Preparation and interactive sessions taken to the next level with online tools

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Abstract
How do we combine the methods and possibilities developed in Massive Open Online Courses (MOOCs) with on-campus teaching and learning? This question is the starting point for the development project e-science presently run at KTH and coordinated by the School of Engineering Sciences. The main theme of this project is to help students prepare for the lectures by material available online. While preparing, the students also provide feedback to the teacher who can adapt the teaching session ("lecture") so that it addresses those misconceptions that are abundant in the group. In particular, preparation material that encourage/enforce reading of written material (e.g. the course book) will be presented. It will also be explained how the teaching sessions are adapted to the fact that the students are prepared and ready to be active learners.

Peer Instruction (PI) is used as the basis for the design of the teaching sessions. A typical PI sequence starts with the teacher introducing a concept and stating a question testing some aspect of this concept. The students reflect by themselves and respond in some manner (clickers, phones, response cards, fingers in front of the chest or other) but the result is not presented for the students (albeit for the teacher). The students then discuss the question with each other and respond to the same question again.

The combination of preparation online with feedback to the teacher and interactive sessions is a different approach to teaching. Experiences from a course in Basic mechanics will be shared.