

# Girls and Technology – Effects from a 6-year experiment

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## Abstract

Educational choices for 14-15 year old girls who participated in a technical summer school were studied. Statistics from 6 years of summer school are compared with statistics of educational choices among all girls in the municipality. The study shows that summer-school girls are more inclined to make educational choices towards technical programs than the other girls.

## Introduction

Technology has been a mandatory subject in Swedish compulsory school the last 30 years (Skolöverstyrelsen, 1980). At that time it was introduced as part of the so called orientation subjects (Blomdahl, 2007). For students in 7<sup>th</sup> grade (age 13) to 9<sup>th</sup> grade (age 16) the subject was integrated with the Science subjects. However, without a specific syllabus, it was up to the interest of each teacher what to teach (Skolöverstyrelsen, 1980; Blomdahl, 2007). The last 18 years it has been a subject of its own, with specific syllabus and grading of the students by means of the curriculum of 1994, Lpo 94 (Skolverket, 2006). In the curriculum of 1994, a basic structure is given with “goals to attain” for all subjects. However, the curriculum does not show *how* to attain the goals. It is up to the teacher to decide, depending on personal knowledge and skills. So, for some teachers this is not a problem, but for others it is a difficult task (Skogh 2001; Blomdahl 2007). According to the syllabus, the Technology subject should stimulate the interest of both girls and boys and facilitate their future career choice.

The approach to technology is often different for girls and boys, as well as the view of society on roles for boys and girls in technical contexts. One aim of the Technology subject is to give the opportunity for everybody to get knowledge within the education in a conscious and balanced way. Skolverket (2000)<sup>1</sup>

Nevertheless, schools did not really get hold on how to teach the subject. Moreover, there are very few of the teachers that got any training in this particular subject. Most of the teachers giving Technology in the later years of compulsory school are traditional Science teachers and in earlier years they are not even trained in Science.

Municipalities have noticed that girls are not stimulated enough by the subject. This is seen in gender-sensitive statistics of the transition from compulsory school to upper secondary school. As a result, some municipalities offer 14-year old girls a voluntary summer school called “Girls and Technology”<sup>2</sup> between 8<sup>th</sup> and 9<sup>th</sup> grade. This is normally a cooperation between the municipality and the nearest university. Examples of activities in the summer school project are Geomatics, GPS measurements, CAD construction, Graphic design, Automatic control, Image processing, Energy conversion, and Electronics including soldering.

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<sup>1</sup> Translation from Swedish by the authors.

<sup>2</sup> Original name: Tjejer och Teknik.

## Method

In this study, gender-sensitive statistics of the transition from compulsory school to the upper secondary school is used. The summer school “Girls and Technology” for 14-year old girls in a small-sized town in the mid-Sweden region was selected as a primary object, and general statistics from the municipality for all girls of the same age are used for comparison. The activity of the summer school has been followed between 2005 and 2010. The statistics is divided into choices of different upper-secondary programs, both technical programs and other. Since the number of participants of the summer school is quite low (ranging from 15 to 39 participants) compared to the official statistics of all girls from the same age group (approximately 250-300) in the municipality, the reliability may be questioned. Fluctuations between years in educational choices can be expected. However, if educational programs are grouped, *i.e.*, all technical programs (theoretical and practical) are treated as one entity, the statistical reliability is increased.

## Results

Figs. 1-6 show bar graphs of results of upper-secondary program choices for the studied age group of girls from the small-sized town in the mid-Sweden region. The blue bars correspond to the summer-school participants. The red bars correspond to the whole population of girls from the same age group in the municipality. The graphs are divided yearly, ranging from 2005 to 2010. The summer-school girls of 2005 are compared with the municipality statistics of girls admitted to upper-secondary educational programs in 2006 for compatibility.

