Editorial

This issue contains no less than five articles. This is a consequence of the increased inflow of manuscripts to Nomad. In order to reduce the waiting time for finalised articles to be published, the editors have decided to let the first two issues in 2017 contain 5 articles each. This expansion of the number of articles might also be applicable for the third issue. The trend of increasing number of manuscripts submitted to Nomad is of course most appreciated by the editors and shows the vitality of the field in the Nordic and Baltic region.

As announced in Nomad earlier, and by now probably known to most of our readers, the 8th Nordic Conference on Mathematics Education (NORMA 17) will take place in Stockholm, May 30–June 2, 2017. Information on the conference is available at http://www.mnd.su.se/om-oss/evenemang/norma-17. In particular we would like to draw your attention to a special session on Nomad at 15.00 on Wednesday May 31. At this session we will follow up the tradition initiated at NORMA 14 in Turku by presenting the *Best paper award*. In a collaborative effort between the editors and the editorial board, going through all papers published in Nomad in the years 2014, 2015 and 2016, one paper has been selected to receive the *Best paper award* for this period. This means that one author, or author group, is in for a very pleasant surprise at this session. We hope to see many of you in Stockholm at the end of May.

The 6th consecutive workshop for doctoral students led by the editors of Nomad will be held in Gothenburg April 27, 2017. More information can be found here: http://ncm.gu.se/node/6962

Another up-coming event is Madif-11, the eleventh research seminar of the Swedish Society for Research in Mathematics Education, in Karlstad January 23–24, 2018. The seminar will, as usual, be held directly before Matematikbiennalen. A call for papers to Madif-11 will be launched shortly and the deadline for papers will be in the autumn of 2017.

In this issue

The first article in this issue of Nomad, *Formative assessment in Swedish mathematics classroom practice*, is written by Catarina Andersson, Erika Boström and Torulf Palm. A substantial body of research has shown that formative assessment is an effective and useful classroom practice that can strongly promote student learning. The topic of this article is therefore essential to investigate further. The article reports on a study

that examines if and how Swedish mathematics teachers use formative assessment. Compared to previous studies in Sweden, it is unusually large in scale, as it examines the classroom practice of 38 randomly selected teachers in one municipality. The study uses both observation and interview data as basis for characterising the teachers' practice. The analysis is based on a previous framework that includes both the "big idea" of formative assessment (i.e. using evidence of student learning to modify teaching to better serve the students' needs) and five key strategies, for example, clarifying goals and providing feedback. The results show that the teachers use formative assessment in many different ways, but also that there is a potential to develop their classroom practice further. The article describes the most common formative assessment activities among the teachers in a structured table, but also provides a fuller description of one teacher's practice through a vignette. The paper thereby contributes with knowledge on current teacher practice in Sweden from a formative assessment perspective. The article also makes it possible to compare the situation in Sweden with that in other countries and, also, to discuss how the situation could be further improved. In addition, it adds significantly to the used framework by describing concrete activities of daily teaching and assessment in mathematics classrooms.

The second article, *Matematikundervisning för begåvade elever – en forskningsöversikt* [Mathematics instruction for gifted students – a research review], by Attila Szabo, provides an overview of pedagogical and organisational approaches put forward in research literature regarding the teaching of mathematically gifted students. Based, initially on a wide search for relevant literature, the scope of the review was finally narrowed down to 180 sources. The literature on mathematically gifted students was found to be quite diverse, partly due to differences in how gifted students are defined and identified. A qualitative content analysis was used in the final stage of the study. The main results regarding organisational adaptions is that *voluntary acceleration* with carefully tailored teaching seemed to have good effect on the students' achievement. Voluntary acceleration means, in most cases, that the students participate in their ordinary mathematics class, and in addition, study mathematics courses that are designed for older students. Also, *general level grouping* can have positive effects on students in the high-performance groups, but here the picture is far from unambiguous. Regarding the teaching of gifted students in regular classes, the overview shows this to be a challenge to many teachers, but that elements such as differentiated instructions, faster work pace and more challenging problems might be used with good results. The overview also shows that the empirical evidence is weak regarding many aspects of the teaching and learning of mathematically gifted students.

