FROM THE EDITORS

NorDiNa Editorial 2/2019

Welcome to the second issue of NorDiNa in 2019. This issue consists of seven research articles.

The article “Three preschool teachers’ teaching in technology - a developmental pedagogy analysis of the intended and the enacted object of learning” by Pernilla Sundqvist presents analysis of three activities from two different preschool units. The aim was to show how the actions of the preschool teachers affect children’s learning possibilities in each activity with regard to the technology in children’s surrounding world. The study shows that the preschool teachers are active in children’s learning, have a pedagogical plan where children’s perspectives are observed and regarded, and perform teaching where the technology in the surrounding world is treated and made visible. To what degree the intended object of learning is enacted varies, and possible causes for this are discussed.

In the article “A Delphi study of teachers views on engagement in the science classroom” by Cristian Abrahamsson, Claes Malmberg and Ann-Marie Pendrill the authors discuss what happens in a science classroom where students are engaged and how teachers observe and interpret student engagement. The findings are based on a three-stage Delphi survey distributed to 39 expert science teachers. The results show science education with a range of different perspectives and that most teachers do not perceive any direct connection between specific science topics and student engagement. The survey also shows that teachers to a high level interpret students’ emotional expressions and academic behaviour as engagement rather than their cognitive behaviour.

The article by Desire Alice Naigaga, Kjell Sverre Pettersen, Sigrun Henjum and Øystein Gutersrud is entitled “Assessing adolescent self-efficacy in ‘body and health’ - Exploring the psychometric properties of the SEBH scale”. The authors argue that the majority of the existing self-efficacy measures are rather ‘general’ and assess aggregated perceptions of students’ proficiencies within broad academic disciplines. Applying Rasch analysis, the present study explored the psychometric properties of the five-item ‘self-efficacy in body and health’ (SEBH) scale as administered to more than 1600 tenth-graders aged 15-16 years in Norway. Based on their sample, the SEBH scale stood out as well targeted and reliable with acceptable overall fit to the partial credit parameterization of the polytomous unidimensional Rasch model. Adapting this scale to different fields of education would contribute to development of more specific measures of perceived capability.
The article “Grading pupils’ knowledge – possibilities and limitations” by Frank Bach, Birgitta Frändberg, Mats Hagman, Eva West and Ann Zetterqvist deals with national tests in the natural sciences for grade 6 which were carried out 2013 - 2015. One of the study’s aim was to provide information about students’ scientific knowledge according to the “abilities”: communicating, exploring and explaining. Are these “abilities” possible and reasonable to distinguish from each other? Answers (60,000) were used for exploratory and confirmatory factor analyses and controlled for dimensionality in a Rasch model. The results show that the tests mainly capture one overall ability. It was not possible to separate the three “abilities” in a reliable way.

Malena Lidar, Susanne Engström, Eva Lundqvist and Jonas Almqvist’s article “Teaching traditions in Science Education in compulsory school and its relation to educational reform in Science Education in year 6” surveys different teaching traditions in Swedish science education. The purpose is to map and investigate patterns in teachers’ views of what constitutes “good” science education in the middle years of compulsory school in Sweden. A web-based questionnaire to teachers throughout Sweden was used. The results show that groups can be formed with teachers emphasizing different teaching objectives, including emphasis on: scientific facts and concepts, laboratory work, everyday knowledge, and political and moral questions, even though the groups had a lot of similarities. The teachers indicate that they changed their instruction to a considerable extent after the three parallel reforms carried out between 2011-13.

Martin Granbom’s article is entitled “Students’ Explanation: Wider Variety of Teaching Methods give Higher Results in Biology”. According to a previous study, results in one topic within an Upper Secondary School Biology course were increased due to student centered, formative working methods. The current study investigates student’s perspective on the reasons for the observed increase in performance through focus group discussions. According to the results, there was not a single factor explaining the increased result, but students felt more motivated during the topic, mainly due to the increased variation in working methods, ways to learn, and examination format.

In their article entitled “Education for sustainable development. - Experienced by science teachers in upper secondary school in Norway” Elina Maria Sundstrøm, Siw Turid Killengren, Stig Misund, and Hans-Georg Köller note that education for sustainable development (ESD) has been implemented in the Norwegian teaching curriculum since 2005. The goal of ESD was initially to give the students’ knowledge in order for them to live more sustainable lives. The authors conducted interviews and a questionnaire survey to investigate how science teachers in upper secondary school teach this subject, and what they consider as challenges. Results from this survey show that teachers mainly use traditional classroom teaching, and to a little extent educated the students the way intended when sustainable development was included in the curriculum. In addition, they feel that the subject is not prioritized from the school administration, and the interdisciplinary collaboration is insufficient. In 2020, a revised version of the Norwegian curriculum will be completed and the findings from this survey emphasize the importance of a stronger impact of ESD in the Norwegian school system.

We hope you enjoy your reading!

Are Turmo and Carl-Johan Rundgren
NorDiNa – Nordic Studies in Science Education

NorDiNa is a Nordic journal of science education publishing scientific articles in the field of science education; both research based and reflective perspectives. Articles on related topics such as technology and geography are also welcome. In addition to scientific articles we publish descriptions of curriculum development and ongoing projects and short abstracts of dissertations in the field. Contributions are in English as well as in Swedish, Danish and Norwegian. All articles have an English abstract regardless of the article’s language.

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