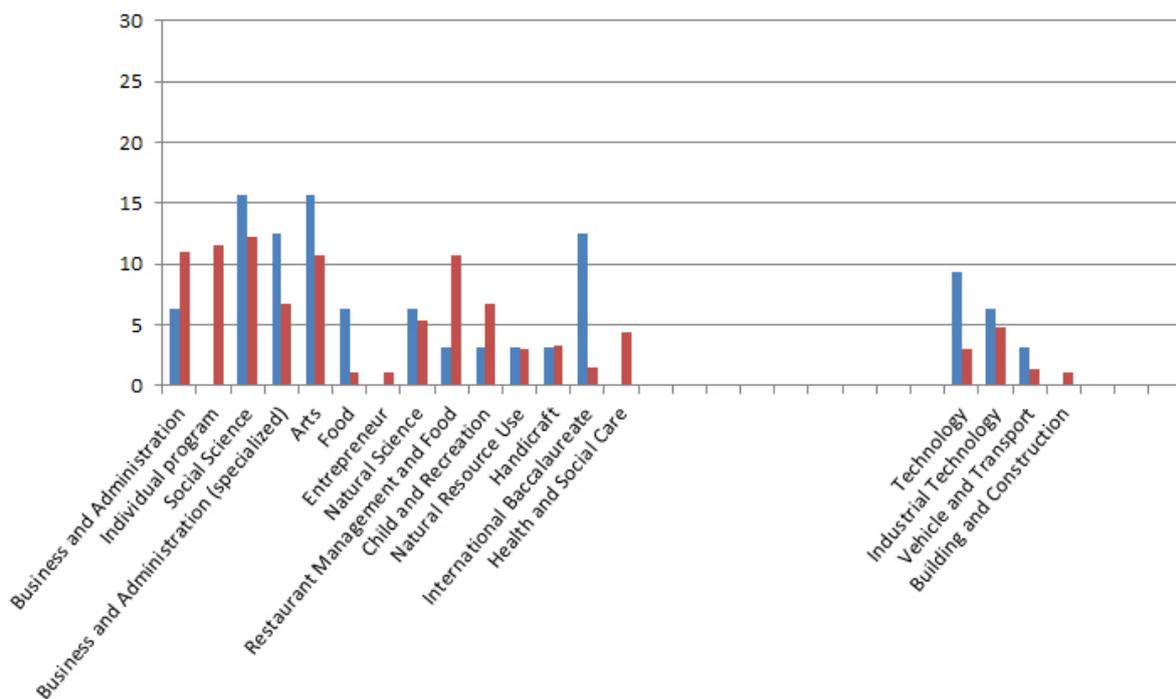


Fig. 1. Bar graph of upper-secondary program choices 2006. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality.

