UNDERSTANDING AND SELF-CONFIDENCE IN MATHEMATICS

Hannula, Markku S.; Maijala, Hanna; Pehkonen, Erkki; Soro, Riitta
University of Turku (Finland), Department of Teacher Education

In this poster we will present the preliminary results of different studies of project 'Understanding and self-confidence in mathematics' together. The project is directed by professor Pehkonen and funded by the Academy of Finland. It includes a survey for grades 5 and 7 (N=3067), and a longitudinal qualitative study of 40 students. The survey was measuring the level of self-confidence and understanding of number concept and it was administrated during the fall term 2001. Students selected to qualitative part of the study were interviewed in groups and observed in classroom situations. The three confidence measures (success expectation, solution confidence and self-confidence) correlated with each other but were not identical. They correlated also with task performance (Hannula 2002b; Maijala 2002; Hannula & al. 2002b). The 5th graders seem to have higher self-confidence in mathematics than 7th graders do. Additionally, boys in both grades had higher self-confidence than girls. The gender difference favoring boys was clear in understanding mathematics (Hannula, 2002a; b; Hannula & al. 2002a; b; Maijala, 2002). Our results show that infinity and fraction are difficult mathematical ideas for students of this age. Most of the students don't have a proper view of infinity, but are on the level of finite processes and less than 10 % had any understanding of the density of rational numbers (Hannula & al. 2002a). Furthermore, students have big difficulties in perceiving a fraction as a number on a number line (Hannula 2002a).

References

Hannula, M.S. 2002a. Fraction on a number line. In E. Pehkonen (ed.) *Proceedings of the workshop on Mathematical Understanding at Turku in June 2002*. University of Turku, Department of Teacher Education, Pre-Print nr. 2, 2002, 40-47

Hannula, M.S. 2002b. Understanding of Number Concept and Self-Efficacy Beliefs in Mathematics. In P. Di Martino (ed.) MAVI European Workshop MAVI XI, *Research on Mathematical Beliefs, Proceedings of the MAVI-XI European Workshop*, April 4-8, 2002, University of Pisa, Italy 45-52

Hannula, M.S., Maijala, H., Pehkonen, E. & Soro, R. 2002a. Taking a step to infinity: Student's Confidence with Infinity Tasks in School Mathematics. In S. Lehti & K. Merenluoto (eds) *Third European Symposium on Conceptual Change - A Process Approach to Conceptual Change*, 195-200.

Hannula, M.S.; Maijala, H.; Pehkonen, E.; Soro, R. 2002b. Three measures for confidence in mathematics. Abstract in. A.D. Cockburn & E. Nardi (eds). *Proceedings of the 26th Conference of the International Group for the Psychology of Mathematics Education*. Vol 1, 343

Maijala, H. 2002. On pupil's mathematical understanding and self-confidence in the 5th grade. *Proceedings of the Workshop on Mathematical Understanding* at Turku in June 2002 (ed. E. Pehkonen), 48-54.