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## Integrating Online Information Search in Tutorials – Effects on Student Learning and Perceptions

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Searching for information online has been an integral part of our lives for quite some time now. But many instructors - and students - will consider googling information to solve an assignment as cheating, perhaps thinking only of assignments that aim at lower levels of learning. How can we integrate online search in tutorials in a meaningful way, to make problem solving more authentic and hopefully increase the students' engagement with the subject and even their understanding of physics?

We studied these questions in a one-year project involving three different first year Physics courses, using a combination of methods: Setting up an experimental group (with online search) and a control group (textbook and lecture notes only) allowed us to study effects on exam performance. We used a survey to study the students' perception of the different methods, and tutorial observations to document the students' activities and conversations.

We will show results from the exams, the surveys and the tutorial observations that illustrate our findings: In this project, we did not find a positive effect of online search on exam performance, but we gained valuable, sometimes surprising, insight into how useful, reliable or engaging the students perceived different resources. Observing the students in the tutorials revealed a large variability in research skills and approaches to team work. We conclude that integrating online search in a meaningful way requires specific problem design as well as teaching of research skills, including how to assess the reliability of sources, which should prove useful for other teaching formats as well.

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