



Research Project

2.1.320 – Women opt for STEM: Factors influencing career choice and the decision to opt for upgrading training (FeMINT [Women in STEM])

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The subject of women entering occupations in science, technology, engineering and mathematics (STEM) has once again gained greater significance in the last few years. Discussions in practice and academia as well as among policy makers are focussing on how to increase the proportion of women in these occupational fields. There is agreement on the need to attract more women to these occupations, not least due to the increased shortage of skilled workers in these areas—which rose to a new record high in 2018, and also because women might have a key contribution to make to reducing the shortfall in skilled workers. The aim of numerous initiatives such as “Girls’ Day”, “*Klischeefrei* [cliché free]” or “*Komm, mach MINT*” [which translates roughly as “Come and get involved in STEM”] is to help provide women with a better understanding of so-called STEM occupations and in this way increase the proportion of women in these fields. While there has been a disproportionate increase in the number of first year students in technical subjects, and in physics and technology in particular, the proportion of women from STEM occupations in the dual non-academic area of education has barely changed over this period and has in fact remained at a low level (cf. Acatech 2015). For example, in terms of newly concluded training agreements in 2016, the proportion of women was significantly under ten percent in the vast majority of metalworking and electrical occupations. The causes of the stagnation are seen, on the one hand, as being the persistent lack in numbers of female applicants for training positions, while on the other institutional reasons are identified as there continue to be reservations about women in male dominated occupations.

However, taking a closer look at trainee numbers in occupations within the STEM sector, it can be seen that women’s under-representation in this area is not across the board. A more in-depth look shows that, even in the STEM sector, typical female occupations exist, i.e. occupations which are frequently chosen by women. While the proportion of men in production and production technology training occupations is by far the greater, in other STEM occupations with a creative or commercial specialisation, or which are based in a laboratory or in design, the ratio between men and women is far more balanced; in some cases, the proportion of women in these occupations is even greater than 50 percent.

Based on these large quantitative differences in the proportion of women within STEM occupations—differences which are, in some instances, considerable—the question arises as to why women are increasingly opting for certain STEM occupations while others barely feature in their career choices. An important aim of the project is therefore to identify the social, individual and contextual factors which are positively influencing women in their decision to opt for a STEM occupation.

A further objective is to examine whether the expectations which female trainees have of their selected occupation at the start of the training are fulfilled by their experiences during vocational education and training. In this way criteria are to be developed which lead school leavers to opt for a production or production technology STEM occupation, as well as criteria which tend to be indicative of a STEM occupation in a production environment. The aim is to compare these expectations shortly before the final examination with the actual experiences of female trainees in order to determine whether a related, more production-based occupation might have retrospectively been considered and which criteria would have facilitated such a refocusing.

Finally, as part of the project, access to the next level of training shall also be considered. This is because it is evident in almost all sectors that the percentage of women in advanced vocational education and training is significantly less than the percentage of women among all training graduates. In order to gain greater insight as to the possible causes of this, the aim is to conduct a more detailed analysis of the potential facilitating and inhibiting factors in the

decision regarding further vocational career advancement and the pathway to advanced vocational education and training. Female skilled workers in companies and participants on preparation courses for upgrading training examinations shall be surveyed for this purpose. Regulated advanced training under the Vocational Training Act at level 5 and 6 of the German qualifications framework are particularly relevant to the STEM training occupations examined and form the basis of this section of the research project.

The aim of the project is to develop recommendations for a more targeted career orientation and for personnel development measures in order to be able to increase the proportion of women in STEM occupations, in particular in production or production technology occupations and among female managers. Possibilities for optimising regulatory instruments for initial and advanced training should also be gained.