

WHAT MATHEMATICAL COMPETENCES CAN BE LEARNED FROM WEB-BASED LEARNING RESOURCES?

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In a large study (Bergqvist et al., 2010), the teaching in 200 Swedish lessons was analysed regarding students' opportunities to develop mathematical competencies. The results show an emphasis on rote learning and procedural handling. This study presents a comparison between the classrooms in the 2010 study and what is offered by two commonly used web-based learning resources. The research questions are:

- What competencies can students develop using the web-based learning resources?
- Are there any differences from what they are meeting in the classroom?

The two resources analysed are *Khan Academy*, a well-known international resource, and *Matteboken.se*, a resource for students where videos of solutions to Swedish National test tasks are presented. 15 task presentations from the Swedish resource and 15 presentations from *Khan Academy* was analysed using MCRF (Lithner et al., 2010), a framework for analysis of empirical data concerning mathematical competencies.

The results indicate that there is a small difference between the two chosen web-based resources, where *Matteboken.se* to a large extent focus on procedures in the same way as in Swedish classrooms. In the videos at *Matteboken.se*, reasons or arguments for how a task should be solved were totally absent. All presentations concerned how to carry out a solution, without discussions of possible options. Videos at *Khan Academy* offer more information concerning how things are done, with explanations of what different expressions mean and examples of multiple solutions. However, mathematical competencies, for example mathematical reasoning and problem solving are almost as rare as in the Swedish resource. The main conclusion from the study is that the possibilities to develop mathematical competencies using web-based learning resources are as limited as in Swedish classrooms.

References

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