



UMEÅ UNIVERSITET

UTANFÖR EXPERIMENTLÅDAN

Kunskapsproduktion, tid och materia
i förskolans naturvetenskapsundervisning

Sofie Areljung

Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för
avläggande av filosofie doktorsexamen framläggs till offentligt
försvar i N360, Naturvetarhuset,
tisdagen den 13 juni, kl. 13:00.
Avhandlingen kommer att försvaras på svenska.

Fakultetsopponent: Docent Maria Andrée,
Institutionen för matematikämnet och naturvetenskapsämnenas
didaktik, Stockholms universitet, Sverige.

Institutionen för naturvetenskapernas och matematikens didaktik
Forskarskolan inom det utbildningsvetenskapliga området
Genusforskarskolan

Organization
Umeå University
Department of Science and
Mathematics Education

Document type
Doctoral thesis

Date of publication
23 May 2017

Author

Sofie Areljung

Title

Outside the science box: Knowledge production, time, and matter in preschool science teaching

Abstract

The aim of this thesis is to contribute knowledge on conditions for science teaching in preschool. While Swedish preschool practices commonly build on children's subjective experiences, scientific knowledge production is often associated with objectivity and detachedness. Seen from that perspective, tensions may occur when the knowledge cultures of preschool and science meet, as when science teaching is implemented in preschool. This thesis seeks to explore issues that are crucial for teachers to negotiate when they implement science teaching in preschool.

The thesis includes five articles that build on empirical data in the form of teachers' talk (interviews, focus group discussion, project meetings) and observation data from preschool practice. The data analyses draw on various theoretical perspectives, including communities of practice and feminist critique of science as well as theoretical concepts connected to framing and agential realism.

The main result is that it is crucial, to teachers' implementation of science teaching in preschool, that science content is open to children's contributions. Further, the results show that teachers integrate several different forms of knowledge production when working with science content in practice. For example, observations and systematic investigations are combined with imagination and children's bodily experiences. This goes against the presumed tensions between the knowledge cultures of preschool and science. However, tensions between the knowledge cultures are indicated by teachers' unwillingness to interfere with children's investigative processes or ideas about science content by relating children's ideas to scientific explanatory models. Seen from a teacher's perspective, it appears to be unproblematic to leave children's ideas about science content unresolved, compared to leaving children's ideas about social relations and other content unresolved.

Drawing on the results, I discuss teaching beyond the limited material and temporal dimensions of the science box, which emerges as a metaphor when teachers describe a way of teaching that they are not comfortable with. Further, I suggest that the concept working theories, which addresses children's tentative ideas about relations in their surrounding world, be introduced in preschool science teaching, to ease the perceived conflict between children's ideas about science and scientific explanatory models.

Keywords

preschool, science education, knowledge cultures, symbolic gender, working theories, time, matter, design-based research

Language
Swedish

ISBN
978-91-7601-708-1

ISSN
1650-8858

Number of pages
98 + 5 papers