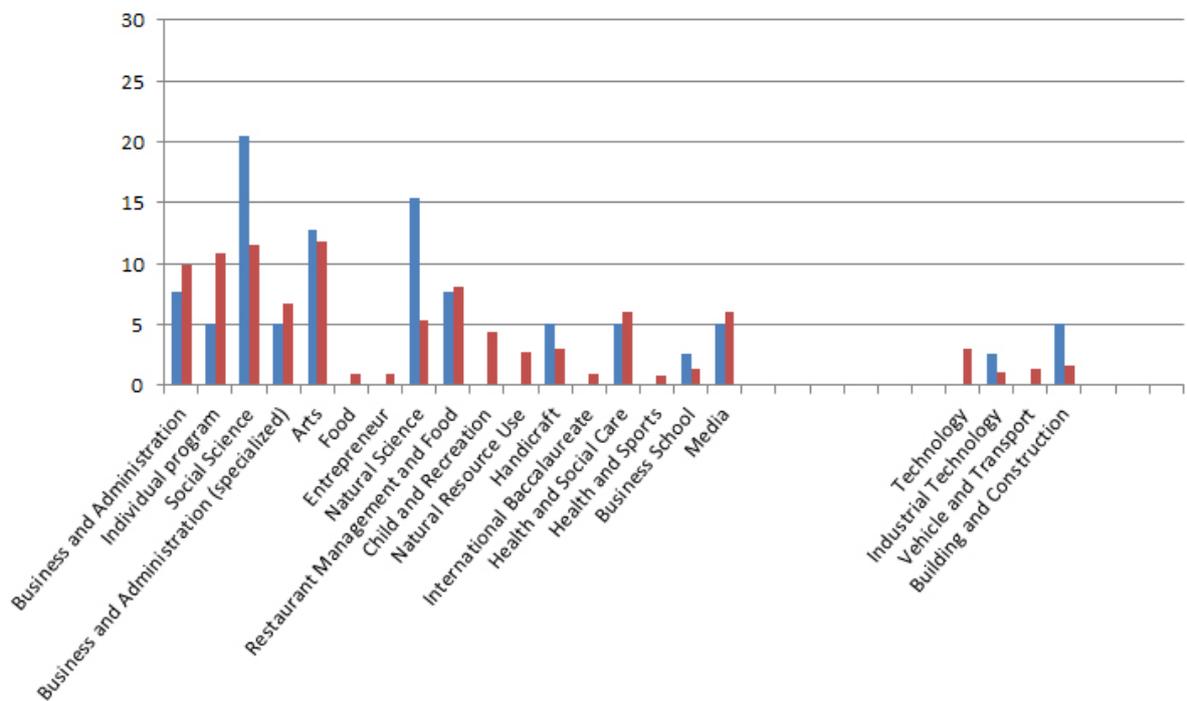


Fig. 2. Bar graph of upper-secondary program choices 2007. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality.

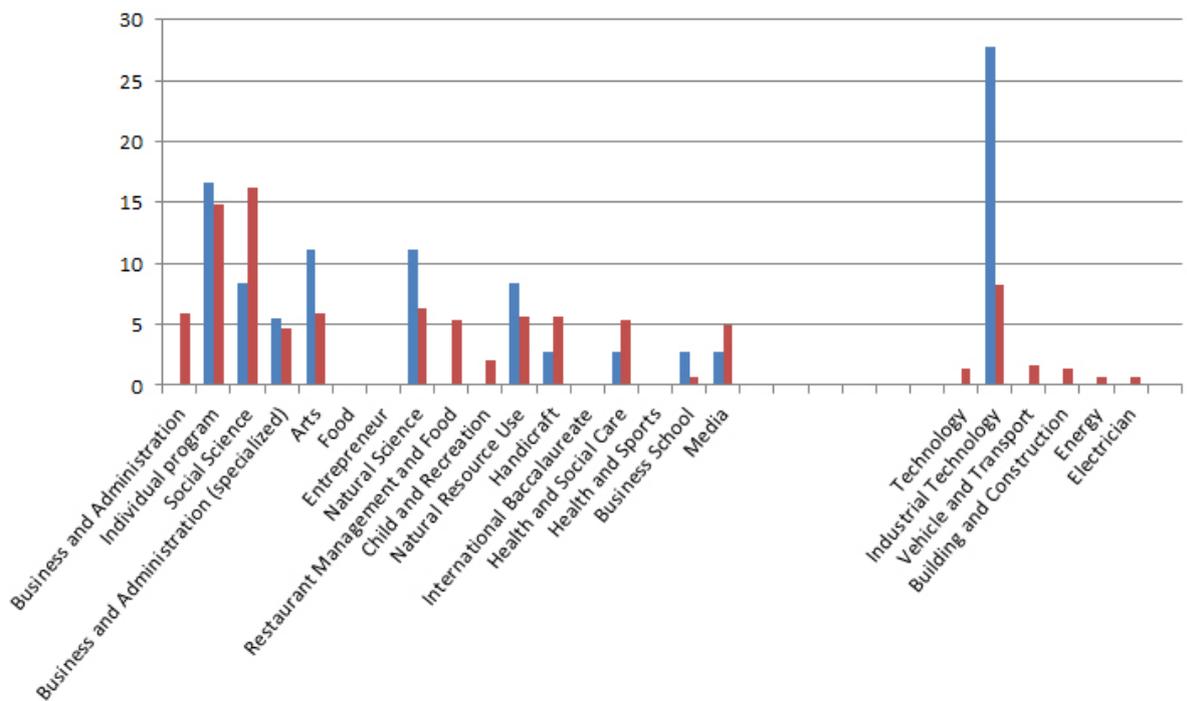


Fig. 3. Bar graph of upper-secondary program choices 2008. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality.

