Knowledge and Writing in School Mathematics
A Communicational Approach

av

Anna Teledahl

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University College London
Storbritannien

Örebro universitet
Institutionen för humaniora, utbildnings- och
samhällsvetenskap
70182 ÖREBRO
Abstract

This thesis is about young students’ writing in school mathematics and the ways in which this writing is designed, interpreted and understood. Students’ communication can act as a source from which teachers can make inferences regarding students’ mathematical knowledge and understanding. In mathematics education previous research indicates that teachers assume that the process of interpreting and judging students’ writing is unproblematic. The relationship between what students’ write, and what they know or understand, is theoretical as well as empirical. In an era of increased focus on assessment and measurement in education it is necessary for teachers to know more about the relationship between communication and achievement. To add to this knowledge, the thesis has adopted a broad approach, and the thesis consists of four studies. The aim of these studies is to reach a deep understanding of writing in school mathematics. Such an understanding is dependent on examining different aspects of writing. The four studies together examine how the concept of communication is described in authoritative texts, how students’ writing is viewed by teachers and how students make use of different communicational resources in their writing. The results of the four studies indicate that students’ writing is more complex than is acknowledged by teachers and authoritative texts in mathematics education. Results point to a sophistication in students’ approach to the merging of the two functions of writing, writing for oneself and writing for others. Results also suggest that students attend, to various extents, to questions regarding how, what and for whom they are writing in school mathematics. The relationship between writing and achievement is dependent on students’ ability to have their writing reflect their knowledge and on teachers’ thorough knowledge of the different features of writing and their awareness of its complexity. From a communicational perspective the ability to communicate [in writing] in mathematics can and should be distinguished from other mathematical abilities. By acknowledging that mathematical communication integrates mathematical language and natural language, teachers have an opportunity to turn writing in mathematics into an object of learning. This offers teachers the potential to add to their assessment literacy and offers students the potential to develop their communicational ability in order to write in a way that better reflects their mathematical knowledge.

Keywords: Mathematics, Writing, Students, Assessment, Communication

Anna Teledahl, School of Humanities, Education and Social Sciences. Örebro University, SE-701 82 Örebro, Sweden, ate@du.se