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## Girls in Technical Apprenticeships: Career Choice and Childhood Experiences

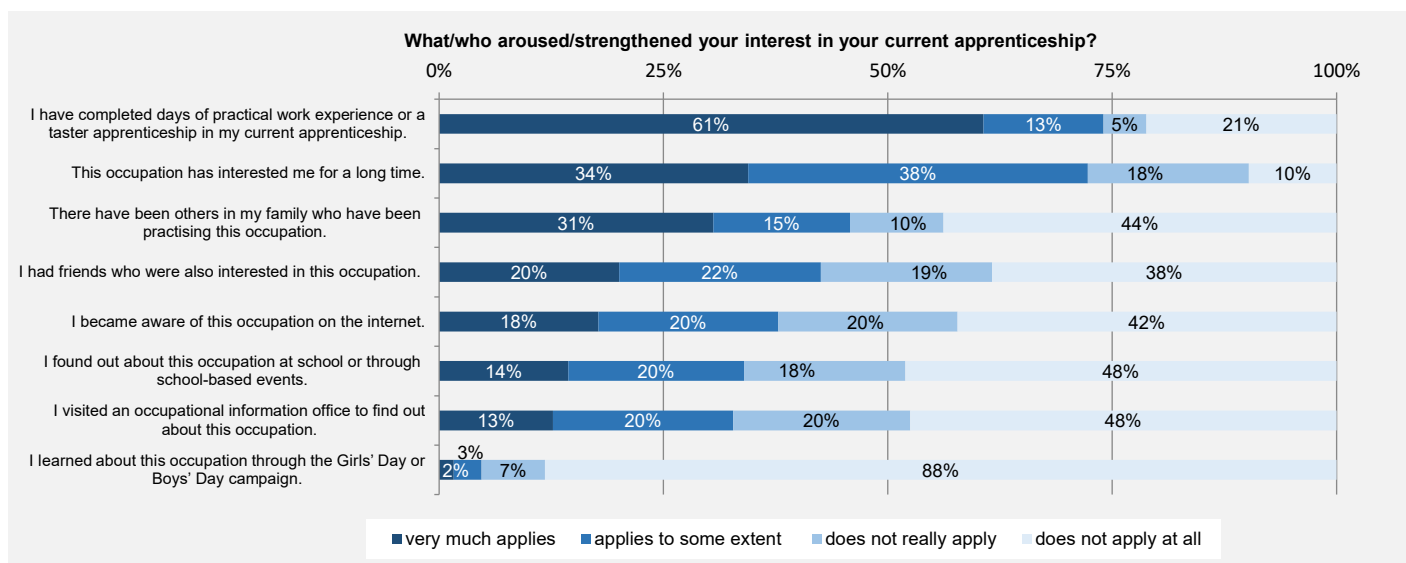
**A**n online survey of more than 1,300 vocational school students in Lower Austria reveals the outstanding importance of direct practical experience for career choice on many levels. The foundation for this is already laid in childhood: apprentices who, as children, played more often with building blocks/kits or helped more with repairs (to the house etc.) are disproportionately more likely to take up a technical apprenticeship. And, now as before, these childhood experiences show a strongly gendered pattern. As indicated by further results of the study, the lack of early, direct, technical/artisanal experiences can later be compensated for only with difficulty by specific occupational marketing activities (e.g. by depicting occupations in pictures).

The aim of this study, which was commissioned by the Federal Ministry for Digital and Economic Affairs, was to identify, on an empirically sound basis, concrete practical action potential in the fields of pedagogy, career orientation and career marketing that can contribute to increasing the share of female apprentices in technical apprenticeships. Despite a considerable number of measures and programmes - both within and outside of Austria - to inspire girls in particular to take up artisanal/technical occupations, only relatively slight and slow changes in gender-specific educational choice behaviour become apparent. This is examined here specifically in terms of the proportion of female apprentices in technical occupations.

Therefore, a research approach oriented towards concrete potential for action was chosen, above all with the help of an online survey of vocational school students in Lower Austria which was conducted in March 2021. In general, the outstanding importance of direct practical experience for career choice has become apparent on many levels. For example, around two thirds (because 61% answered "very much applies") of the respondents have already completed days of practical work experience ("taster apprenticeships") in their current apprenticeship (cf. Diagram 1).