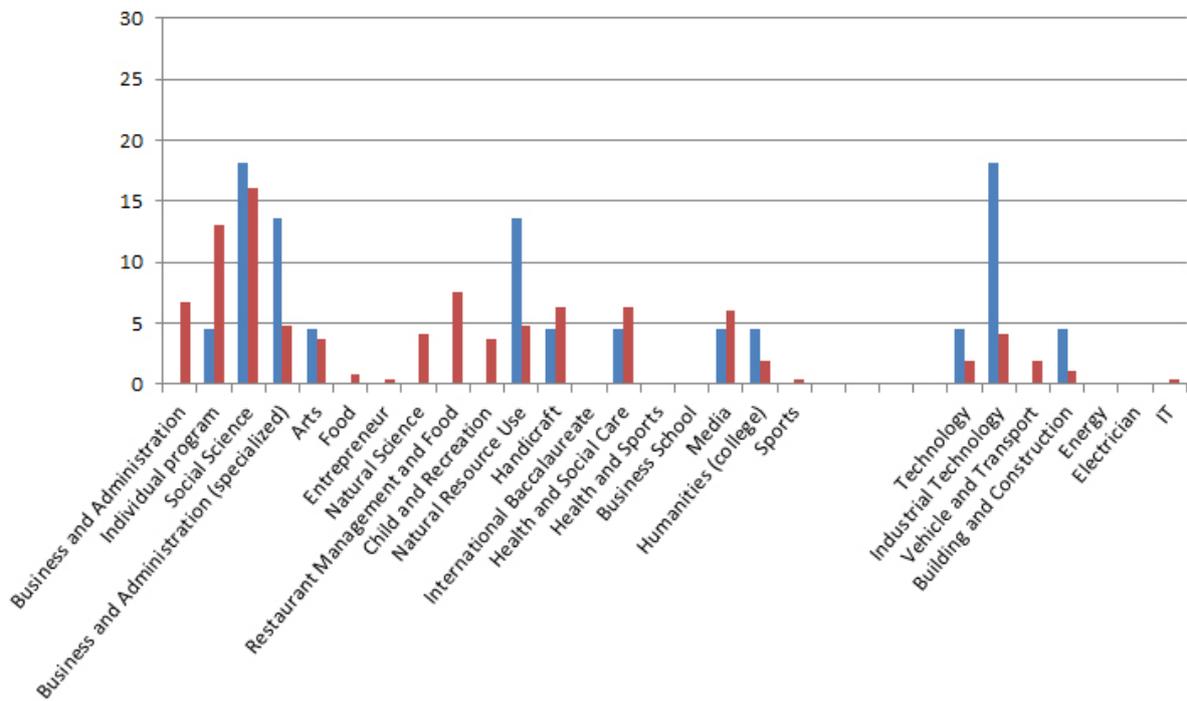


Fig. 4. Bar graph of upper-secondary program choices 2009. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality.

