

Atelier for Creative Programming.

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The aim of the *Atelier* project is to develop an online platform that creates an atelier-like setting that emphasizes collaboration and sharing of ideas. It is built for the *Community of Practice* (Lave, 1991) of students, student assistants, and lecturers involved in teaching programming in PROCESSING in the first year of the bachelor programme Creative Technology (CreaTe) at the University of Twente. CreaTe is a design programme, with an engineering background in Computer Science and Electrical Engineering. It extols its own design philosophy, which emphasizes autonomous design, creative thinking, multidisciplinary teams, tinkering and reflection. The motivation behind *Atelier* is to support the teaching team, to help it to create a Community of Practice where face-to-face tutoring is central. It is consciously not intended to replace face-to-face tutoring.

A distinguishing characteristic of education in CreaTe is the central role of tinkering as a means to master the material (Mader and Dertien, 2016). By tinkering, we understand a self-directed, playful exploration of material. This educational innovation emphasizes ownership and motivation. The focal point of learning programming is the tutorials, where students work on their projects, supported by a team of student assistants and lecturers. We will present a paper on the concept on *Tinkering in Informatics as Teaching Method* at this conference, CSEDU 2020 (Mader et al., 2020).

From the beginning, students define their own design projects, while they are required to use concepts that were covered in the course. The student fully owns the problem; there is no example solution that students can work towards or that tutors can refer to. Instead, the projects have to demonstrate understanding and correct application of given programming concepts (e.g. classes or arrays), proper software design (e.g. encapsulation and event handling) as well as sufficient complexity and interactivity. This requires tutors to discuss quality aspects and requirements in the context of the student-defined project.

The project develops an online platform called *Atelier* to support the educational innovation in the programming courses of CreaTe. To do this properly

tutors need to be able to comment on the program as a whole, as well as on individual lines of code. Since we are working jointly towards the assessment, it needs to support threaded discussions, i.e. students should be able to ask for clarifications, tutors should be able to discuss internally, and students should be able to involve each other and tutors. This means that the platform should offer social media type mechanism for commenting and sharing, e.g. tagging of persons who should be included in the discussion. This can, of course, be used for peer discussions, but in the spirit of a true Community of Practice, this discussion would include tutors and lecturers as well.

To support the tutors *Atelier* will include the static analysis tool *Zita*. It is a custom build tool to detect design smells in novice PROCESSING code (de Man and Fehnker, 2018), which was presented at CSEDU 2018. Design smells are surface indicators for poor design and misunderstood concepts. Its use helps tutors to find problems systematically and consistently, which is a labour intensive and error prone task for humans.

We propose to present the *Atelier project* as part of the Open Communication of CSEDU. We would prefer a poster presentation.

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