

Project title: CMODE-UP: Challenge based modular on-demand digital education upscaled

Period: January, 2021-January, 2022

Funded by: 4TU/CEE

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In the CMODE project (2019-2020), a blueprint for challenge based modular on-demand digital education was developed. The first pilot was conducted on the compulsory course for Mechanical Engineering students; 4DB00 Dynamics and Control of Mechanical Systems with 360 participants. This blueprint could be improved by a specific set of design principles that can be used to redesign other courses within Eindhoven University of Technology (TU/e) or other universities. The goal of this present project; CMODE-up is to scale-up the blueprint and the course redesign tested in the previous study by delivering an evidence-based framework with practical principles. This project is also connected to the D-MODE (Dr. Stollman) where the focus is to develop concepts for learning path differentiation in the context of modular education.

The project consists of three stages: (1) informal interviews with key actors at TU/e, experienced in studying and/or designing modular instruction, a systematic literature review on higher engineering education and modular instruction; (2) a test of the design principles that were developed using the interviews and literature review; and (3) a test of the CMODE-up framework that was built on the results from the second stage, using think-out-loud protocols. Completion of the first stage resulted in a set of design principles, that in the second stage are being tested with professionals and teachers within TU/e in order to come up with the initial version of a framework for instructional design. The design principles are represented with: 1) instructional design steps and 2) a brief teacher manual with the best practice articles identified from the literature to represent each design step. The evidence-based framework will be finalized with the completion of the third stage.