

Institutionen för didaktik och pedagogisk profession

The concept *concept* in  
mathematics education:  
A concept analysis

av

Lotta Wedman

AKADEMISK AVHANDLING

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

*Fredagen den 11 september 2020, kl. 13:00, Göteborgs universitet*

*Disputationen sker virtuellt*

---

Fakultetsopponent: *Professor Johan Lithner, Umeå universitet*



## Abstract

Title: The concept *concept* in mathematics education: A concept analysis

Author: Lotta Wedman

Language: English with a Swedish summary

ISBN: 978-91-7963 030-0 (print)

ISBN: 978-91-7963-031-7 (pdf)

ISSN: 0436-1121

Keywords: *concept, mathematical concepts, concept analysis, conceptual analysis, mathematics education, conception, schema, concept image*

The notion *concept* is used in different ways within the field of mathematics education. The aim of this study is to carry out a concept analysis of the notion *concept*, within some frequently used frameworks describing conceptual understanding. Building on a philosophical literature review resulting in distinctions that can be used for interpreting views on *concept*, the study addresses the question: Which views on *concept* may be found in texts using the chosen frameworks, from the perspective of the distinctions mental versus non-mental, intersubjective versus subjective and molecular versus holistic? The design involves a literature review in mathematics education, resulting in a selection of texts. Views on *concept*, and to some extent on *concept image*, *conception*, and *schema*, are then interpreted with the help of indicators, and represented in 3D matrices.

There are two categories of views on *concept* within the texts: a mental and intersubjective category, and a non-mental and intersubjective category. One difference between the views is whether conceptual structures have molecular or holistic features. Concerning the notions *concept image*, *conception*, and *schema*, there are generally three different views: an individual view and two culturally dependent views. The different views are sometimes combined. One result is findings regarding how language is used within the texts, where non-mental and mental arenas, and terms and meanings of terms, are not always distinguished. The main contribution of the study is to deepen the understanding of views on the notion *concept* and how terminology is used in mathematics education. This opens the way for a discussion of how the terminology mentioned above may be used coherently within the field of mathematics education.