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Implementing the Do It Yourself in Education (DIYLab) Concept in Higher Teacher Education in the Czech Republic

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Contribution

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This article aims to present the results of a study that was designed to evaluate the implementation of the DIYLab concept in higher education at the Charles University in Prague Faculty of Education (CUNI).

The implementation process and its subsequent evaluation are a phase of the 3-year DIYLab project (*Do it Yourself in Education: Expanding Digital Competence to Foster Student Agency and Collaborative Learning*; funded by the European Commission's Education, Audiovisual and Culture Executive Agency; 543177-LLP-1-2013-1-ES-KA3MP) that has been underway in Spain, Finland, and the Czech Republic since 2014. The DIYLab project strives to transform the concept of education through lessons that reflect the DIY principle and emphasize digital literacy development; the impact of which (particularly in terms of scholastic and extracurricular education) has become increasingly important in recent years. The DIY concept stems from the belief that every individual is capable of solving and realizing a broad spectrum of tasks via the retrieval, compilation and interpretation of available information. This is especially true when the theme of such tasks closely corresponds to real life and one's own interests, as opposed to being limited to formal issues (Kafai & Peppler, 2011). One significant aspect of DIY is a creation process that is familiar and obvious to young generations during the use of modern digital technologies, and which leads to learning both in and out of school (Jocson, 2012, p. 299).

Our customized implementation was preceded by: 1) analytical studies of the curriculum, educational environment, and

conditions at CUNI to determine the opportunities, strengths, weaknesses, challenges, and obstacles pertaining to DIYLab implementation; and 2) a subsequent DIYLab concept design for the CUNI and specific educational activities (DIY activities) based on previous findings and the primary DIYLab project goals.

Six key didactic requirements (among other things) were used to determine specific DIY activities at CUNI. The requirements were defined in a specific DIYLab proposal and were based on the principles of the DIY philosophy: a) inquiry-based learning, or problem-oriented student activities (Kamenetz et al., 2011); b) themes of DIY activities with overlapping practical applications; c) an emphasis on self-regulation and autonomous learning; d) the use of freely or commonly available (within the course) technologies; e) an emphasis on student collaboration; f) an emphasis on development of students' digital literacy.

DIY activities result in the creation of learning / teaching materials that are then published as a digital object on the DIYLab Hub. DIY digital outcomes should either document or illustrate student learning processes, the methods students utilized to manage their activities, and what they have learned. DIY outcomes may include video / video tutorials, photo albums, graphics, presentations, guide books, lesson plans, web applications, software outcomes, etc. (Černochová, 2014).

The DIYLab project (i.e. the implementation phase) was initiated at the CUNI in Bachelor's and Master's degree studies in the fields of Art, Biology, and Information Technology. Undergraduate studies provide professional training in specific areas and, therefore, focus on the development of knowledge and skills that lead to specialization. Subsequent graduate studies are predominately focused upon the educational, psychological, and didactic aspects of a given field. Graduate student roles in the DIYLab project were therefore more extensive (and doubly effective) when compared to undergraduate student roles; preparation for their roles as teachers (Leask & Pachler, 2014) not only included topical DIYLab activities, but also focused on understanding and applying the DIY philosophy from an educator's perspective. Moreover, students could then apply this method during the pedagogical practicum as part of their professional training.

Method

This study examined the efficacy and appropriateness of DIY concept inclusion throughout the course of project implementation. More specifically, it focused on possible changes in the roles of teachers and students; the quality of students' work and outcomes; and changes in the student learning process itself.

DIYLab implementation at the CUNI was carried out in the form of proactive action research (Nezvalová, 2002) during the Winter and Summer semesters of the 2015 calendar year. The study involved 8 teachers in various fields: 6 from the Department of Information Technology and Education; 1 from the Department of Biology and Environmental Studies; and 1 from the Department of Art Education who conducted DIY activities during their courses. The number of students participating in DIY activities varied (typically 5 – 30 students), and most activities were conceived as a semester-long project with varying degrees of student collaboration. The primary methods used for data collection were qualitative in nature (e.g. ongoing participant observation, and questionnaire surveys distributed to students and teachers at the conclusion of individual activities).

Several focus groups were held during the course of implementation, during which the teachers discussed current insights, problems, and shortcomings pertaining to the assignment and realization of DIY activities. Following completion of the implementation phase, 2 additional focus groups were held with teachers and a select sample of students participating in DIY-related coursework. Ongoing teacher meetings and course observation were crucial to the action research principle; they allowed teachers to reflect upon (and modify) ongoing DIY activities, as well as those initiated further along in the course. Instructor and student reflection was examined in the context of specified activities and the fulfillment of DIYLab model parameters. The self-reflection questionnaire surveys examined the problematic stages of activities, the teachers' positive self-reflections and reflections of the activity. The questionnaires administered to students at the conclusion of DIY activities identified their reflections in a similar manner. Students were questioned about their levels of satisfaction with the DIY philosophy (in a general sense), the course of activities, and their outcomes. The questions aimed to identify issues related to project organization, technology, and collaboration. Students were also asked what they had learned while participating in the activity; not only from the content itself, but also in terms of improvements in digital competencies, and competencies associated with methods utilized to complete given tasks.

Expected Outcomes

Implementation of the DIYLab model at the CUNI successfully fulfilled our objective to incorporate a DIY approach in higher education. It has proven itself to be an innovative method of knowledge acquisition via autonomous student activities that are based on 6 fundamental didactic pillars. Education at the CUNI has its own specific requirements; thus, the DIYLab approach cannot be implemented in every course due to the narrow scope of disciplines and subjects, curriculum load, etc. Nevertheless, cross-curricular and interdisciplinary collaboration were successful. Teacher reflections suggested a change in their own teaching approaches and mindsets relative to the knowledge transfer process. These reflections also indicated that teachers were interested in innovating their own teaching methods, which implied a change in the traditional concept of the teacher-student role. Teachers were additionally aware of the potential development of students' digital, learning, and

managerial competencies through DIY activities. They did note, however, that this model requires students to have a high level of motivation and capacity for self-reflection (in terms of the learning process) – these are often major issues that are reflected in the quality and depth of student performance and outcomes.

Students generally felt that they lacked sufficient time for the actual work; in the future, they would devote more time to analyzing the problem itself. Students' reflections ranked working with information resources, information retrieval, and its classification to be among the most common problems. The majority of students did not experience major difficulties processing activities with various technologies and subsequent applications; however, questionnaire responses did occasionally make reference to outdated technology or unfamiliarity with a given software environment. According to students' perspectives and observing results, the main issues were as follows: poorly self-organized timetables, isolation when attempting to solve unanticipated problems, and poor estimation of their time and professional opportunities.

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