Editorial

Workshop for doctoral students 2022

The editors are happy to announce the return of the Nomad workshop for doctoral students. The next workshop will take place in Gothenburg, June 2, 2022. More information and an invitation to take part is published on the Nomad web, http://ncm.gu.se/nomad-workshop

Thematic issue 2023

The editors have accepted a proposal for a theme for 2023. The theme is *Digital resources in mathematics education*. You find the call for papers with a timeline below.

In this issue

This issue contains four articles, all written in English.

In the first article, *Fostering mathematical reasoning in inquiry-based teaching – the role of cognitive conflicts*, Larsen and Misfeld explore cognitive conflicts in one fifth-grade class participating in an inquiry-based intervention study. Students' independent mathematical inquiry, here called "independent situations", is a key part of the inquiry-based teaching. The authors focus on what characterises productive cognitive conflicts when students work in independent situations and how these relate to students' mathematical reasoning process. The findings indicate that cognitive conflicts can drive the students' reasoning processes and that the environment has an important role in retaining the conflicting positioning by making the cognitive conflicts available for discussion and scrutiny.

The next article is titled *Designing a game-based environment for enhancing rational number knowledge*. Kärki, McMullen and Lehtinen have examined a game-based learning environment for enhancing rational number knowledge. They introduce a new game NanoRoboMath designed especially for providing an activity that intertwines mathematical content, namely rational number knowledge, with the design of the educational game. The study is based on data on four comprehensive school students playing the prototype of the game and the data consists

of video-recorded observations, gameplay log data and interviews after playing time. Results are drawn from analysing the amount and variety of arithmetic practice visible in the game as well as the use of both additive and multiplicative moves. Kärki, McMullen and Lehtinen state that piloting the game show the potential of both time and power mode tasks for enhancing the use of various number-operation combinations. The study shows a promising indication that designed mechanisms of the game are favourable for improving understanding the features of rational numbers and their operations.

In the third article, *Effective mathematical communication in play-based activities: a case study of a Norwegian preschool*, Beate Nergård and Kjersti Wæge presents a qualitative case study to provide new insight into effective mathematical communication in preschool. The article focuses on how visual mediators, gestures and mathematical concepts support effective mathematical communication in play-based activities. The findings show that using mathematical concepts, moving, lifting or pointing to concrete objects – and the links between them – were crucial for making the focal projects and contexts explicit in the conversations, and thus for communicating effectively. In this article Nergård and Wæge contribute to the research on mathematical communication in preschool by using and developing an analytical approach for examining effective communication in play-based activities. The analysis of effective communication is useful for researchers interested in effective communication in preschool and it might help preschool teachers to identify the children's focal projects and contexts, which may in turn inform their communication and teaching.

In the article, *Languaging in mathematics classrooms – space for students' varied language repertoires in the Language introduction program in Sweden*, Wedin investigates languaging in Swedish mathematics classrooms that are for second language learners who have recently arrived in Sweden. The article focuses on understanding languaging in the classroom in relation to space for students' use of their varied linguistic repertoires. Wedin applies Barwell's sources of meaning as analytic approach to discuss how languaging in mathematics classrooms may open or close space for students' use of these repertoires. The data consists of observations and field notes from mathematics classrooms of four teachers. The methodological frame for the project is based on linguistic ethnography that is used for creating the material while Barwell's sources of meaning are used for the data analysis. The analysis was to identify multiple languages, multiple voices and multiple discourses in the classrooms. In their study, Wedin notices that space open for students' use of their varied linguistic repertoires appeared in all classrooms but in different extent. Wedin discusses

the importance of educating teachers for understanding languaging in their mathematics classroom and, thus, providing conditions for recently arrived students to learn.

The editors

Thematic issue of Nomad 2023
Call for papers

Digital resources in mathematics education

Digital resources seem to play an ever-increasing role in mathematics education and are now part of the teaching and learning of most mathematical topics. While resources that are no longer new, such as the calculator, are still being used frequently, new and more sophisticated resources seem to emerge. Thus, the landscape of available digital resources in mathematics education includes textbooks, infrastructure, and topic specific software/hardware, making it complex to navigate for both teachers and learners. In the Nordic countries, the complexity is further accelerated by ongoing or imminent discussions and initiatives of revising the mathematics curriculum to include programming and computational thinking. This landscape adds implications for practice, policy and for what is needed of our theoretical frameworks to study mathematics education in such a context adequately. This special issue invites contributions from the Nordic and Baltic countries that investigate a broad spectrum of how practitioners, researchers and decision-makers navigate digital resources in mathematics education from pre-school to higher education.

Topics

Authors' contributions can relate to multiple aspects of the overarching theme. These can report both on empirical and theoretical studies and refer (but not be limited) to the following topics:

- How have digital tools and aids been included in the mathematics *curriculum*? What explicit justifications and hidden reasons can be identified? Are there notable similarities and differences between countries?
- What do experiences and results say about the mediating role of digital technologies in students' mathematics *learning*?
- How have digital tools facilitated or eventually obscured the *assessment* of mathematics learning?

– What are the roles of digital resources in bridging mathematical competencies with other *non-mathematical* fields of practice (e.g., design) and theoretical constructs (e.g., computational thinking)?

– Which opportunities and challenges are there in the use of *online platforms* for teaching and learning mathematics, including online synchronous and asynchronous teaching and learning?

– How can digital resources and their role be defined and classified in the context of mathematics education? How do different *theoretical perspectives* frame computing hardware and other tangibles, mathematics-oriented software, digital textbooks, programming languages, online teaching platforms and learning communities?

– Which challenges and dispositions do *teachers* find in adopting and using digital resources before and during their practice? To what extent do technologies respond to their necessities? Are there gaps associated with, for example, age?

– Which *socio-political* aspects can be highlighted with the irruption of digital resources in mathematics education? Which political agendas and corporate motives are interwoven in the mainstreaming of digital resources?

Timeline

September 15, 2021	Abstracts to be submitted. An abstract shall contain 300-600 words and 3-5 keywords
October 15, 2021	Feedback on abstracts
March 1, 2022	Full papers to be submitted
May 30, 2022	First round of reviews completed
June 15, 2022	Feedback to authors from editors
October 15, 2022	Submission of revised papers
February 1, 2023	Second round of reviews completed
February 15, 2023	Feedback to authors from editors
August 1, 2023	Final revisions to be completed

To be accepted for this issue, papers must meet the standard requirements of Nomad [see http://ncm.gu.se/5978-2]. Submitted papers will be reviewed by at least two other researchers through a double-blind peer review. Authors are expected to participate in the review process by reviewing

other contributions. Authors who wish to contribute to this issue are invited to send a brief outline of the intended paper, in the form of an abstract, to Andreas Lindenskov Tamborg [andreas_tamborg@ind.ku.dk] no later than September 15, 2021.

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Britta Eyrich Jessen will participate in the group of editors as one of the regular editors.