Editorial

The alert reader will have noticed that this issue is dated no 1 in 2013 and will perhaps wonder, ”wasn't the last issue I saw no 2 in 2012? So where are the issues 3 and 4 from 2012?” We fully understand why this may seem puzzling so an explanation is in order. As those who faithfully follow Nomad also know, we have recently had problems to get the issues out in time and sometimes been seriously delayed. This is a regrettable situation but we are very happy to be able to say that we now seem to get on track. The missing issues 3-4 in 2012 will soon appear as a very rich issue with papers based on presentations at the MAVI conference in Helsinki last year. Getting the double issue out requires a lot of work by many persons involved and therefore we decided that we would first get this regular issue out. But more is soon to come!

For the future we are working with more special issues and in addition the flow of regular articles seems to have increased. This is positive but there is no time to rest, so we still encourage all our readers to send their work to Nomad. The current issue contains three articles which will be briefly described below.

In this issue

Oduor Olande is the author of the article *Making sense of a ”misleading” graph*. He is addressing a topic which is very relevant when talking about the democratic aspects of knowing mathematics, namely the capability of interpreting graphical representations of statistical material in a correct way. He refers to the ability to critically read, interpret and communicate data using statistical tools and representations as *statistical literacy*. To denote the particular abilities connected with graphical artefacts, he uses the word *graphicacy*. This goes back to Balchin and Coleman in the mid 1960s who placed *graphing* alongside with *reading*, *writing* and *doing arithmetic*.

Olande's study is centred around one of the released items from the PISA study, an item called *Robberies*. The task contains a bar chart showing the number of robberies in two different years where the vertical axis is cut so that it does not start at zero. The task further contains a statement that ”there is a huge increase in the number of robberies” and the students are asked to say whether they think this statement is a reasonable interpretation of the graph. Olande has had access to the Swedish results from PISA 2003 where 1400 students had the possibility to answer this particular item. The item has been coded with double-digit-rubrics, where the first digit shows the extent to which the answer is correct and the second digit tells something about the content of the answer. Olande presents and discusses the distribution of student responses over the various double-digit codes.

In the second part of his study Olande has made a qualitative investigation of three student groups in Swedish upper secondary school. The groups were given the same task and the discussion in each group has been video recorded. Parts of the discussion in each group are presented and analysed.

The article *Student teachers' work on instructional explanations in multiplication – representations and conversions between them* is written by Anita Valenta and Ole Enge. They have been working with pre-service teachers on the teacher education programme for grades 1–7 in Norway. A fundamental concept in this article is the notion of *instructional explanation*. Referring to Leinhardt, Putnam, Stein and Baxter the authors define this as "an activity in which teachers communicate subject-matter to pupils in a way that gives an opportunity for pupils to understand a given concept or procedure". Using material from the student teachers that the authors themselves work with they are looking at student teachers' use of representations in instructional explanations on whole number multiplication. The student teachers have been given as an assignment to write instructional explanations to hypothetical pupils and it is this work of 140 student teachers that form the empirical material behind the study.

In addition to drawing on theory about instructional explanations the paper also draws on the theory about *Mathematical Knowledge for Teachers*, as reported on at length by Deborah Ball and several co-authors. Furthermore, theory on semiotic representations is central and here the authors primarily base their discussions on the framework presented by Raymond Duval and his emphasising of the importance of being able to switch between different semiotic registers. Based on Duval's terminology, the authors pose their research questions which summarised can be explained as questions about what kind of representation registers the student teachers use in their explanations, and what kind of challenges that can be detected in conversion between representations in the explanations.

The third article in this issue is written by Ida Friestad Pedersen and deals with Norwegian students' motivation for enrolling in mathematics, and plans for post-secondary studies. The main title of the article is one of the possible reasons for studying mathematics that has come up in the study; *"I need advanced mathematics to pursue the career of my choice"*. Friestad Pedersen has investigated students in the most advanced mathematics course in Norwegian upper secondary school and their motivation for choosing this particular course. As females traditionally is an under represented group in this course, she has paid particular attention to the gender aspect.

This study is situated in theories concerning students' confidence in their abilities, building on concepts like beliefs, values and goals, motivation, and self-efficacy. A central framework is *Expectancy value theory*, with reference to Eccles and colleagues. This framework divides the expectancy of a course in four components; intrinsic value, utility value, attainment value and cost. Friestad Pedersen formulates several research questions. The questions address the students' expectations of success, their reasons for enrolling in the course, and their plans for post-secondary education. She also addresses the gender aspect, where gender is seen as a sociological concept, concerning feminine or masculine values.

Data for the study are taken from the Norwegian part of the TIMSS Advanced Study, conducted in 2008 and comprise 1932 students, 38 % girls and 62 % boys. An exploratory factor analysis based on the question "Why are you studying advanced mathematics?" has led to four constructs; *Expectation of success*, *Interest in mathematics as a school subject*, *Utility value for future studies*, and *Influence of social agents*. In degree of importance the utility value gets the highest mean score, and furthermore it turns out that interest in mathematics is somewhat more important to girls than to boys. The importance of the utility value is particularly high among students who plan to study STEM (Science, Technology and Mathematics) subjects after secondary education.

The editors