Physikalisches Kolloquium

Universität Konstanz

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R 513

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Establishing a Collaborative Student-Centered Learning Environment using the SCALE-UP Pedagogy

The time-honored conventional lecture (“teaching by telling”) has been shown to be an ineffective mode of instruction for science classes. For the enhancement of critical thinking skills and the development of problem-solving abilities, collaborative group-learning environments have proven to be far more effective. In the SCALE-UP pedagogical approach, students sit at round tables in groups of three — in this configuration, they carry out a variety of pencil/paper exercises (“ponderables”) using small whiteboards and perform hands-on activities such as demos and labs (“tangibles”) throughout the class period. Formal lecture is reduced to a minimal level and the instructor serves more as a “coach” to facilitate the academic “drills” that the students perform.
In this talk, I will present an overview of the SCALE-UP concept and outline its implementation at George Washington University. I will also discuss empirical data from assessments given to the SCALE-UP collaborative classes and the regular lecture classes at GWU in order to make a comparative study of the effectiveness of the two methodologies. Finally, I will describe my current experience at ETH Zürich this semester (Spring 2017) where we are implementing a pilot section of SCALE-UP for the first time. Similar to the GWU case, we also have a parallel lecture class at ETH which serves as a control group for comparisons between the two approaches.