



The Inverted Classroom Model in a Composite Constructions Course at TU Darmstadt

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Abstract

An example of the integrative concept in E-Learning, in which presence phases and online offers are combined, the so-called Inverted-Classroom-Model (ICM), is presented for a structural engineering course.

Keywords: education, teaching, learning.

1 Introduction

The digitization of teaching is currently a great discussion at many levels. In the year 2000 already, the German Science Council [1] defined interdisciplinary skills and key qualifications as basic objectives for degree programs. Communication and team skills, presentation and moderation techniques as well as the handling of modern information technologies were identified in the report as important competences for graduates. The extent to which digital media can or should be used in the advancement of the various abovementioned competences within higher education has been controversially discussed for a long time.

Supporters argue that digital teaching and learning scenarios can direct a greater focus on competences. Skeptics consider the tried and tested, classical university scheme to be at risk. Jay Cross, to which the invention of the term "eLearning" is attributed in 1998, is cited as follows: „We thought we could take the instructors out of the learning process and let workers gobble up self-paced (i.e., “don’t expect help from us”) lessons on their own. We were wrong. First-Generation eLearning was a flop.” (Mason/Rennie [2]).

Certainly the use of digital media can only be implemented with corresponding didactic concepts. In this article, different approaches of digitization are summarized. The so-called Inverted Classroom Model (ICM) is presented, which is one possibility for the combination of online teaching and presence-based teaching. The use of wikis in higher education is also briefly discussed. A successful example for the application of the ICM within the curriculum of the master's degree in civil engineering at the TU Darmstadt will be explained and discussed in detail.

2 Concepts for the Use of Digital Media

The term “Digitalized Teaching” is used very widely, similar to the term “E-Learning”. In the absence of a clearly defined definition, there is almost everything possible from the provision of complementary exercise materials in the World Wide Web, through the implementation of electronically supported tests on computers up to the use of MOOCs. Concentrating on specific courses at universities, it is possible to distinguish basically between three different concepts (Bachmann et al. [3]):