DIAGRAM 1

### Origin of interest in the current apprenticeship

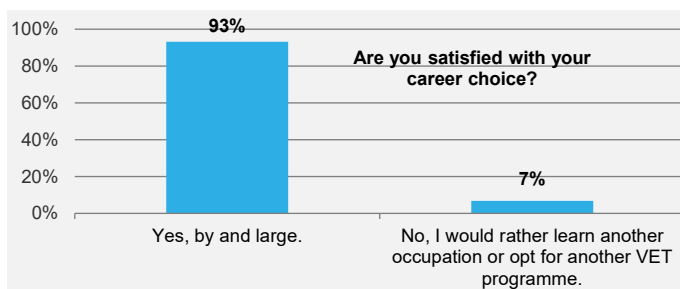


Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

In the surveys, the young people also stressed the importance of practical experience and real-life testing opportunities, all of which aroused their enthusiasm for artisanal/technical occupations. Initiatives to promote practical experience of technical occupations could be encouraged by the high satisfaction of those girls/women who are already learning a technical apprenticeship. 96% of them (more than in most other occupational groups) are satisfied with their choice of occupation, despite the fact that girls/women in technical occupations and in construction occupations are more often not trained in their original desired occupation. At the time of the survey, a total of 93% of the vocational school students in Lower Austria were by and large satisfied with their choice of occupation, 7% would prefer to learn a different occupation or undergo a different vocational education and training (VET) programme.

DIAGRAM 2

**Satisfaction with career choice**

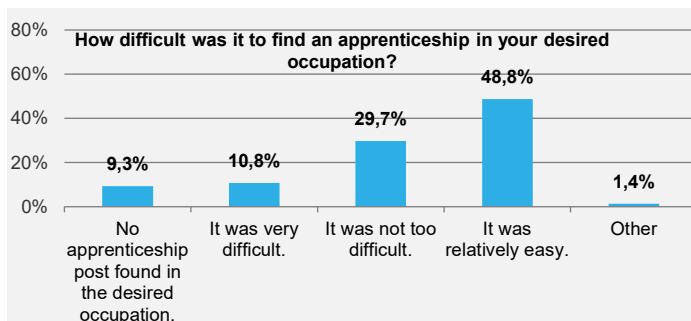


Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

Around 90% of the vocational school students surveyed succeeded in finding an apprenticeship in their desired occupation, for around half this was relatively easy, for 11% it was very difficult (cf. Diagram 3).

DIAGRAM 3

**Difficulty in finding an apprenticeship in the desired occupation**



Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

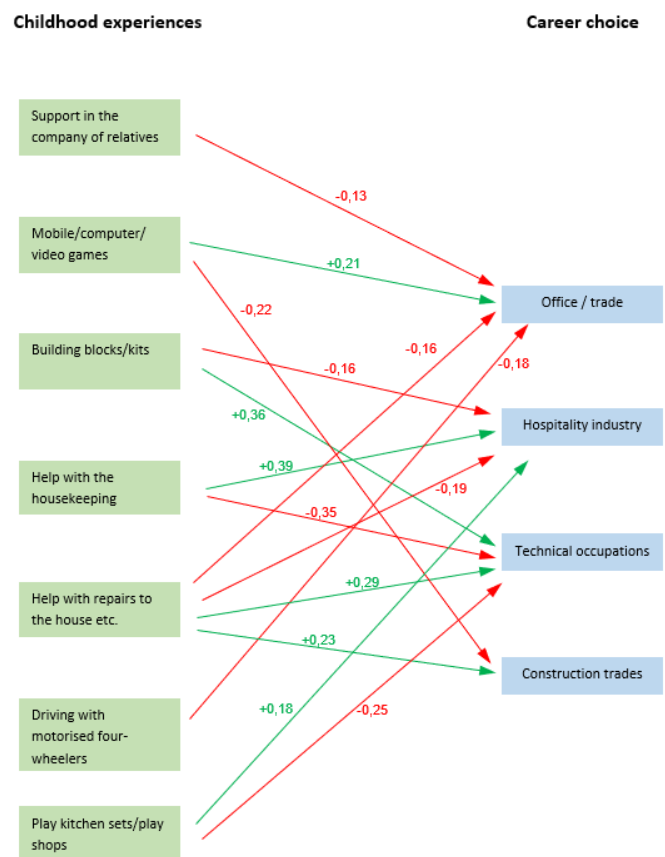
N.B.: Answers in the category "Other" mainly "I do not have a desired occupation" or "I am still too young for my desired occupation".

The results of the online survey of Lower Austrian vocational school students also prove the high importance of practical childhood experiences for later career choice. The choice of a technical occupation is - also independent of gender - in a direct positive correlation with the frequency of playing with building blocks/kits as well as the frequency of helping with repairs (to the house etc.) during childhood (cf. Diagram 4).

DIAGRAM 4

**Overview of childhood experiences and career choice (gender-independent)**

(Partially significant correlations/regression coefficients (b))



Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

N.B.: Green arrow = positive (partial) correlation, red arrow = negative (partial) correlation

Examples of interpretation: Playing with building blocks/kits more often in childhood increases the (later) probability of taking up a technical occupation. With more frequent leisure activities in the form of mobile and computer games, the (later) probability of taking up a career in the building industry decreases.

