Girls And Computer Science

Attitude Formation Via Practical Experience

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1 Introduction

Regardless of huge efforts in the last decades the percentage of women in leading positions as well as in engineering and computer science is very low.[1] Although a lot of projects try to get girls interested in technical subjects and also support them in their career,[2] most girls choose 'typically female' careers or subjects of study.

This abstract shortly describes two projects ("MUT" and "Girls' Day") at the University of Bamberg (Faculty Information Systems and Applied Computer Science) which provide girls (positive) practical experiences with typical topics of computing and computer science and were evaluated by questionaries during several years.[3] We now present an extract of our data.[4]

2 MUT

"MUT – Mädchen und Technik" (girls and technology) Bamberg provides a three day workshop program for girls from 10 to 14 years, which is attended by up to 80 girls each year. The workshops are supervised by scientists and cover the following topics: robot building and programing, algorithmic thinking, 3D-modelling, creating websites, assembling computer hardware, mobile GPS gaming, and business process simulation.

The average girl visits two workshops, is twelve years old and goes to gymnasium (high school). Nearly 40% of our girls attend MUT more than once. 54% attended MUT because they were curious and wanted to try it out. 32% claim "computer science and technology is great", 32% have been told by a friend about MUT.

Asked before and after MUT abot their stance on technics and information science we see significant changes in all directions between "Yes, thats absolutely suitable for me", "I like to deal with technology/informatics" and "sometimes it's difficult to deal with technology, therefore it's not always fun". So the MUT experience has impact, but different impact on different girls.

Most girls (53%) say that such campaigns can enthral girls for technology.[5] They want more such programs (41%). 4% think that girls'-only-programs discriminate boys, 45% think that they dare more easily to try something new on girls'-only-projects. 20% agree "One learns more without boys", 28% claim "I do not care whether boys participate, I do not notice any difference".

Asked "What did you like most?", 77% emphasised on "to make something on my own" (by far the most called answer), followed by "that I have learned something new" (69%), and "doing something concerning technology" (45%).

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[1] See e. g. [4]

[2] "Ada-Lovelace-project" since 1997, "Technik – Zukunft in Bayern?!" since 2000, "Girls' Day" since 2001. See also [6, 5, 2, 1].

[3] For MUT wee use a modified and abbreviated variation based on the longtime evaluation questionaries of FH Coburg, for Girls' Day we use an extract of the the questionnaire of the nationwide organiser Kompetenzzentrum Technik-Diversity-Chancengleichheit e. V., which is supported by Bundesministerium für Bildung und Forschung, Bundesministerium für Familie, Senioren, Frauen und Jugend, and European Social Fund.

[4] We state data of MUT 2008. It confirms our results from earlier years.

[5] Some girls cancelled the word "girls" and replaced it with "all people".

3 Girls' Day

Girls' Day ("Future Prospects for Girls") is a nationwide practice day for teenage girls to encourage them to "seize their career options and to decide in favour of a qualified vocational training or degree." [3] Girls' Day at University of Bamberg is attended by around 60 girls each year. Girls can choose between five to six workshops along similar topics as in MUT but with more advanced tasks.

While inviting girls from gymnasium from 9th to 13th form, we unfortunately only reach few girls above 10th form[6], i.e. in their last years before university where the decision-making process if and what they want to study is in the critical phase.

Most girls agree that jobs in engineering, information technology and nature sciences are varied (44% agreement : 54% partial agreement : 2% disagreement, social jobs: 68% : 32% : 0%), not boring (45% : 50% : 5% to 65% : 32% : 3%), – contrary to social jobs – well-payed (41% : 56% : 3% to 3% : 78% : 20%) and demanded at the job market (60% : 35% : 5% to 22% : 68% : 8%). They also think, that for women jobs in social area are easier to find as in technical vocations (77% : 17% : 7%).

Concerning Girls'Day 33% claim they learned about a field they are interested in, 20% say, they can imagine to work in this arear and 20% now know what they don't want to do. Girls' Day was attributed as "very helpful", "a great practical experience", "interesting" and "informative" and "works against job stereotypes".

4 Conclusion

Technology and computer science workshop days for girls are an important and working approach to overcome gender stereotypes. They allow the participants to gain own experiences and help to get a realistic estimation of interests and capabilities.

The girls' answers show, that MUT and Girls' Day in fact do influence their perception of technology, of computer science as a possible profession and of their own abilities regarding computers.

We also see that even though they assign positive attributes to technical jobs, most of them follow traditional role models and prefer jobs in the social sector. These events will not and shall not push all girls into engineering. It will and should provide experiences which allow them to come to a well informed decision.

Our questionaries are under constant improvement. In this text only a excerpt of the data is shown. A full report will be published in future work.

References

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[6] Barbara Schwarze and Wenka Wentzel. »Zeit, dass sich was dreht« – Technik ist auch weiblich! Instrumente zur Herstellung von Chancengleichheit in technischen und naturwissenschaftlichen Ausbildungen und Berufen in Nordrhein-Westfalen. Technical report, Kompetenzzentrums Technik-Diversity-Chancengleichheit e. V., Bielefeld, 2007.

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[6]as schools support Girls'Day up to 10th form