

Nordic mathematics education research in the world and in the region

The period of 2008, since the publication of the previous number of *NOMAD*, has been a very agitated period for mathematics education in the world, and also in the region. In this editorial we would like to continue a line of reflection that we started from our editorial in the first volume of this year, namely the prominent role that Nordic mathematics educators have played internationally, regionally and nationally in each of the countries in the region. We will bring some comments about this topic focusing on the realisation of ICME 11 in Monterrey, Mexico, and of the big international seminar for PhD supervisors organised by NoGSME.

The eleventh International Congress on Mathematics Education ICME is always a big event: the conference for the large community of mathematics educators in the world. After the remarkable work of the Nordic organisation in planning and holding ICME 10 in Copenhagen, it was the turn of the Mexican mathematics education community to host this congress. It was the first time an ICME took place in a Latin American country and there were many expectations about what the country and the continent as a whole had to offer to the international community of mathematics education. Many histories can be told about ICME 11 (see, for example ICMI News 5, at <http://www.mathunion.org/piper-mail/icmi-news/2008-September.txt>). In this occasion we would like to highlight some points of this meeting through a Nordic view, focusing on the participation of our research environment in the conference.

A first noteworthy fact is the number of participants from the region in the congress. In a counting of the countries with the biggest delegations, Norway, Denmark and Sweden were well ranked with 20, 35 and 64 participants respectively. It was not possible for us to get the official figures about the amount of participants from Iceland and Finland, but from having seen many colleagues in Monterrey, we suppose that these countries also had good numbers of participants. We find these numbers to be significant if we compare the size in the population in our countries with the size of the delegations from other strongly represented

countries. In fact, even compared to the participation of many Latin American countries, we can say that the Nordic representation was significant.

A second remarkable fact was the engagement of these delegates in both organisational tasks and in presentations in the different activities in the congress. Serious and committed work was carried out by Nordic colleagues in the top organisation of the programme, in subplenary lectures, in the different topic study and discussion groups, as well as in poster presentations. Again such active participation has impacted the overall functioning of the conference, as well as it has been set research and practice in our region on the world map of mathematics education.

Finally, following the practice initiated by ICME 10, ICME 11 has gathered an impressive resource in mathematics education by keeping the conference website open to the public. In the website it is possible to have access to many of the activities, papers and products of this important worldwide activity. We encourage colleagues who did not participate in ICME 11 to use this resource of value for practice and research.

Nordic (and Baltic) collaboration in mathematics education

Just recently The Nordic Graduate School in Mathematics Education (NoGSME) held its last seminar for researchers and doctoral supervisors from Nordic and Baltic countries. This time four internationally highly recognised researchers were invited as plenary speakers to give their views on the theme of the seminar: *Local, global and international perspectives in mathematics education*. Details about this very interesting seminar can be found in the report from NoGSME in the back of this issue. The seminar was a natural occasion for looking back on the recent developments in the Nordic collaboration in mathematics education research, to evaluate the contribution made by NoGSME and to look forward to see future challenges and opportunities for strengthening the collaboration in the field in the Baltic and Nordic regions.

Mogens Niss gave in his address a historical overview on the Nordic collaboration in mathematics education as a field of research. The field is quite young. Not much research was done in the Nordic countries in this field before 1970 and it was not until the late 1980's that the first signs of Nordic collaboration in research activities emerged. The organisation of Nordic research symposia and conferences such as the symposium on the criteria for scientific quality and relevance in the didactics of mathematics under the Danish Initiative *Mathematics teaching and democracy* 1988–1992 (see Nissen & Blomhøj, 1993), and the first NORMA conference in Finland in 1994 where some of the first Nordic activities.

It is also worth mentioning the Nordic collaboration driven by Göran Emanuelsson and Stieg Mellin-Olsen, which resulted in the foundation of a Nordic journal for research in mathematics education. As a result, the first volume of *NOMAD* was published in 1993.

In its entire history of twenty years the Nordic collaboration in the field has been held up by synergetic effects between the growing Nordic network and national or often local research initiatives by various research groups or institutions in the Nordic countries. Whenever possible local research grants have been used to strengthening the Nordic collaboration and local environments have take advantage of the Nordic network and its connections to international research groups to strengthen their own development. The Nordic collaboration has been particular important in relation to the foundation and development of doctoral programmes at various institutions around the Nordic and also Baltic countries. With a few exceptions, the research groups in mathematics education in the Nordic and Baltic area are very small – typically two or three researchers with permanent positions and less than five doctoral students at the time. Nordic and international connections are therefore crucial in order to secure the quality of research education in the field.

Since 2004, the activities of NoGSME have raised tremendously the quality and quantity of Nordic and Baltic collaboration in the field. This fact was recognised by all participants in the seminar and was also highlighted by the international guest speakers. Formally NoGSME finishes in 2008, and therefore the seminar was a natural forum for discussing the future challenges and possible forms of organisation for the continuation of the Nordic and Baltic collaboration.

A new umbrella organisation, Nordic Society for Research in Mathematics Education (NORME), was founded at NORMA08 in Copenhagen (see our editorial in *NOMAD* 13(2)). This society gathers as its (potential) members national societies of research in mathematics education in all the Nordic and Baltic countries. We see this organization as one new important actor to support the future development of the field. As an important part of its constitution, it aims at supporting *NOMAD* and the continuous holding of the NORMA conferences every third year. In addition, it is meant to take initiatives to continue some of the activities related to research education initiated and co-ordinated by NoGSME. A crucial issue is of course how to raise economic support for such activities. Therefore, one of the first tasks of NORME is to inquire the possible sources for financing activities in the Nordic and Baltic regions.

