**Activity Report 2011**

**Tutoring.** 21 courses in Physics and Mathematics used tutoring. For each we did a training session for the tutors followed by an observation or debriefing session with them. Student evaluations reveal an overall positive appreciation.

**Evaluation & Coaching of Teachers.** The number of requests to carry out in-depth evaluations continued to grow in 2011. Evaluation services include the following: course observations, student evaluations of teaching through questionnaires, (construction, distribution and treatment of data), and a written report handed out during a confidential discussion.

![Distribution by Program (of Teacher Request)](chart)

**Coaching per Section.** We are taking the lead in supporting programs on defining and writing learning outcomes. This action supports the reform of the Bachelor and responds to international accreditation standard requirements. A teaching advisor is attributed for each program:

- Ingrid Le Duc for CDM, IC, SV
- Jean-Louis Ricci for SB, CDH
- Nadine Stainier for ENAC
- Roland Tormey for STI

**Training.** 12 half or full day courses for professors, 7 workshops for PhD exam preparation, and 3 Lunchtime workshops (new) took place at EPFL. In total these were attended by 69 professors and 93 PhD students.

**Video Lectures.** Recordings of 16 courses were made available on-line. 84% of 250 respondents found this technology useful for reviewing lectures and preparing for the exam. Students can watch the lecture while simultaneously looking at the slides that corresponding to that part of the lesson.

**Video Booth:** This allows the teachers to record brief presentation about their course aiming to facilitate their choosing of optional courses. The video can be uploaded on EPFL TV and portables devices.

**Clickers:** 5 teachers introduced electronic voting via clickers to their teaching. Apart from livening up a class, clickers proved useful in practice in verifying student understanding.

**Moodle:** 1090 courses are currently using the platform, of which 210 opened in 2011. Moodle supports teaching in many ways, like uploading quizzes and posting lecture notes and slides.

**BootStrap Days.** 25 new professors and 5 new lecturers attended one of the three BootStrap sessions. During this gathering, participants are presented the particularities of teaching and running a lab at EPFL as well as other useful information such as the Bologna reform, promotion procedures, etc.

**Bilan Math.** An on-line test helps first year students determine their level in Mathematics prior to starting studies at EPFL. Future students receive a book with exercises and can log on to the website to solve quizzes and check their progress.

**Sabbatical for secondary school teachers.** The first teachers who are now benefiting of this program are currently on Campus. The program is conducted by Maya Frühauf.
CRAFT
Activity Report 2011
Located at the Rolex Learning Center, these are our recently completed and on-going projects.

**Paper Interfaces for Geometry Education in Elementary Schools**: To test how paper-based computing interfaces can replace keyboards, the mouse, or screens as a mean of controlling computers. Quentin Bonnard carried out experiments involving bimanual manipulation, folding and cutting. Paper interfaces seem particularly relevant in the subtle integration of computational at elementary school levels (3rd to 6th grade), where the use of paper is ubiquitous. The children who came to EPFL for the "Journée des classes" and "Futurs en tous genres" experienced these paper interfaces (NSF ProDoc).

**Classroom Orchestration**: The PhD thesis of Son Do-Lenh successfully integrated Tinker Lamp 2.0 in 6 classes of 93 vocational apprentices. The system facilitated the teachers' work, making it easier for them to manage the class. Interaction with the lamp also led to improvements in both the classroom atmosphere and learning outcomes (*Dual T*).

**Dual Eye Tracking**: Marc-Antoine Nüssli completed his PhD research focusing on the analysis and solution of several methodological issues related to eye-tracking in general and to dual eye-tracking in particular. The analysis of experimental data collected in collaborative tasks helped identify relationships between dual eye-movements and social interaction. Kshitij Sharma has started his work on the computational modeling of temporal aspects of interaction (NSF project + NSF Ambizzionne Grant).

**Lantern**: The application of ambient computing to support classroom management is explored in the design of our invention “Lantern”. Hamed S. Alavi’s PhD found that in problem solving sessions, Lantern makes visible information on the work status of students. Moreover, after a session, it provides the teacher with a report of student performance: how much time they spent on each exercise and how much help they needed to solve each exercise.

**Robots for Daily Life (NCCR robotics)**: A 6-month ethnographic study with families and robotic vacuum-cleaners aimed to investigate the acceptance of domestic robots. Our study of people's daily routines and their cleaning activities found that even if adopting the robot was rare the children were fascinated by it. Julia Fink is now developing an interactive robotic box for children aiming to motivate them to tidy up their room.
Augmenting Meetings with Multiple Input Devices (Mouse & Keyboard vs. Pen and Paper). Collaborative meeting environment allows participants to create and share content simultaneously over a wall-mounted shared workspace by providing each participant with an input device. Himanshu Verma’s study highlights the important aspects of input device usage and their influence on sharing behaviors.

Flaviu Roman is working on awareness in meetings. He uses technology such as iPhone applications to measure participation, and time and agenda management during meetings.

Other projects include an automatic comic strip generator which uses iPhones in meetings for collecting data.

Effects of Self- and Peer-Written Annotations on Reading Behavior and Learning: A head-mounted eye tracking system was specifically designed and developed in order to gain deeper insights about the attention processes involved while reading texts with or without annotations. Experimental results lay the foundation of a social learning environment that facilitates knowledge sharing across a class of university students or a group of colleagues through shared annotations. Andrea Mazzei, Tabea Koll, Youri Marko and Himanshu Verma contributed to finalizing this project.

Supporting Opportunistic Search in Meetings with Ambient Display: Using the Tinker Lamp, Nan Li explores different designs of an ambient display to support opportunistic search in meetings. A first design employs a foldable display system with Tinker Lamp, where people can spontaneously search words or expressions they come across. A second design employs a direct multi-touch system with Tinker Lamp, which continuously recommends search results based on conversational context. Both prototypes have answered specific research questions and informed future designs.

Vocational Training Supported by Technology: Vocational education and training in Switzerland consists of a dual system in which every apprentice works 4 days a week in a company and goes to school on the remaining day. There is often a gap between the theory taught at school and the everyday life of the workplace. Sébastien Cuendet applies technology to bridge this gap: his project focuses on the case of carpenter apprentices and the development of their spatial skills by using a tangible tabletop technology in the classroom.

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