

Editorial

The editors held their annual meeting in Gothenburg in May. This time the meeting was physical, after some years of online meetings. The editorial group of NOMAD consists of scholars from Denmark, Finland, Norway and Sweden. In order to maintain continuity, editors hold their post for around four years and are replaced one at a time on a running schedule. This time the Danish member, Britta Eyrich Jessen, will step down from the group of editors. We wish to thank Britta for her good work and hopefully we will continue to cooperate in the future. In her place we welcome Andreas Lindenskov Tamborg, University of Copenhagen, to the group of editors. Heidi Krzywacki will also step down, although she will continue to work with the thematic issue on *Mathematics teachers' professional identities*, which will be published in 2024. Jake McMullen has been representing Finland since last year. We wish to thank Heidi for her fine work as editor and for being responsible for the allocation of editors-in-charge to submitted manuscripts.

The editors have made some important decisions regarding changes in the publication of NOMAD. From next year, 2024, Volume 29, the two years embargo of open access publication online will cease and all articles will be freely accessible for *everyone* to download immediately on publication. At the same time, the printing of NOMAD will stop and NOMAD will become an on-line-only journal. This means no subscriptions will be necessary in the future.

We are also looking for a partner regarding the handling of manuscripts during the review process, all the way from an on-line submission to publication. There are some interesting solutions to monitor the work-flow, which include giving all articles a DOI index and listing them in several databases. The editors hope these changes will maintain the interest in NOMAD and to increase the readership of published articles.

Workshop for doctoral students 2023

The editors are happy the NOMAD workshop for doctoral students could be arranged again in Gothenburg. The workshop has been put on hold the last years due to the pandemic, but now the workshop was held face-to-face. The program can be viewed at the NOMAD web, <http://ncm.gu.se/nomad-workshop>. Here we will publish information regarding the next workshop in 2024.

Thematic issues

The last issue, in a volume of *NOMAD*, has for many years been a thematic issue with invited guest editors. The intention of a thematic issue is to bring together researchers with a certain interest from all Nordic and Baltic countries. The theme for 2023 is *Digital resources in mathematics education* and the work is in progress. The editors are looking forward to an interesting double issue, displaying the research activity in this field.

The work with a thematic issue takes place over almost two years and the work with next years theme, *Mathematics teachers' professional identities*, is already under way. The theme for 2025 will be *Mathematical modelling* and the call for papers is announced on p. 113 in this issue.

In this issue

Theens, Bergqvist and Österholm study the issue of language and translations between languages within mathematical tasks in multilanguage assessments such as PISA. A goal when mathematics tasks are used in multilanguage assessments is that the various translated versions of each task are as equivalent as possible. Thus, the purpose of Theens et al.'s study is to deepen the knowledge on different aspects of equivalence for mathematics tasks in multilanguage assessment, exemplified through PISA 2012 tasks in the Germanic languages of English, German and Swedish. The equivalence between translated versions of the tasks is measured both formally and functionally. The latter equivalence is measured by way of a *Differential item functioning* (DIF) analysis. That is, DIF is shown if test takers from different groups have different probabilities to answer the task correctly despite having the same underlying ability that the test intends to measure.

The results of their study show that about 50% of the tasks given in PISA 2012 displayed DIF. That is, they found that there were differences in the pairwise comparison of the English, German, and Swedish versions of the tasks. However, the DIF was quite evenly distributed favoring each of the language versions, except in one case. 17 tasks which displayed moderate DIF show a clear majority in favor of the Swedish version. The study also shows that the linguistic features between different language versions differ for several PISA tasks.

The article *Mediating activities in students' collaborative work on self-explanation prompts*, by Ida Bergvall and Anneli Dyrvold, presents a study on students' collaborative work. So called self-explanation prompts have been used to enhance meaning by directing students' attention to important features and principles of the mathematics present in tasks. The idea is that the prompts will help students to change their approach from

wanting to find the answer to focusing on the mathematical concepts. In most previous studies students' individual work with the prompts have been examined. Bergvall and Dyrvold have studied how the use of self-explanation prompts may help students to engage in mathematical discussions when working in small groups. The students' discussions were filmed and transcribed and data were collected from 14 collaboration sessions in three grade-four classes. The discussions were analysed and utterances judged to contribute to students meaning making were identified as a *mediating activity*. The analysis of the activities taking place, revealed five mediating activities, but also potential hinders for a fruitful discussion to occur.

