RECENT DISSERTATIONS

SONJA M. MORK, 2006:

ICT in Science Education. Exploring the Digital Learning Materials at viten.no

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Abstract

The main topic of this thesis concerns how ICT in form of digital learning materials may serve as a vehicle guiding students and teachers in exploring socioscientific issues and scientific phenomena.

The thesis consists of four articles that focus on the following aspects of the use of ICT in science education: a) What characterises the digital learning materials from viten.no, and how do these influence learning? b) Students' argumentation when using information from viten.no in role-play debates, and the teacher role in such debates. The data material is based on studies in three 9th grade classes that used the Viten program *Wolves in Norway*, and four 10th grade classes that used the Viten program *Radioactivity*.

The results show that the students improved their knowledge after using both programs: they gave more nuanced descriptions of phenomena, used more scientific concepts and the answers were based more on facts than feelings. The first article shows that students, who before working on *Wolves in Norway* thought wolves are dangerous, changed their view to dangerous under specific circumstances on posttest. In article II, results show that students were very positive to *Radioactivity*, and thought it was fun to work on and had a good design. They thought *Radioactivity* provided variation and student control, and animations and visualisations made it easier to learn. There is a high degree of accordance between the animations in *Radioactivity* and guidelines found in the research literature: they are simple with no unnecessary text or features, they are designed as several steps where students can manoeuvre back and forth and they are related to important and "invisible" phenomena like the three radiation types. Features of animations are reflected in some student answers, both in the form of text and drawings. Articles III and IV deal with the closing activity in *Wolves in Norway*; a role-play debate. Article III introduces a new method for analysing student argumentation in debates. Student argumentation in this study varied from simple claims to more complex arguments with biological, personal, political and economic content. Article IV concentrates on the teacher role in the debate situation. A typology of potential problems in debates, including examples of how the teacher can handle these, is presented. This typology may serve as a tool for teachers who want to use debates in their teaching.

Language:	English
ISBN/ISSN:	1501-8962
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Download:	http://folk.uio.no/sonjam/publications/publications.htm