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Science linking with School
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Interim Report, March 31st 2009

**Engineer Your Sound! (EYS)
Participatory technology design using the
example of music. Secondary-school students
developing didactical concepts for
interdisciplinary engineering education**

LEADING INSTITUTION

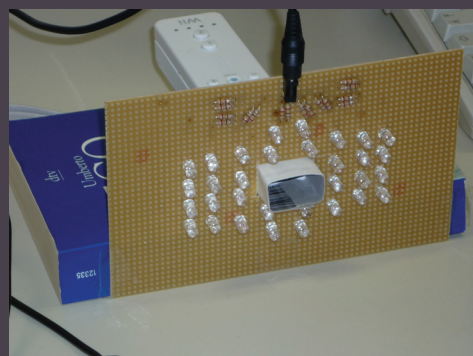
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SCIENTIFIC CO-OPERATION PARTNERS

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SCHOOL INVOLVED

Musikgymnasium Dreihackengasse, Graz, Styria



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Austrian Federal Ministry of
Science and Research

Engineer Your Sound! Participatory technology design using the example of music

Project description

Technological professions are very promising but still only a few young people decide to take science, engineering and technology (SET) courses after graduating from high school. The project Engineer Your Sound! (EYS) takes a basic interest of young people in technology (such as mobile phones and computers) as a starting point and takes them deeper into the field of technology. Music serves as a vehicle for this process, since it is a crucial element in youth culture. Many young people enjoy producing music themselves. Together with students of the Musikgymnasium Dreihackengasse in Graz, researchers and teachers develop didactic concepts of how to enable young people, who have no practical musical competencies, to create their own sound.

Course of the project up to now

In the launch period the students got to know the Institute of Electronic Music and Acoustics which is a scientific co-operation partner of EYS. After that a kick-off workshop helped the young people to get started with the realization of their ideas for music-technology-products. Two excursions lead the project team (students, teachers and researchers) to the Institute of Electronic Music and Acoustics and to a recording studio at the University of Technology in Graz. There the visitors had the chance to experiment with the technologies presented. A teacher stated at the recording studio, "It's great that the students get to see this and to try it themselves." A student agreed, "It's very interesting to see what a recording studio looks like and how everything works in here."

These impressions inspired the students for their small projects which they presented in a blog (<http://eys.twoday.net/>). This website was created in November 2008 and serves for communication and presentation of ideas and results. Furthermore, it is used to inform about interesting and helpful things for the music-technology-projects and to inform about upcoming activities and events. After numerous meetings the projects are about to be completed. The previous results have been impressive and the students enjoy their progress. A student stated, as she finished editing her first song, "You feel proud when you've finished editing and you know: This is, what I have recorded, and it sounds so cool."

First project ideas

The group "Emotions" wants to test, how film music influences the mood of the audience. As a first step, the students filmed three scenes and chose six songs as "soundtrack". Three of them are supposed to trigger



a sad mood and the other three songs are supposed to induce a happy mood. Supported by an audio engineer, the students recorded these songs. Currently, the recordings are edited and attached to the film material.

The project group "Hintergrund im Vordergrund" ("Background to the Foreground") also works with film- and audio-recordings. The students want to emphasize noises and sounds which normally are hardly noticed. In doing this, they partially take it one step further and replace the initial sounds by related but stronger ones. Thus, a lighter becomes a flame-thrower and small firecrackers become fireworks. The students filmed in public places and chose three scenes to which soundfiles from the internet are attached.

The objectives of the group "Just Danube" are to design and to play an "air-instrument". Light emitting diodes (LEDs) send infrared rays which are sent back to an infrared camera by reflective material attached to the students' fingers. The camera forwards these signals to a computer program which transfers the information of the location of the reflective material in the room to a note dedicated to this position on a virtual axis. The notes can be played with sounds of any instrument – „Just Danube“ chose the piano.

The students for the group "Soundexperience" want to alienate sounds and voices. As a starting point they composed a medley of funk, rap and reggae and recorded it themselves. The recordings are now edited and put together. This original will now be alienated by various effects. In the final presentation the original will be contrasted with its variations.

A fifth group called "Die Spitzel" ("The Spies") has accompanied the creation process of the other groups. These students filmed, took photos and interviewed their peers during their project meetings and now use this material to create a documentary film describing the first project period.


Prospect on the second project period

Currently the second project period is about to begin. The experience the students have gathered, while working on their products, is used as a base for didactic concepts which should help other young people, who do not play any instruments, to produce music. These, to some extent interdisciplinary, concepts shall be used in related school subjects.

Websites

<http://www.ifz.tugraz.at/eys>
<http://eys.twoday.net/>





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