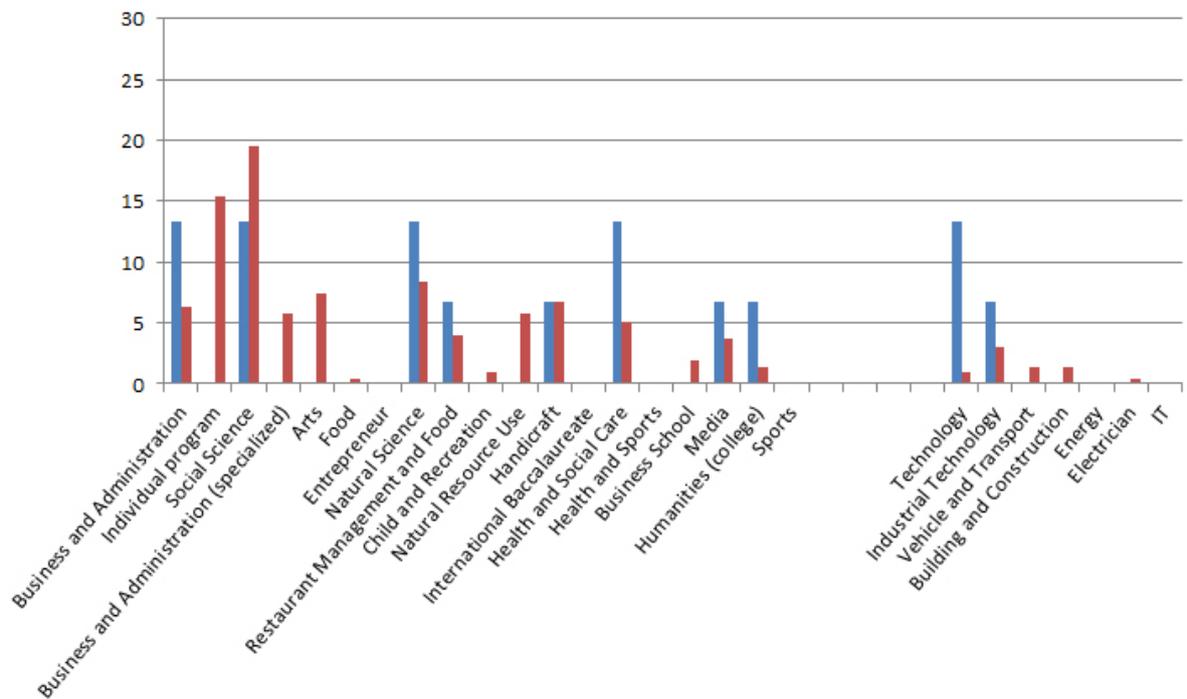


Fig. 5. Bar graph of upper-secondary program choices 2010. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality.

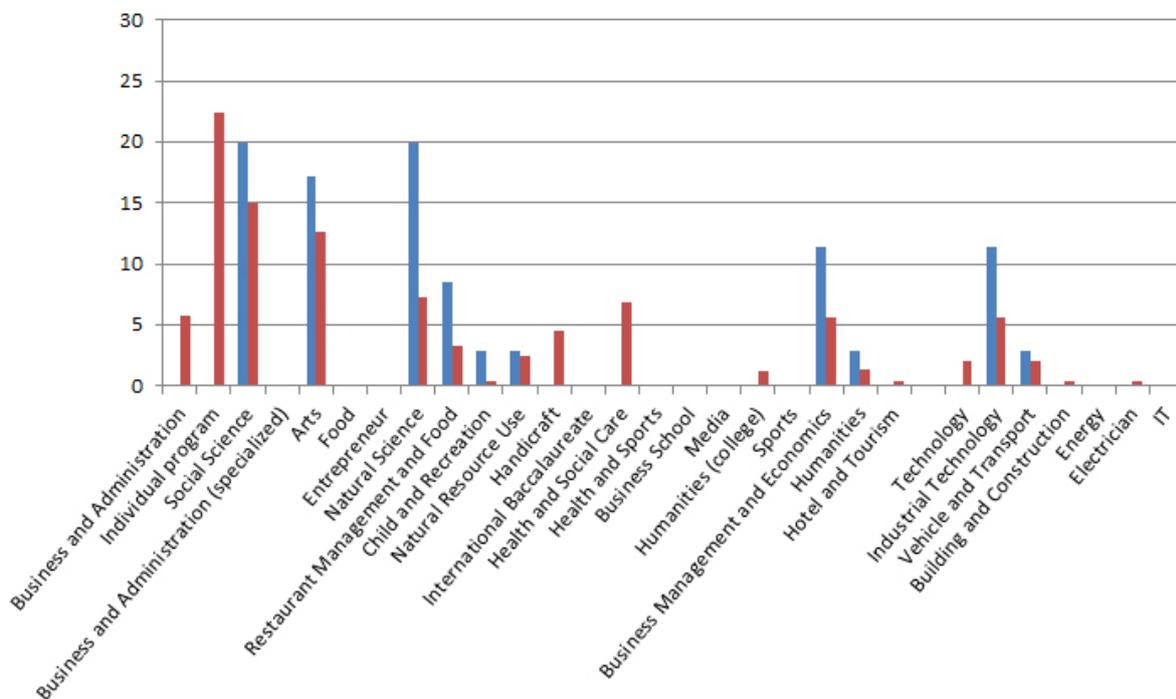


Fig. 6. Bar graph of upper-secondary program choices 2011. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality.

The programs to the right in Figs. 1-6 are considered to be technical programs. Of these, the only strict theoretical technical program is *Technology*. *Industrial Technology* is only partially theoretical since it comprises a variety of programs. However, the majority of the summer-school girls starting *Industrial Technology* have chosen the theoretical option.

From the statistics presented in Figs. 1-6, the percentage of girls that have chosen any available technical program is shown in Table 1 and fig. 7.

Table 1. Percentage of girls choosing a technical program.