Mary G. Billington and Egil Gabrielsen from the University of Stavanger, Norway, contribute with the paper *The older the better? Are younger Norwegian adults losing ground on basic numeracy skills?* Their background for asking these questions lies in the OECD survey of adult skills from 2012 (PIAAC), where the age skill profile shows that younger Norwegians perform around the OECD average numeracy score whereas the older groups score well above the average. They also look at the Adult literary and life skill survey from 2003 (ALL), and comparing with this study they observe a downward trend in numeracy competency for the younger generation. In their paper they try to find explanations for the observed trends in the Norwegian school reforms in the period 2003–2012.

After a discussion of the concept *numeracy* the authors examine how particular age groups contribute to the national skill base, as seen in PIAAC, and then compare this to the results from the earlier study ALL. The results from PIAAC show that while the Norwegian score is very close to the average OECD score for the groups up to age 30, from there on the Norwegian scores lie well above the average. While for the age groups 16–29 Norway ranks from 10 to 14 compared with the other countries in the study, the age groups from 30 to 50 rank in the region of 2–5.

After having looked closely at results from the studies and done some comparisons, also involving a comparison with the other Nordic countries, the authors go into the history of school reforms in Norway, starting with the reform in 1959, which gave local municipalities the possibility to introduce nine years of compulsory schooling. As a general law this was introduced in 1969. For the youngest cohorts, the two most recent reforms (1997 and 2006) are most relevant. For the 24 year olds cohort in PIAAC the authors point to the fact that this cohort entered school before the 1997 reform, then they were introduced to this reform and they also experienced the 2006 reform before finishing school. The younger ones did not experience the pre-1997 reform period but went to school both under the 1997 reform and the current system. The authors present the hypothesis that the poor results for the younger cohorts may partly be explained by the unrest following frequent reforms. There is also some evidence in research to support the claim that the methods prescribed in the 1997 reform led to teachers adopting a passive role in the classroom and also that they in some cases were too positive towards pupils' work. This is also taken as a partial explanation of the poor results of people who have been exposed to this reform.

The fourth article is *The teaching of mathematical problem-solving in Swedish classrooms: a case study of one grade five teacher's practice*, written by Anna Pansell and Paul Andrews. The paper reports on a case study of a Swedish fifth grade teacher's teaching on mathematical problem-solving. Problem-solving is seen as one of the core activities of school

mathematics, both internationally and nationally, for example, in the Swedish national curriculum. At the same time, the authors point out that the Swedish textbooks are unregulated and Swedish teachers are free to choose how they design their own classroom practice to meet the curriculum demands. With such a weakly framed curriculum, it is relevant to examine teachers' enacted curriculum regarding problem-solving. The study therefore looks closely at how one teacher, Mary, handles problem-solving in her classroom and at how she interprets the curriculum and its expectations of her. The study takes an ethnographical approach and provides a thick description of Mary's problem-solving practice. The analysis uses Lester's and Schroeder's descriptions of teaching *for*, *about* and *through* problem-solving to examine Mary's teaching and how it is informed by the curricular materials available to her. The results indicate that Mary primarily teaches *for* and *about* problem-solving, and, in line with this, that the curricular documents that she bases her teaching on do not support teaching *through* problem-solving to the same extent as *for* and *about*. Finally, the article discusses the many decisions on different levels that Mary has to make in order to design her problem-solving classroom practice, especially with such a weakly framed curriculum.

The article by Eva-Lena Erixon, *Convergences and influences of discourses in an online professional development course for mathematics teachers*, concerns mathematics teachers' competence development in an online environment. Such online development of teachers' competences is becoming common practice in Sweden, and this study investigates the teachers' experiences in relation to such. More precisely the study in the article asks two questions. Firstly, which competences the teachers themselves find to have developed during their online deve-lopment courses and how – in case of changes – these have affected their own teaching of mathematics. Secondly, which possibilities and limitations they see in relation to their output of the online course. It is shown that although an actual development of teachers' competences, know-ledge, etc. does take place, several of them have concerns with the online environment, e.g. the asynchronous communication and lack of body language in the facilitation of the dialogue. Not being able to interrupt conversations and having to wait one's turn is also raised as a drawback of the learning environment in the virtual rooms of the course.

The Editors