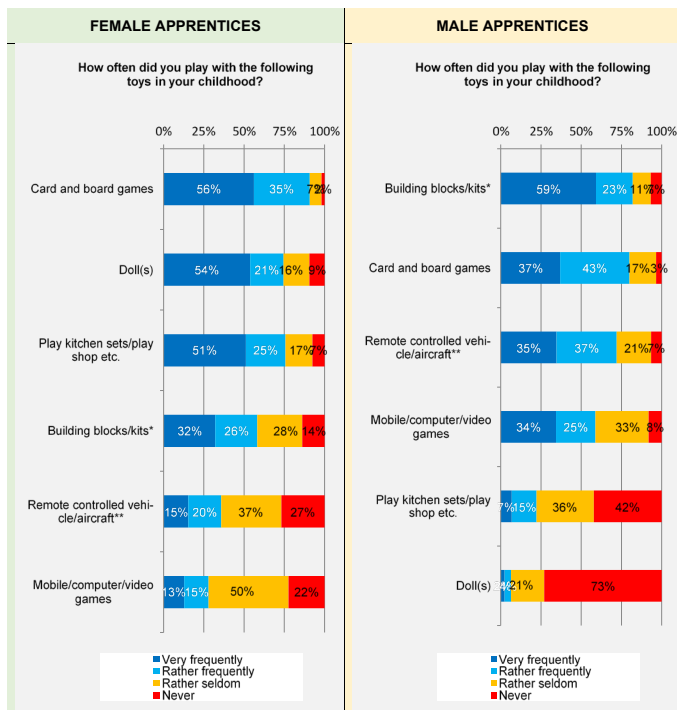
Expressed as a percentage, this means, for example: 66% of vocational school students in technical apprenticeship occupations state that they very often played with building blocks/kits in their childhood, but only 36% of apprentices in office/trade occupations. Furthermore, 43% of the vocational school students from technical apprenticeship

occupations very often and only 5% never helped with repairs to the house etc. in their childhood, among apprentices in office/trade occupations only 21% were very often involved, but as many as 22% never. These correlations are also clearly evident when only female apprentices are considered: 54% of the female apprentices surveyed in technical occupations, for example, very often played with building blocks/kits in their childhood, 0% never. In contrast, of the female apprentices in office/trade occupations and also in the hospitality industry, only 30% each very often played with building blocks/kits, but around 15% never.

By contrast, apprentices who helped out with the house-keeping more often during their childhood are less likely to take up a technical occupation and more likely to take up an occupation in the hospitality industry (cf. Diagram 4).<sup>1</sup>

DIAGRAM 5

**Toys in childhood**



Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

\* e.g. Lego, Fischertechnik, Matador, Kapla, electronics kits/chemistry sets, etc.

\*\* e.g. model car

However, it is also apparent that the frequency of different childhood experiences already varies considerably by gender (cf. Diagram 5). For example, 59% of the male apprentices played very often with building blocks/kits in their childhood, but only 32% of the female apprentices. 38% of the male apprentices very often helped with repairs (to the

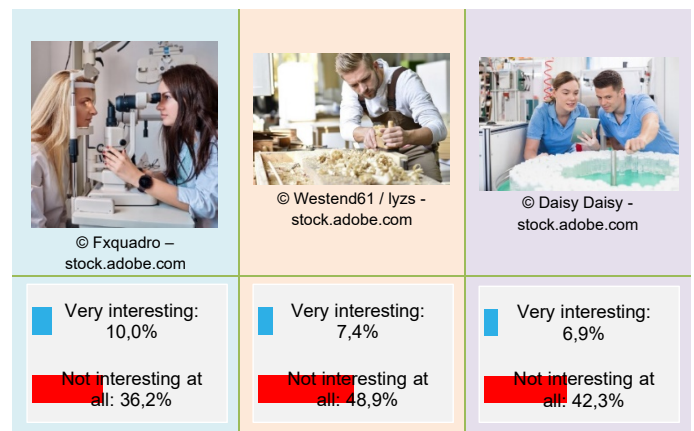
house etc.) during their childhood, but only 20% of the female apprentices. On the other hand, for example, 50% of the female apprentices (and only 25% of the male apprentices) helped very often with the housekeeping, 54% of the female apprentices (and only 2% of the male apprentices) played very often with a doll/dolls in their childhood.

As indicated by further results of the study, the lack of early, direct, technical/artisanal experiences can later be compensated for only with difficulty by specific occupational marketing activities. In general, for example, the type of pictorial representation of technical occupations seems to have very little influence on the interest of female apprentices in technical occupations, especially with regard to the selection of the persons depicted (cf. Diagrams 6 and 7). For example, there is no evidence that the gender of the persons depicted plays a significant role for female apprentices when evaluating depictions of technical occupations. The initial hypothesis that the representation of several interacting persons could make the images of technical occupations more interesting for female apprentices could also not be confirmed. In general, the interest of female apprentices in technical occupations is very low (and also significantly lower than among male apprentices - cf. Diagram 8). Even the picture rated most positively by the girls (cf. Diagram 6) - a representation of the occupation "ophthalmic optics", which as a technically oriented health occupation was also depicted/surveyed for control purposes - was found very interesting by only 10.0% of the surveyed female apprentices, while 36.2% did not find it interesting at all.