The article written by Valbekmo and Bjuland focuses on students' collective problem solving processes. The study examines reasoned classroom dialogues among Norwegian seventh grade students while solving problems in a thinking classroom setting. One aim of the study is to focus on how the vertical whiteboards support students in their reasoned dialogs. Valbekmo and Bjuland employ in their study an analytical framework following Sociocultural discourse analysis that helped to identify utterances (dialog moves) essential for revealing a dynamic and continuous scaffolding processes. The study shows that a thinking classroom setting, using vertical whiteboards, supported students during the reasoned dialogues and created an environment particularly suitable for interactive learning where students constructed and refined their ideas in collaboration with each other. Valbekmo and Bjuland also discuss teachers' role as a facilitator of classroom dialogues when supporting students to get deeper into the ideas of others.

Wæge and Svingen, both from the Norwegian Centre for Mathematics at the Norwegian University of Science and Technology, study changes in teachers' pedagogical discourse after participating in a professional development (PD) project. Their theoretical frame concerns the idea of *ambitious mathematics teaching*, which takes students' sense-making as a point of departure and aims at developing conceptual understanding, procedural knowledge, adaptive reasoning and engagement in mathematics. Wæge and Svingen acknowledge that this is a complex and demanding endeavour and that ambitious mathematics teaching takes time and direct attention to develop. Hence, in this study they investigate the effects of a professional development project where teachers collaborate to learn the principles and practices of ambitious mathematics teaching (the Norwegian MAM project). Using a discourse analysis approach, the authors explore in what ways the participating teachers change their pedagogical discourse as a result of the PD. Through semi-structured interviews before and after the PD they look at how the participants

frame what it means to do, learn and teach mathematics, differentiating between delivery pedagogical discourse (DPD) and exploratory pedagogical discourse (EPD). Their findings show that the teachers' discourse became more aligned with EPD at the end of the project. The change of discourse is seen in the use of new words, valuing ambitious teaching practices, providing rationales for teacher actions and making specific references to student learning.

In their article *The problematic equal sign*, Toppol and Opsal revisit a topic well described in previous literature. It is well known that a relational understanding of the equal sign is fundamental in mathematics. However, what Toppol and Opsal question is the assumption that *understanding equality* implies a *relational understanding of the equal sign*. They hypothesize that this is not the case and that the two concepts of equality and the equal sign need to be considered separately. Investigating students in grades 5–9, they analyze over 2 500 Norwegian students' responses to three test items. Two items require *assessments of equality* without including an explicit equal sign and the third item is a *missing addend task* with operations on both sides of an equal sign [$14 - 5 = _ + 7$]. The results show that 50% of the students did not correctly solve the missing addend task, i.e. did not show a relational interpretation of the equal sign. Among those who correctly answered the two tasks requiring assessments of equality, almost 30% failed to answer the missing addend task correctly. From this, Toppol and Opsal conclude that equality and the equal sign cannot be treated as equivalent concepts.

Thanks to authors and reviewers

The editors wish to thank all authors for submitting papers to NOMAD. We also wish to thank our reviewers. The production of NOMAD would not be possible without your contributions. We are sincerely grateful to all for their continued engagement, especially during the pandemic period which increased the workload for many of us. Below we present a list of all reviewers of manuscripts for which a decision was made during 2022.

The editors

List of reviewers

Alexandre Pais	Kicki Skog
Andreas Ebbelind	Kimmo Eriksson
Ann-Sofi Lindberg	Kristina Juter
Anna-Lena Ekdahl	Lasse Eronen
Anu Laine	Leif Bjørn Skorpen
Bodil Kleve	Lisa Björklund Boistrup
Charlotte Krog Skott	Markus Hähkiöniemi
Christer Bergsten	Mart Laanpere
Cosette Crisan	Mogens Niss
Dave Hewitt	Morten Blomhøj
David Reid	Oduor Olande
Dorte Moeskær Larsen	Oliver Thiel
Freyja Hreinsdóttir	Ove Gunnar Drageset
Frode Rønning	Per Nilsson
Hanna Palmér	Per Sigurd Hundeland
Helena Eriksson	Peter Liljedahl
Jan Olsson	Ragnhild Hansen
Janne Fauskanger	Reidar Mossvold
Jeppe Skott	Solveig Corner
Johan Sidenvall	Thomas Kaas
Jöran Petersson	Timo Tossavainen
Katrin Rolka	Tomi Kärki
Kerstin Larsson	Vaiva Grabauskiene

