

Meningsskapande möten i det naturvetenskapliga klassrummet

Anna-Karin Westman

Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för
avläggande av filosofie doktorsexamen framläggs till offentligt försvar i
Alfhild Agrell-salen, Sambiblioteket, Härnösand,
fredagen den 13 maj, 2016 kl. 10:00.
Avhandlingen kommer att försvaras på svenska.

Fakultetsopponent: Professor Staffan Selander,
Stockholms universitet, Stockholm, Sverige.



**Institutionen för naturvetenskapernas och matematikens
didaktik**

Umeå universitet
Umeå 2016

Organization

Umeå University
Department of Science and
Mathematics Education

Document type

Doctoral thesis

Date of publication

22 April 2016

Author

Anna-Karin Westman

Title

Meetings of meaning making in the science classroom.

Abstract

This thesis is an investigation of how students interact in teaching and learning sessions of natural science. The thesis includes four studies in which interactions between students have been investigated, but also interactions between students and teachers, researchers, and resources for learning. The resources used in teaching and learning of science are all parts of the social practice in science education. The resources are in some cases specific for science and science education and the learner needs to learn the social practice of how to read and interpret those resources in addition to the learning of scientific ideas. One way of regarding a sequence for learning is as a process, which starts when one has to handle a question or an assignment. The situation is framed both by the teacher and the learning environment, but also by the way the learner perceives the situation. The learner has to transform the message and, if the learning shall be visible to others, the learner also has to create a new representation of what has been learnt. There is an aim in each sequence for learning, something that is meant to be learnt. Knowledge about the scientific ideas is the aim for teaching and learning in my studies. The overarching question for the thesis is: How do students express their meaning making of a scientific content during interactions in science education in relation to previously known difficulties in learning this scientific content?

Results from the four studies show that in science education students are learning the scientific way of communication as well as they are learning the scientific ideas. Presentation of a scientific way of explaining a phenomenon might be obvious to an educated science teacher, but hidden for the learner. The presentations of scientific ideas in my studies do not always pay attention to the way scientific ideas are communicated e.g. by abstract, scientific illustrations or relations between microscopic particles and macroscopic phenomena. Results in the studies show a greater proportion of students meaning making in teaching situations that consciously note those aspects and which build on students' experiences.

Keywords

Science education, interactions, communication, meaning making, peer discussion, scientific ideas, social semiotics, organizational levels

Language

Swedish

ISBN

978-91-7601-467-7

ISSN

1650-8858

Number of pages

92 + 4 papers