DIAGRAM 6

**The "top 3 technology pictures" for female apprentices**

(Highest proportion of "very interesting" answers among girls)



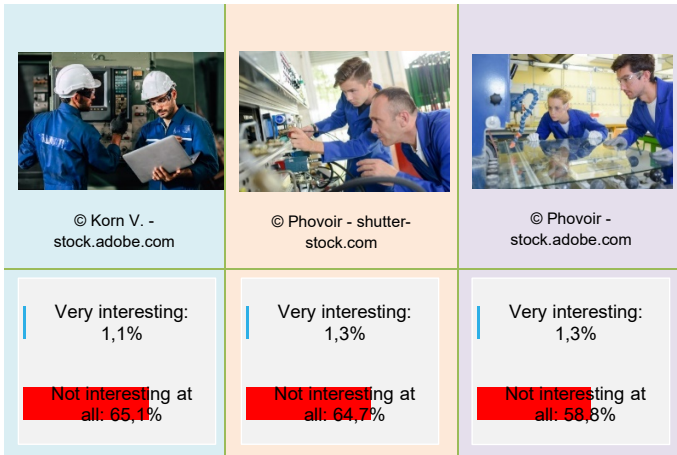
Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

<sup>1</sup> Of course, these effects of childhood experiences cannot be interpreted unambiguously in the sense of a causal relationship, not least because as a rule the choice of certain games was not random. Nevertheless, a (potentially causal) tendency of the correlation/impact can be reasonably

assumed as the described childhood experiences generally occurred clearly before the choice of the occupation. In the social sciences, however, it is impossible to speak of true "causality" anyway because of possible unknown other variables.

DIAGRAM 7

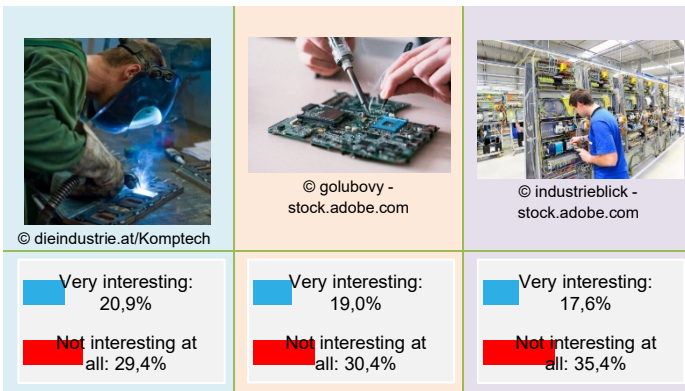
**The "flop 3 technology pictures" for female apprentices**  
(Lowest proportion of "very interesting" answers among girls)



Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

DIAGRAM 8

**The "top 3 technology pictures" for male apprentices**  
(Highest proportion of "very interesting" answers among boys/young men)



Source: ibw vocational school student survey for Lower Austria (March 2021; n = 1,339 apprentices)

By means of a specific and perhaps particularly subtle selection of pictures of technical occupations, it is therefore

unlikely that it will be possible to arouse a fundamental interest in technical occupations on the part of girls and young women even if the pictures do visualise cooperating and interacting young people. Interest in technical occupations is probably generated primarily by experiences in these activities in particular and by personal and social preconceptions associated with these occupations. For career marketing and career guidance activities, this result means that young women's basic expectations of technical occupations can probably only be influenced in a very basic way (e.g. by enabling practical experience); purely visual representations (e.g. in image folders) can hardly be expected to have any effect.

In order to increase the absolute and relative number of young people - especially girls and young women - in technical occupations, they would have to be familiarised more and increasingly with artisanal and technical activities from childhood onwards. These results are also highly relevant for elementary and compulsory education. Finally, this circumstance can be described particularly impressively in the words of a surveyed vocational student:

*"Already at school, more field trips should be conducted to businesses where everyone also works with their own hands. To break through the inhibitions of trying something out in real life, it would be a good idea to visit sites where technical jobs are actually practised instead of organising trips to various museums. Even more so - that young people themselves have to perform tasks related to this occupation and also really get to try things out."*

The entire study can be downloaded from <https://ibw.at/bibliothek/id/533/> (in German).

Source:

Dornmayr, Helmut / Fibi, Benjamin / Rechberger, Marlis / Seyer-Weiß, Silvia (2021): Mädchen in technischen Berufen (Girls in Technical Occupations), ibw Research Report no. 206, Vienna.