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2015-11-12

Programme Norsma 8, Kristianstad University, Sweden, November 19 – 20, 2015

Thursday November 19th

08.30 – 09.00 Registration

09.00 – 09.30 **Opening session, building 20, session hall 425**

09.30 – 10.30 **Plenary talk 1**

Revealing the mathematical potential of special needs students Marja van den Heuvel Panhuizen, University of Utrecht, The Netherlands

Good teaching starts with getting to know what students know. Although this applies for all students, it is particularly true for weak learners (here, one may think of students who are one to two years behind their peers). The problem with these weak learners is that they have low scores in standardized mathematics tests, which may automatically lead to conclusions about their inability to solve demanding mathematics problems and their failure in coming up with own solution methods. Unmasking such preconceived ideas is of vital importance for these students. Therefore, it is time to assess what special needs students can do, rather than what they cannot. Such an approach to assessing weak students may open new opportunities for their learning of mathematics. In this lecture I will discuss a number of small-scale studies that reflect this new approach to assessment. The results of these studies give evidence that special needs students have more possibilities to learn mathematics than we think they have. The crucial issue, however, is how we can reveal their mathematical potential.

10.30 – 11.00 Coffe break

11.00 – 12.30 **Paper session 1**

12.30 – 13.30 **Lunch**

13.30 – 14.30 **Plenary talk 2**

Technology-enhanced learning and dyscalculia - a short review and current trends Pekka Räsänen, University of Jyväskylä, Finland

We are at a start of a new era in education and learning. Screen technology is replacing paper-printed books. I will try to give an overview what we already know about computer-assisted interventions (CAI) on children with low achievement in mathematical skills. The presentation will cover the main technical steps and educational trends from the the first large scale studies of the IMSSS in 1960's to the latest studies that have already included assessments of brain activation patterns or used video tracking of whole body movement as a tool for human-computer interaction (HCI). In general, the increase in technologies and processing power of the computers has – thus far – not improved the effectiveness of educational interventions, but inside the details there are some pedagogically important messages to follow. Second, the main question in CAI is how to individualize the learning experience in an optimal way for each child. I will show results based on studies with different models of adapting the CAI (tutor-content-learner models) and some of our new results from Sweden how individualization for better learning should to be based on both on domain-general (cognitive) and domain-specific (mathematical skills) factors.

14.30 – 15.00 Coffee break

15.00 – 16.30 **Paper session 2**

19.00 – **Conference dinner Quality Hotel Grand**

Friday November 20th

08.30 – 09.30 **Plenary talk 3**

Numbers in context: Numerical ambiguity in function and meaning

Michèle Mazzocco, University of Minnesota, Minneapolis, USA

Number skills and knowledge are important foundations for early mathematics learning, and they are presumed to be mastered by late primary school. But in children with mathematics difficulties, whole number concepts may be weak, even in late elementary school. Our recent work focuses on how we may better differentiate young children's awareness and attention to number in visual and linguistic contexts. The findings have implications for assessing early number concepts in primary school years and for developing early number activities designed to promote number awareness.

09.30 – 10.00 Coffee break

10.00 – 11.30 **Paper session 3**

11.30 – 12.30 **Lunch**

12.30 – 14.00 **Plenary talk 4**

What cognitive factors influence the development of mathematical difficulties? Ulf Träff, University of Linköping, Sweden

The presentation will address the following three issues regarding mathematical difficulties in children:

1. Different terms or constructs related to low performance in mathematics (mathematical difficulties, mathematical learning disability/disorder, dyscalculia).
2. Cognitive factors that support children's learning of basic arithmetic.
3. Different hypotheses regarding mathematical difficulties, and mathematical learning disability/developmental dyscalculia in children.

14.00 – 14.30 **Closing session**, coffee is served.