

Institutionen för didaktik och pedagogisk profession

## Ansvar för matematiklärande

Effekter av undervisningsansvar i det flerspråkiga klassrummet

av

Åse Hansson

AKADEMISK AVHANDLING

som med tillstånd av utbildningsvetenskapliga fakulteten vid  
Göteborgs universitet för vinnande av doktorsexamen i ämnesdidaktik  
framläggs till offentlig granskning

Fredagen den 28 oktober, klockan 13.15 i Kjell Härnqvistsalen  
Pedagogen hus A

---

Fakultetsopponent: Professor Johan Lithner

## Abstract

Title: Responsibility for mathematics learning. Effects of instructional responsibility in the multilingual classroom.

Language: Swedish with summary in English

Keywords: Mathematics teaching; responsibility for learning; multilingual classroom; pedagogical segregation; multilevel structural equation modelling.

ISBN: 978-91-7346-711-7

The aim of the thesis is to contribute to knowledge about crucial conditions for students' mathematics learning, and more specifically what role mathematics teaching plays in that process. Also taken into account is the effect of group composition in terms of family background or language skills, and also the relation between group composition and teaching design. The study is based on the assumption that it is essential for students' performances if the teacher in the multilingual classroom takes responsibility for key dimensions of mathematics teaching.

The study is a secondary analysis of TIMSS data from 2003 focusing on mathematics for Swedish students in 8th grade. Based on theories of learning and teaching have important dimensions of mathematics teaching for which the teacher should take responsibility been identified. It has then been investigated how these dimensions of responsibility for students' mathematics learning are related to achievement, and also how they are related to different group-compositions.

Unlike traditional models of mathematics teaching, the model developed in this study simultaneously highlights three dimensions of teacher's responsibility. The first dimension concerns teacher's responsibility to actively and openly support students in their mathematics learning by for example highlighting and explaining the mathematics content, questioning and conversing with students and organizing instruction so as to create conditions for interaction and various social activities. The second dimension concerns teacher's responsibility for handing over responsibility to the students for their own construction of knowledge by for example encouraging them to their own reflections and reasonings about mathematical problems. Finally, the third dimension concerns teacher's responsibility for highlighting the content relevant to the grade as object of teaching. The results show that when teachers through actively teaching and guidance take responsibility for students' mathematics learning it will affect the performances positively. The results also indicate that this is of particularly importance for students with weak skills in the language of instruction.

However, the results show that mathematics education in Sweden is characterized by pedagogical segregation. In groups where many students are likely to have great need of support, teachers take a less responsibility for students' learning than is done in other groups.

The thesis discusses that pedagogical segregation, and responsibility for mathematics learning put on students themselves, may have contributed to the negative knowledge development in mathematics in Sweden during the last decades.