

Deadline: 1 oktober 2015

1. Project title and applicants

“Reducing teachers’ classroom anxiety through a virtual internship”

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2. Background and justification of the project

Beginning professionals in general and student teachers in particular, often feel *anxiety* about their workplace (teaching) tasks (cf. Kyriacou, 2001). This anxiety impedes their ability to perform in a classroom because it prevents them from achieving their desired goals such as managing a group of students, high-quality transfer of knowledge and skills, and gathering good learning results (Durban & Alontaga, 2013). Research shows the relation between classroom anxiety and self-efficacy among teachers (Friedman & Kas, 2002). Therefore beginning teachers need to increase the extent of their control over the challenging situations and eliminate or considerably diminish their classroom anxiety. In previous studies, it was found that with teaching experience, classroom anxiety gradually decreases while attitudes to classroom control increases (Fuller, 1969).

One possible way to reduce teacher anxiety are ‘virtual internships’ based on the theory of *situated learning* (e.g. Sadler, 2009). This theory suggests that students learn best when they have an opportunity to take consequential action in realistic settings. Shaffer and colleagues (Chesler, Ruis, Collier, Swiecki, Arastoopour & Shaffer, 2015) developed and deployed, by means off the ‘Syntern platform’, virtual internships in STEM context.

“For example, in a STEM virtual internship, students are presented with a complex, real-world problem for which there is no optimal solution. Student project teams read and analyze research reports, perform experiments using virtual tools and analyze the results, respond to the requirements of stakeholders and clients, write reports and proposals, and present and justify their proposed solutions. During the virtual internship, students communicate with one another using build-in email and instant message systems. They also receive directions, feedback, and guidance from non-player characters (NPCs), such as their boss or company stakeholders, whose actions are controlled by a combination of artificial intelligence (AI) and human domain managers using scripted material in the simulation. Through flexible scripts and automated processes, NPCs answer students’ questions, offer suggestions, guide reflective conversations, facilitate student collaboration, and provide support (Shaffer, Ruis & Graesser, 2015).”

Virtual internships can also be valuable for classroom simulation. By means of these virtual internships a unique and safe learning environment can be created which helps student

teachers prepare for the transition to educational practice. It allows them to practice given tasks and interactions, to solve educational problems and to correct mistakes, similar to what they will experience in their future classroom. As a result, they develop a framework that supports their response to the challenges they will face in educational practice. By result their classroom anxiety is expected to decrease.

3. Objectives of the project

- The aim of this educational innovation project is the realization of a virtual internship in the Master Science Education and Communication as a new innovative way for simulating classroom practice.
- As a result, student teachers' reduced classroom anxiety and more rich practical experiences are also objectives of this project.
- By realizing a virtual internship, this educational innovation project aims to gather insights into improved preparations of student teachers for educational practice.
- The developed virtual internship and insights could also be valuable for the training of TU/e teachers (initial qualification didactic competencies/ 'BKO') or provide leads for the different faculties of the TU/e for the preparation of engineering students for their future workplace tasks.

4. Expected outcomes of the project

Expected outcomes

During this project, a virtual internship as a new innovative way for preparing student teachers for educational practice will be developed in the Master Science Education & Communication and evaluated. As a result, student teachers' classroom anxiety will reduce and they will encounter richer practical experiences. The project is successful when this process creates an understanding of the pedagogical constraints of such a virtual internship. These insights are also valuable for the preparation of TU/e engineering students for their future jobs.

Dissemination of the outcomes

The expected outcomes will be disseminated by means off:

- The developed virtual internship
- A list with do's and don'ts for developing and implementing virtual internships
- Presentations at the (3)TU sessions of the 3TU.CEE
- A project report via the 3TU.CEE website
- A journal article

5. Project design and management

Respondents

Two groups of student teachers of the ESOE Master Science Education & Communication will participate in the research. The first group of approximately 40 student teachers will participate in the pilot phase of the virtual internship during the course 'Education 2' (EM4X0). The second group of approximately 40 student teachers will participate in the implementation phase of the virtual internship during the course 'Education 1' (MEOX0). In both courses, the virtual internship will be embedded in a similar way (with the exception of insight based adjustments). Also both teachers of 'Education 2' and 'Education 1' will participate in this study.

Data collection and analysis

This study encompasses a mixed method approach. Four tools will be used to evaluate the developed virtual internship for beginning educational professionals: (1) the questionnaire 'work engagement' (Schaufeli, Salanova, González-Romá, & Bakker, 2002), (2) the questionnaire 'classroom anxiety' (Friemdan & Kas, 2002), (3) semi-structured interviews with the two teachers, and (4) learning analytics of the virtual internship data.

Instruments 1 and 2 will be applied in a pre-test post-test design. The interviews will be held and learning analytics will be applied, each after the courses Education 1 and 2.

Project management

The project has a pointed currency of one calendar year. Activities will be undertaken in a temporarily order (see table 1).

Table 1. Project planning and activities

Planning	Description activity
January-April	Kick off meeting projects (7 January 2016)
	Literature review on classroom simulation / virtual internship > defining design criteria for virtual internship in teacher education
	Developing the virtual internship (concept)
April-July	Piloting the conceptual virtual internship during the course 'Education 2' (EM4X0) in the Master Science Education & Communication
	Projects meeting 1 (17 May 2016)
July-August	Making adaptations to the developed virtual internship based on the small-scale testing (evaluation pilot)
September-October	Applying the virtual internship during the course 'Education 1' (MEOX0) in the Master Science Education & Communication
	Projects meeting 2 (15 September 2016)
November-December	Evaluating the virtual internship and writing the final research report
	Final evaluation and report meeting (15 December 2016)

8. References

Chesler, N.C., Ruis, A.R., Collier, W., Swiecki, Z., Arastoopour, G. & Shaffer, D.W. (2015). A novel paradigm for engineering education: virtual internships with individualized mentoring and assessment of engineering thinking. *Journal of Biomechanical Engineering*, 137 (2), doi:10.1115/1.4029235

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