It also offers the chance for young people to acquire new skills and build new interests in practical implementation.

Exploiting potentials: The connectivity of social media in the working environment

The sometimes rapid developments and new opportunities that have arisen through digitalisation are still not reflected enough in the interfaces relevant to the labour market. Above all, the desire for further training in new developments on the labour market, on newly emerging job profiles and on social media were frequently mentioned by counsellors in career guidance. There are no recognisable specific considerations and concepts in educational counselling and career guidance on the complex question of whether this could also involve breaking up traditional gender stereotypes or to what extent this could be supported.

Young people see many potentials for the professional world in social media and online marketing. At the same time, young women in particular – but also young men – consider themselves competent in the use of social media. There are many points of reference here, especially for career guidance, but also for school education. For example, they can be used to present the diversity of an occupation, to broaden the digitalisation discourse in the working environment and to convey a realistic image to young people. More permeable and comprehensible job profiles can be used to debunk preconceptions based on stereotypical ideas.

For a perfect fit of such contributions, it makes sense to involve the young people themselves in the design. Furthermore, existing skills can be used to engage young people in more in-depth IT skills. In order to learn or strengthen digital skills, it is also helpful to recognise existing skills and identify points of reference. In addition to gender-sensitive educational work, critical media competence is particularly crucial here.

Edifying female-dominated professions and social skills

A confrontation of occupational segregation leads to the social and monetary valorisation of traditional ‘women’s occupations’ as well as adapted working conditions for better compatibility of family and paid work in all occupations. Social skills are generally considered to be very important, including in the context of the digital transformation, but their monetary compensation is lacking.

The structural imbalance between the sexes is reinforced by the permanent experience that women tend to earn less and work in less valued or prestigious professions. In addition to career guidance, it is therefore essential to raise awareness in personal (family environment) and public life (school, companies, etc.).

Active shaping and need for further research

It is difficult to assess how the work of the future will be specifically changed by the advent of digital technologies. At the same time, it is characterised by ambivalent developments and experiences. The forecasts regarding the impact of digitalisation on existing gender inequalities also seem to be contradictory. Thus, the digital transformation may offer an opportunity to break through stereotypical attributions, but there is also a risk that traditional gender-specific attributions are reproduced in the digital world.

In the research project, the stereotypical gender attributions became particularly visible with regard to advanced digital skills such as programming. Therefore, it would be important for the stakeholders to reflect on the attribution of technology, as well as the applied materials and tools, as ‘masculine’ and social media and social skills as ‘feminine’. They should find a sensitive way of dealing with gender attributions to interests, competences and professions. There is a need for further research, especially on the interaction of different inequality dimensions such as socio-economic background, education, ethnicity or disabilities in the context of digital transformation in the labour market.

8 Literature

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