

How to make teenage girls love coding ?

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Too few women work in IT. It's a pity as it deprives women of exciting jobs and computing of women viewpoint. So, members of Lille University decided to fight prejudices by making female computer science students teach coding to teenage girls, using Python and the visual arts language Processing.

Women in computer science

Too few women are working in IT (Information Technology) nowadays. This fact is known for several years and, worst, the proportion of women among computer science students has dropped since the beginning of the 80's, reaching around 10% of the classes at Lille University, for example. This decline is linked to the advent of the home personal computer and the development of man geek coder stereotype. This is a societal problem because women are excluded of various and exciting careers offered by IT companies and because diversity is essential for working atmosphere and sharing of ideas.

IT jobs are mainly associated to programming, and programming is mainly thought as a boring and lonesome activity. But this is not realistic, programming is a creative pursuit carried out as a team, and IT jobs are diverse going from programming to website design via team management or software architecture.

So, how to fight against the persistent and wrong prejudices associated to computer science that discourage women? Women can succeed and blossom in computer science, provided that they aren't disgusted by the stereotypes carried by media.

Since three years, the collective *informatique au féminin*¹ from Lille University² is accomplishing actions to fight against stereotypes and to promote computer science for teenage girls. Its flagship action is scholarships for young women studying computer science at Lille University. These scholarships are sponsored by local IT companies and services that mentors individually undergraduate female students. Another action is the organisation of roundtable meetings with female computer science students and IT employees that describe their experiences and careers. This year, this collective

¹<http://femmes.fil.univ-lille1.fr/>

²<https://www.univ-lille.fr/>

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and *Ch'ti code*³, another collective of Lille University dedicated to computer science mediation, have initiated a new action: *L codent, L créent*⁴ (she codes, she creates). This action aims to teach code to schoolgirls of between 13 and 15 years old, before they amass prejudices against computer science.

Initiation to computer science by creative coding

Activity organisation. For its first year, *L codent, L créent* was planned during one month, with two sessions by weeks, during lunch time, in two secondary schools of Villeneuve d'Ascq, the city where the Science and Technology faculty of Lille University is located. The 35 teenage girls were supervised by 9 female computer science students of Lille University, to create a proximity link between the young women.

Programming language choice. To emphasize the fact that coding is a creative and innovative pursuit, we choose to teach Processing, a programming language built for visual arts. It allows coding static or animated or even interactive pictures. Our goal was to associate coding to visual art creation, and so to raise positive feeling about coding. Processing is associated with several programming interfaces including Java, JavaScript, Python and Ruby. We choose the Python Mode for Processing as we believe that Python is a great first language because : i) it is easy to learn ii) it has a simple syntax with no extra code to complete basic tasks iii) it is an interpreted language, so we can immediately see the result iv) it is used extensively in professional and academic communities

Teaching scheme. During the first sessions, pupils learn programming basics by creating simple works of art, using given templates. Thus, the notions of block of instructions, variables and assignment, statements, loops and functions were discovered and manipulated in Python. During the last sessions, teenage girls and female students created one or several digital visual works of art : static pictures or interactive animations.

Final exhibition. After the 8 sessions of creative coding, an exhibition has been organised in the heart of Science and Technology faculty of Lille University, at LILLIAD Learning center innovation. All the teenage girls and their families were invited to this event. First, women working in computer science have presented their professional and academic background, focusing on women integration. Second, the participants have appreciated the visual works of art done by the teenage girls during the sessions.

Outcome

We asked the teenage girls to write their feedbacks on the activity. They appreciate learning code and many complain about the too few number of sessions and would like to continue coding in the future. Encouraged by this success, we plan to offer this activity to more schools and to spread the sessions over several months.

³<http://chticode.info>

⁴french courses : <https://wikis.univ-lille1.fr/chticode/wiki/ecoles/lclc/2017/home>