

Editorial

Researchers in the Nordic countries have developed an interest in the field of special needs education in mathematics. Research in the area concerns, for example, cultural, social, psychological, didactical, mathematical, and educational aspects of teaching and learning. Many of the researchers are active in The *NOrdic Research network on Special needs education in MAtematics* (NORSMA), which holds conferences every second year and has been active since 2001. This thematic issue was initiated during the 9th NORSMA conference held in Finland at Åbo Akademi in Vasa in 2018. Participants were invited to contribute with articles, hence the research presented in this thematic issue does not fully represent the presentations at the conference.

The present thematic issue mirrors some of the ongoing research, fourteen years after the previous thematic issue that was published in 2006. Since then, much has happened. The field of research and practice is adopting new challenges and directions as societies, and new knowledge has been generated both within the field and in contiguous fields. This issue of *NOMAD* thereby constitutes an important contribution for continued discussions and development of research in the area of special needs education in mathematics.

Special needs education in mathematics is placed in the intersection of mathematics education and special education. It reveals implications for the challenges facing kindergartens, schools, universities and support on individual, group and/or organization level. These challenges are often related to issues of inclusion, exclusion, diversity, equity, and segregation. Central questions concern who the children or students in special needs are, how they are defined, and how teachers, schools, kindergartens, and the society can support their mathematical learning. Issues of social political heritage can be raised, as well as issues of methods and approaches in mathematics education.

In this issue

In the first article in this special issue, *A logical model for interventions for students in mathematics difficulties – improving professionalism and mathematical confidence*, Lena Lindenskov and Pia Tonnesen describe a several years long work to design a Danish model for interventions for students in mathematics difficulties. The aim was to design and evaluate the support students and teachers would get from the interventions. In

the main section, they present the logical model that has underpinned their developmental work, illustrated by extracts from the identification materials and the curriculum materials, and also give examples from the data collected in the evaluations. In conclusion they claim that this model for interventions can be used as a standard for dealing with students' mathematics difficulties based on high expectations for students, teachers and schools.

In the article *Student conceptions of assessment accommodations in university mathematics: an analysis of power*, Juuso Henrik Nieminen has explored assessment accommodations through the Foucauldian lens of governmentality and then with power as being sovereign, epistemological and disciplinary. Assessment accommodations are applied in order to afford students access and equal opportunities to display knowledge, but the very same practices have been shown to be imprinted by systematic discrimination. In the study at hand, Nieminen has interviewed nine students during a university course in mathematics. They chiefly experienced the accommodations as unfair. Furthermore, the students normalised and accepted the exclusion following from this, simultaneously as they normalised the assessment itself. An implication from this study is that without paying attention to the power dynamics involved in assessment accommodations, the reconstruction and construction of inequity and injustice in mathematics assessment, can not be disrupted.

Using quantitative data analysis Leif Bjørn Skorpen in his article, *What the teachers and the students do and how they interact – a comparison of special education teaching and ordinary teaching in mathematics*, compares the differences in what the teacher and the students do in three ordinary teaching situations differing in different aspects of inclusion: ordinary class mathematics teaching, special education teaching in mathematics located within the ordinary class, and special education teaching in mathematics located outside the ordinary class. The results reveal that in the special education the teaching is more individual, and the student is more frequently engaged in subject-related activities and in communication with the teacher than in the ordinary teaching, and that each of the two different organizational forms of the special education teaching in mathematics separately seem to better fulfil different aspects of the concept of inclusion, outside the ordinary class is better for didactical aspects, and within the ordinary class is better for social aspects.

Catarina Andersson points out in her article, *Formative assessment – from the view of special education teachers in mathematics*, that although the potential of using formative assessment is well demonstrated by research, there is a lack of studies about the use of formative assessment from a special education perspective. Through her study, she wants to address this gap by investigating the view of formative assessment in a group of

39 special education teachers in mathematics (SETMs), who had learned about formative assessment within the SETM program 2–6 years earlier. Interviews with five of the teachers were used to design a questionnaire answered by the rest of the group. The SETMs had perceived formative assessment beneficial and useful in all their common sub-responsibilities and reported experiences of benefits as well as challenges. The article discusses the importance of reaching an inclusive formative assessment practice in mathematics education.

The article, *Educational settings in relation to special educational needs in mathematics*, is authored by Helena Roos, Maria Lindfors and Anette Bagger. The article aims to uncover the reflections by teachers and principals regarding the construction of knowledge by students in need of special education in mathematics (SEM students). In particular, the study examines these reflections in relation to the epistemic climates in two different educational settings, the regular teaching setting and the test setting. The results show that different aspects emerged from the interviews and varied depending on educational setting. These aspects concern how and when the SEM students' knowledge becomes legitimate and justified, and where the source of knowledge lies. The variation of the aspects between the settings indicates that the settings have different underlying epistemic climates. Because of this, teachers need to apply different knowledge representations, norms and practices depending on if it is a teaching moment or a moment of assessment.

In the article *Mind the gap between students and their mathematical textbooks*, Cecilia Segerby focuses on how reading and comprehending mathematics textbooks means understanding the global meaning, and that for this to occur, successful comprehension strategies are required. Segerby draws on the results of a pilot study with six grade 3 students, in which a relationship between the students' reading skills and their mathematical skills appeared. To examine this relationship further, 18 students from grades 1, 4 and 7, with different achievement levels, were interviewed. The interview questions were inspired by the comprehension strategies of prediction, clarification, questioning, and summarization from Palincsar and Brown's reciprocal teaching model. These strategies are connected to Halliday's *Systemic functional linguistics* to better understand how the textbook context affects students' use of comprehension strategies. The results show that all students had developed reading comprehension strategies that were more or less successful, starting already from grade 1. Furthermore, the results of this study highlights that all students, independent of their achievement level or grade, require explicit teaching concerning efficient comprehension strategies to grasp the mathematical content being presented in mathematics textbooks.

Looking ahead

Looking ahead, the articles in this issue provide a glimpse of what is going on in the research on special needs education in mathematics in the Nordic countries. It is important to uphold the interest in how to better facilitate learning for all children and students in the Nordic mathematical didactic community. Next NORSMA conference is planned to be held in the autumn of 2021 in Reykjavik, Iceland. We hope to meet many scholars from the Nordic mathematics education community on Iceland at the conference.

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Workshop for doctoral students

At present, it is uncertain if the annual workshop for doctoral students can be arranged in Gothenburg in the spring of 2021. The Editors are looking into possibilities to do the workshop on-line. More information will be published on the NOMAD website, <http://ncm.gu.se/nomad-workshop>

Thanks to authors and reviewers

We wish to thank all authors for submitting papers to NOMAD. We also wish to thank our reviewers, without whom neither this thematic issue nor the two regular issues of 2020 would have been possible at all. We are sincerely grateful to all for their continued engagement. Below we present a list of all reviewers of manuscripts for which a decision was made during 2020.

The Editors

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