"Cool, just like modern art!"

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"Cool, just like modern art!"

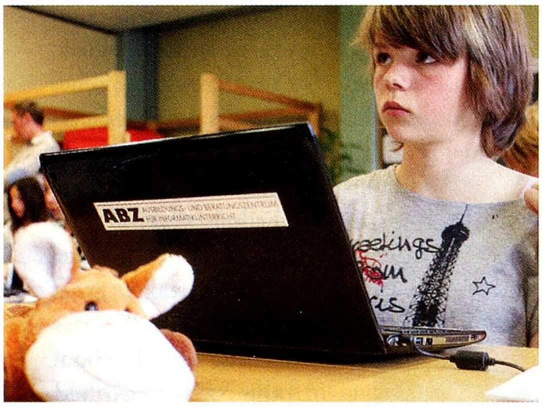
11-year-olds are learning to write computer programs in Davos. The Swiss Federal Institute of Technology Zurich (ETH) wants to introduce IT lessons as part of general education at all primary schools.

By Reto Wissmann

The guests from Zurich are not here on holiday. IT specialists and education experts from ETH Zurich have travelled to Landwassertal to teach computer programming to primary school teacher Adriano Schaniel's fifth grade class. This morning, the children have to make the turtle on the screen walk in a square. They already know from last time that fd stands for forward and rt for right. They type the programming instructions "fd 100 rt 90" into their laptops. The turtle marches 100 steps forwards and then does a 90-degree right turn. The programming language Logo is very straightforward. The software can be downloaded free of charge. The experts from the Education and Consulting Centre for IT Training at ETH Zurich know from experience that even eight-year-olds can use it.

The little boys and girls concentrate hard on the tasks set, discuss them with classmates sitting next to them and obtain advice from the IT experts. Naima just cannot get it to work. The error is quickly identified. She has typed "sqare" instead of "square". "The computer does not tolerate any inaccuracies", explains IT education expert Giovanni Serafini. Programming forces the children to work accurately. The system reacts immediately to errors. They can then be identified and corrected by the pupils. In an ideal scenario, the teacher only plays the positive role of helper rather than corrector.

By the end of the five-day course, the children will be able to draw complex shapes and patterns using computers. Without being aware of it, they are learning the modular procedure used in the design of complex systems. Complicated problems are broken down into individual elements and resolved step by step. This approach is adopted by experts in all technical disciplines. Nicolas is already bored with just simple squares. He has developed his own program that enables his turtle to draw a sun with 2,000 rays at lightning speed. "Cool, just like modern art! I'm going to print it out at home and ask for 2,000 francs for it", he tells his classmates.



Inquisitive look: a pupil during the programming class

Ensuring the competitiveness

ETH's IT specialists believe what they are teaching the children in Davos should be part of general education in a high-tech society. They do not want to play programming off against other subjects but are convinced that everyone today ought to understand the fundamental rules according to which computers operate. Serafini believes it is also about ensuring the competitiveness of the Swiss economy. However, this notion has yet to be embraced by the Swiss education system despite the Institute of Technology's efforts in this regard for over 10 years now. Admittedly, computers are now found in almost every classroom and more and more teachers are trying to ensure their pupils adopt a responsible approach to using electronic media, but programming is taught hardly anywhere and not at all in primary school. IT education expert Serafini cannot understand this: "Just teaching children to use computers is like sitting a driving test at school instead of learning physics."

Professor Juraj Hromkovič's team at ETH has a clear objective: it has already helped to re-establish IT as an optional supplementary subject within grammar schools. The aim now is for it to be introduced at primary school, too, as an independent subject. But there is still a long way to go even though the IT specialists have already taught their Logo courses at many schools with the support of the Hasler Foundation and are lobbying determinedly at teaching universities. Computer programming is not part of the Lehrplan 21 curriculum that is soon to be mandatory for the whole of German-speaking Switzerland.

Some success has nevertheless been achieved. Universities in Zurich have joined forces with business leaders and politicians to create Switzerland's equivalent of Silicon Valley. "eZürich" is a priority for the city's legislative agenda and the "Informatik ist spannend" (IT is Exciting) educational project is part of this. The first classes teaching programming will begin in the autumn, and the project will be expanded as widely as possible from next year.

Many requirements

Zurich will be able to benefit from the experiences of Davos. Primary school teacher Adriano Schaniel is adamant: "The introduction of IT as a subject is long overdue." He is, however, also aware that schools have to meet many different requirements. For example, in Grisons, basic English will be introduced in the next school year, while less time will be dedicated to handicrafts. Schaniel's enthusiasm for IT would not be met with unanimous approval in the staffroom of his school in Davos. However, his pupils love the artwork produced by the Logo turtle. Long after the lunchtime bell has sounded, four boys are still glued to the screen. One of them has written a program for a filigree mandala. His classmate exclaims: "I'm going to do that at home as well!"

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