Admission year	Summer school girls	All girls in the municipality
2006	18,8	10,2
2007	7,7	7,1
2008	27,8	13,9
2009	27,3	9,4
2010	20,0	7,1
2011	14,3	10,6

## Girls choices of technical programmes to upper secondary schools

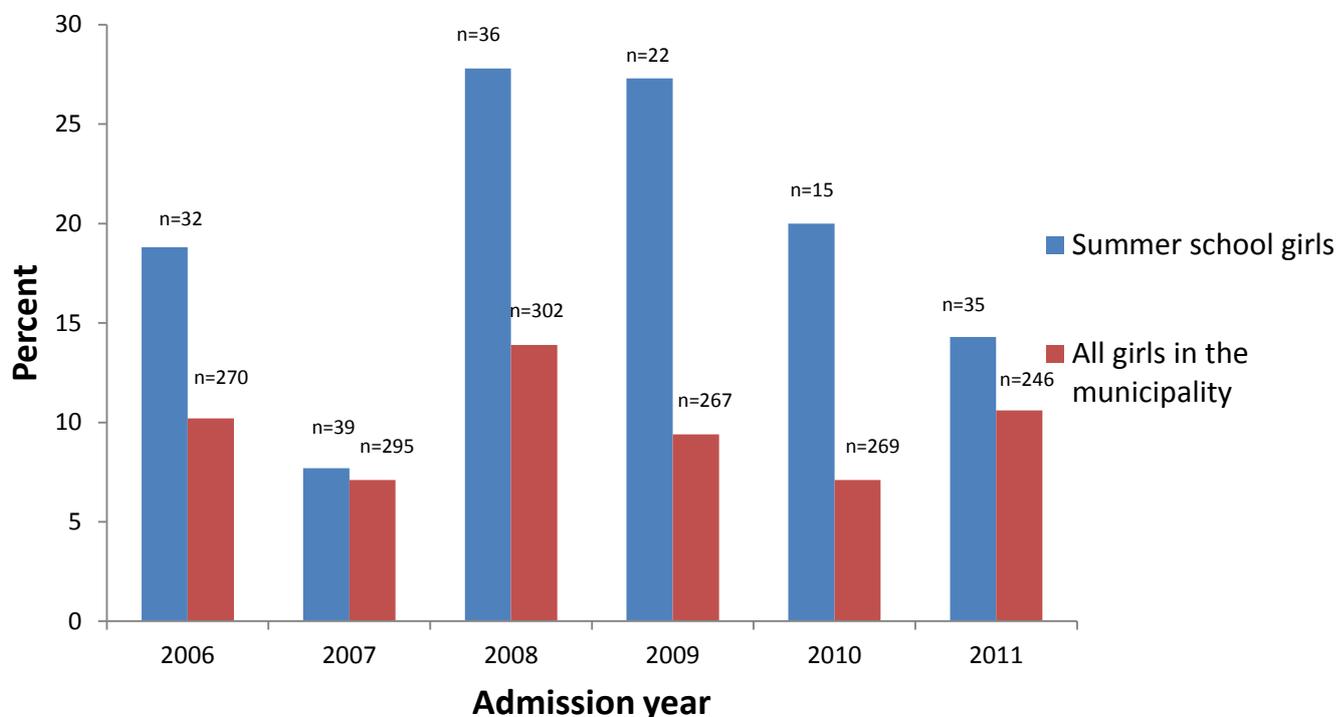


Fig. 7 Bar graph of upper-secondary program choices year 2006-2011. Blue bars = percentage of summer-school girls, red bars = percentage of all girls in the municipality. ...

### Discussion

Statistics of how the participants have chosen upper-secondary school education was gathered for each year, compared to the statistics for all girls of the same age in the chosen municipality. The results are fluctuating between years for different educational programs in upper secondary school, but the general trend is that the participants of the summer school are more inclined to select a technical education (theoretical or practical) than the other girls of the same age group in the municipality. Natural Science education (theoretical) is also of interest in this respect since most students choosing engineering in university have this educational background. The statistics show following percentages of summer-school girls vs. all girls in the municipality.

2006: 6,3% vs. 5,4%; 2007: 15,4% vs. 5,2%; 2008: 11,1% vs. 6,3%; 2009: 0% vs. 4,1%; 2010: 13,3% vs. 8,4%; 2011: 20,0% vs. 7,3%. For Natural Science only the admission 2009 is deviating negatively for the summer-school girls.

## References

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