We see that early in the development of the Nordic collaboration *NOMAD* has played a prominent role as a means of communication in the region about the research being produced, and also as a showcase of the

region to the world. The journal is still considered to be a central element in collaboration since it is the only journal for research in mathematic education in which research papers in the Scandinavian languages can be published. Moreover for many doctoral students and young researchers NOMAD is a natural choice for submitting a paper to a research journal for the first time. But the journal is not only a publication exercise for novice researchers, but it also collects the work of well-established researchers. It is this mixture of authors and different levels of research expertise a characteristic that we see to be promising in any effort to develop NOMAD as a well recognised scientific journal.

During the operation of NoGSME the number of papers submitted to NOMAD every year has more than doubled and we are sure that the doctoral school is one of the most important factors behind this development. Several of its activities have involved NOMAD directly in form of seminars for reviewers and authors, and the doctoral courses have raised awareness on young research students' possibility of making the journal an important tool of information and of publication. At the same time NOMAD has served as a means of communication for NoGSME.

Unfortunately we still wait to see a substantial increase in the number of subscribers to NOMAD. The number is growing but very slowly. For the time being there are nearly 250 individuals or institutions subscribing. This is still way below the 400 during the first years of the journal. Together with NCM in Göteborg, we strive to find ways of increasing subscriptions and of cofinancing the expenses associated with keeping publication. Hopefully, with the support of NORME, we will be able to create a better financial basis for maintaining the journal in the future and hereby also providing a basis for the continuous development of the quality of NOMAD as a research journal.

About this number

Andreas Ryve in *Analyzing mathematical classroom discourse. Initiating elaborations on the usefulness of the dialogical approach* presents a discussion of the use of the dialogical approach to research mathematics education classrooms. In mathematics education the focus on interactions as an important dimension of learning has led researchers to recontextualise different analytical models of human communication, dialogue and interaction into the specificities of the mathematics conversations among students and teachers and students in classrooms. Drawing mainly on the work of the Swedish linguist Per Linell, Ryve discusses how Linell's dialogical approach could be developed and complemented for serving the purposes of mathematics education research. Ryve builds on his research

experience using this approach, as well as on the experience of other Scandinavian researchers such as Maria Luiza Cestari and Raymond Bjuland. He also engages in the exercise of contrasting the insights that are possible to gain from researching from within the approach, against criteria for the quality of mathematics education research. He concludes by suggesting further aspects that need to be discussed and elaborated on in the project of making it even more useful for understanding mathematical teaching and learning.

The paper *Learning mathematics through inquiry* by Ole Skovsmose and Roger Säljö bring the very important notion of inquiry in learning to discussion. The paper uses the Knowledge, Instruction, Learning Projects (KUL-projects), two very large and significant projects in Norway and in general in the Nordic region, as an entry point to examine the notion of inquiry in relation to mathematical learning. Using their own research as a background for reading the use of the notion of inquiry in the KUL-projects, the authors argue that in order to develop an understanding of inquiry processes, detailed analyses of the nature of inquiry in interactional activities in mathematics learning is necessary. It is also argued that the notion of inquiry adopted by the projects is based on a conception where inquiry is seen as a means of learning mathematics better; while an alternative and complementary view on inquiry could emphasise the promotion of critical thinking in understanding the functioning of mathematics in democratic societies.

In the paper *Do students need to learn how to use their mathematics textbooks? The case of reading comprehension* by Magnus Österholm we learn about three different studies addressing receptively the properties of mathematical texts, students reading of mathematical tasks and of mathematical expository texts. The two first studies are literature surveys while the third one is an empirical study of upper secondary and university students' reading and comprehension of expository mathematical texts with different degrees of use of mathematical symbols. The findings from this complex of studies are analysed and distilled to form the basis for a discussion of the research question in the title of the paper. Generally students do develop special strategies for reading mathematical tasks and texts. Parts of these strategies are based on superficial aspects of the texts and are not desirable in relation to the students' learning processes. In order to challenge and develop the students reading strategies it is argued that in general students need more varied experiences with reading mathematical texts and support to reflect about their reading and comprehension of different types of mathematical texts. Students cannot be expected by themselves to develop forms of reading strategies for mathematical texts and to see the benefits of using general literacy skills also for

mathematical texts. In order for students to be active and competent users of mathematics textbooks in full, mathematics teaching needs to focus more on reading and reading comprehension and to make sure that the students are exposed to varied experience with reading different types of mathematical texts. And not surprisingly, we need more research on how to support the students' development of strong and effective reading strategies for mathematical texts.

Finally, Frode Rønning presents a review of the book *Matematik for lærerstuderende. Ypsilon, basisbog*, the first book in one of the newest and most comprehensive textbook system for mathematics teacher education produced in Denmark by Hans Christian Hansen, Kristine Jess, Jeppe Skott and John Schou. Rønning gives an overview and critical reading of the content of the book.

The editors

References

Nissen, G. & Blomhøj, M. (Eds) (1993). *Criteria for the scientific quality and relevance in the didactics of mathematics*. Roskilde: RUC – Danish Research Council for the Humanities.