

Description of the Initiative

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In Denmark, as in many other countries, very few female technical IT specialists are educated. This is a huge problem because our nation has a dramatic shortage of such specialists and both the public and private sector is desperately trying to attract technical IT specialists to their workforce. To tackle that challenge all talents must be in play; it is not acceptable that almost half of the talent is not in play alone because it is female.

It has become difficult to point out a major societal change, where software developers do not play a key role. Now that software development changes both men's and women's future, both men and women should help decide in detail what this common digital future will be. It does not make sense that women are reduced to being just users when it comes to IT. They must be part of creating our shared digital future. Female software developers are important for gender equality.

The IT University of Copenhagen is one of the main contributors in Denmark to the education of IT specialists. A few years ago decided to make a change and started an effort with the aim of attracting far more female students to our most technical IT education; the three year bachelor degree in Software Development (BSWU), where the intake of female students were catastrophically low, around 5%. We take in roughly 140 students on BSWU.

What did we do:

- 1) We have studied best practices, including research and good results from other universities.
- 2) We have employed a social anthropologist who systematically studies the expectations that Danish students, high school students, high school teachers, and our own employees have concerning software development.

What we found out was that potential BSWU students asks themselves the following four main questions before they select their study, questions that we had not responded sufficiently so far.

- 1) What is software development? Many young people have not become familiar with programming, for instance in elementary school. Unless they have learned to program or get help learning from parents or friends, they do not know what software development is. It constitutes a barrier for the young people.
- 2) Can I figure it out? This is a question that, in particular, many women ask themselves. Just in relation to software development, there is an idea that you must be able to program even before the start of the study. The lack of knowledge of programming causes many to opt out of the subject because they fear they cannot follow the studies.
- 3) Can I fit in? Women look for role models on the study - other female students they can identify with. They refrain from seeking a study with an overweight of men.
- 4) Can I make a difference? Many of the female high school students we have been in contact with dream about getting a job that they can make a difference in the world with. They are looking for role models and concrete examples of what to use the subject for.

It is in all simplicity these four questions that we have endeavored to respond adequately.

We have taken the translation on what is software development on us. Through a variety of videos, articles and project examples, we try to get our own students to explain what the subject is about. The students themselves are often the best to do just that.

During each Easter and Autumn holidays, we arrange an *IT camp* for 50 female high school students to give the participants hands-on programming experience. The purpose of our IT camp is to give the women an idea of what software development is and to insist that programming is also for women and that they can easily learn to program. The IT camp is one of our most effective outreach activities. Around 30% of the participants in the camp apply for being enrolled on BSWU.

We are also active at educational fairs at high schools across the country. In addition, we have six students employed in a *teaching team*, who in the last two years have taught more than 7,000 high school students. Our teaching team has two female students from BSWU who have provided students with technical insights into how the internet is build up and how to take care of their personal data.

We have an offer to high school students to become '*student for a day*'. Here you will be accompanied by an ambassador from one of our bachelor programs. We have a number of women employed as ambassadors from BSWU to just show the potential female applicants that the subject is also for women. This initiative is also effective - 40% of the participants applies for being enrolled on BSWU.

We know that the concern about whether to be able to follow the studies is particularly high for many of the potential female applicants. We have therefore increased the level of support for new students. We have launched the initiative *BootIT*, which is an introductory course before the start of the studies. We have established *live coding*, where older students help first year students with hands-on experience with programming. Finally, *Study Lab* is a kind of lecture cafe, where older students help first year students to solve tasks.

In order to counteract the cliché about the lonely programming nerd, we make a virtue of showing that we have a vibrant and diverse *study environment* in which women as well as men fit. We generally have a high satisfaction among our students, and we have become much more aware of showing our study environment to potential new students. Our students are very committed and happy to tell you about their study life, for example as digital ambassadors on social media or in live streaming on Facebook.

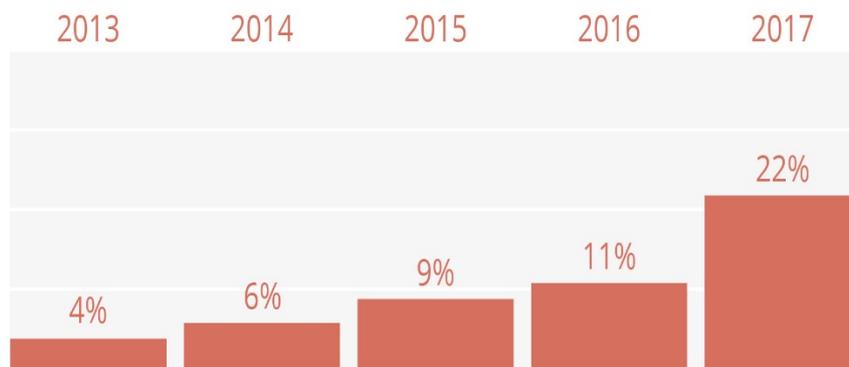
In the presentation of all our educations, we emphasize to illustrate what you can do with an IT education. Our role models attends our IT camp to tell the participants what it means to work as a software developer and how to make a difference in the world with the use of IT.

Evidence of Impact

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The figure below shows the percentage of female students enrolled on our bachelor education in Software Development (BSWU) and hence is the evidence of the impact of our efforts of having more female students enrolled on BSWU. We enroll around 160 students on BSWU each year.

In four years, we have increased the amount of female students enrolled on BSWU by a factor five. It is our ambition to continue this growth the coming years.



It has not only been possible to attract more women to our bachelor's degree in software development, we have also attracted far more men. In two years, we have increased the amount of applicants by 85 per cent. In 2017 we had almost 600 applicants for BSWU.

The dropout rate for the education as a whole is 25%; this is comparable with the Danish national level for bachelor educations. The dropout rate for female students enrolled last summer has been 10%.

When we break the current cultural ideas about what a technical IT education is and who can read it, we are able to reach a far wider group of men and women.

We usually say that we should not compete with IT education with the other universities in Denmark. Instead, we must succeed in attracting young people who otherwise consider education in other areas, for example humanities, law or in medicine or business. We must have pulled the technical IT programs out of the nerded niche and give them a position as plain and exceedingly reasonable study choices that provide access to creative, highly paid and future-proof jobs.

Recently we got a grant of 375.00 Euro from a private Danish foundation to pursue attracting even more female students on BSWU. The foundation was impressed by the results so far and would like to help us move further.

The struggle for more female students in technical IT educations is a struggle for diversity but at the same time the struggle for promotion from nerded niche to mainstream.