Welcome to the first issue of NorDiNa this year. First, we want to express our gratitude to Christina Ottander for her work as editor during the past years. Issue 2 in 2013 was her last issue as editor of NorDiNa. Christina has played an important role in developing the journal during the last years.

Many see “technology and design” as having a potential for students to work with science and mathematics in practical contexts. Berit Bungum, Bjørn-Tore Eshjolm and Dag Atle Lysne’s article entitled “Science and Mathematics as part of practical projects in technology and design: An analysis of challenges in realising the curriculum in Norwegian schools” reports from a video study of the use of mathematics and science in student projects in technology and design. They found that the projects contained little conceptual knowledge from mathematics and science even when their purpose was to do so. The authors identify four issues that explain why this is the case. These issues are related to the nature of technology rather than to pedagogy, and the results suggest that “technology and design” as a domain of knowledge should be represented in the curriculum in its own right and not as an arena for learning science and mathematics.

In their article “Authenticity and legitimacy in science education: Negotiating the relevance of laboratory work” Mattias Lundin and Mats Lindahl underline that the influences on students’ motivation and their attitudes towards science and the learning of science have been given increasing attention in recent years. This lack of interest relates to the students’ perception that science education had little or no relevance to everyday life. The purpose of the study is to address how students, in collaboration with their teachers, turn their attention to and from activities related to laboratory work. By studying these moves, the authors interpret what students question and what they might find relevant.

One aim for many natural history museums, science museums and science centres is to contribute to school-related learning in science. In the article “Exhibits as learning material: a review of empirical research on students’ science learning at Natural History Museums, Science Museums and Science Centres” Nils Petter Hauan and Stein Dankert Kolsto review published empirical studies of this area. Their review indicates that the effectiveness of educational activities at different types of science-communication venues (SCV) in supporting students’ science learning varies. There is also evidence of interesting differences between activities, depending on the design of these activities. The authors identify areas that might prove fruitful in guiding further research.

Birgitta Norberg Brorsson, Margareta Enghag and Susanne Engström’s article “Oral Communication during a Lesson on Energy Sources in Grade 5” presents a study of oral communication patterns during a lesson on energy sources in year five in a Swedish primary school. The teaching sequence is analysed to make evident the use of time, question – answer patterns, roles, and genres. The teacher creates a dialogue, using both everyday and academic language to explain complicated concepts, and allowing plenty of time for the students’ contributions. The students had opportunities to internalise the scientific language by means of demanding roles and genres. By including writing elements, this oral lesson would have provided even greater learning opportunities.
Per Anderhag, Helena Danielsson Thorell, Carina Andersson and Andreas Holst investigate aims in relation to laboratory activities in their contribution "Purposes and contingencies in the lower and upper secondary school lab: A study of how students act in relation to the goals of the activity". The authors study the relation between the ends-in-view that are in focus for the students in the laboratory activity and the teacher’s final aim with the activity, and how continuity is created between the ends-in-view and the final aim. The results showed that there were differences among the students regarding the possibilities they had to act toward the activity’s final aim. This may relate to the amount of purposes introduced by the teacher as well as those that arose because of contingences, and the connection of these purposes to students’ prior experiences.

Science in primary education is the focus in the article by Lena Hansson, Lena Löfgren and Ann-Marie Pendrill, entitled "Starting from questions and everyday situations in preschool: What kind of science content could that lead to?". The investigation was performed in connection to a teacher professional development program, förskollärarlyftet, for preschool teachers in Sweden. In the study, children’s spontaneous questions were collected and categorized, according to the relations to physics or chemistry content. This is used as a background for a discussion about possibilities and challenges that preschool teachers may face when they try to use children’s questions as a basis for science teaching.

In their article “The importance of discourse and attitude in learning astronomy: A mixed methods approach to illuminate the results of the TIMSS 2011 survey”, Trude Nilsen and Carl Angell investigate factors influencing students’ learning in the field of astronomy. The background of this study is the positive results of Norwegian students in this particular field of science in the TIMSS 2011. Their findings showed that the students’ reported discourse practices had an influence on their attitudes and that attitude towards astronomy was important to their conceptual understanding of this topic. Students’ attitudes reflected mostly interest and self-efficacy, and they reported to practice astronomy discourse through media and discussions inside and outside of school.

Majken Korsager, James D. Slotta and Doris Jorde have studied peer interaction between students from different countries in an online environment, in an international shared curriculum, the Global Climate Exchange. Student groups from Canada, China, Norway and Sweden participated in the study. In their article, entitled “Global Climate Exchange: Peer collaboration in a ‘Global classroom”, the authors found that communication between international peers might be more constructive than when communication is limited to national peers.

In this issue, we present abstracts of recent dissertations from Majken Korsager, Risto Leinonen, Rúnar Sigþórsson, Svanborg R. Jónsdóttir and Peer Daugbjerg. Our national editors, Marianne Achiam in Denmark, Kalle Juuti in Finland and Allyson Macdonald in Iceland have helped the editors in finding Nordic dissertations, which previously have not been presented in NorDiNa. This is the reason why some of the dissertations presented in this issue were published initially more than a year ago.

The Nordic Research Symposium on Science Education (NFSUN) will be held in Helsinki 4th-6th of June 2014. Information about the symposium can be found on http://www.helsinki.fi/luma/nfsun2014/. On the afternoon Wednesday June 4th a special session focusing on NorDiNa is scheduled. Furthermore, a special issue of NorDiNa with contributions from the NFSUN is planned.

We hope you enjoy your reading!

Are Turmo & Carl-Johan Rundgren