Postprint

This is the accepted version of a paper presented at CERME 8.

Citation for the original published paper:


N.B. When citing this work, cite the original published paper.

Permanent link to this version:
http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-42555
Teacher observation has shown that some pupils achieve very high on the Kangaroo Competition test (KC) but very low on the Swedish National test in Mathematics (SNM). This study will investigate the number of pupils who have high achievement scores on the KC (top 10%) but low achievement scores on the SNM (bottom 50%). Individual results on the SNM given in grade 6 (age 12) will be compared to results on the KC given in grade 7; concerning approximately 700 individuals. Results will give an example of the quantity of mathematically able pupils who underachieve in School Mathematics in Sweden. Data interpretation will connect this study to international research concerning mathematical abilities and mathematical achievement among mathematically able pupils.

BACKGROUND

Research stresses that early identification of giftedness, stimulation and support are important to prevent underachievement (Seeley, 2004). Sweden therefore has to support and stimulate those pupils who are mathematically able in early ages to prevent underachievement. TIMMS show less high achieving students in Sweden (Skolverket, 2009).

The Swedish curricula claim that teaching in mathematics should give pupils opportunity to develop mathematical abilities mentioned in the curricula (Skolverket, 2011). The purpose of the SNM is to measure abilities according to the Swedish curricula connected to different topics in mathematics; it aims to give the teachers support in equal and fair assessment and grading (Skolverket, 2012).

Mathematical abilities discussed in international research can often be connected to Krutetskii (Krutetskii, 1976). Krutetskiis definition can be used to analyse the problems in the KC (Pettersson, 2011). The purpose with the Kangaroo Competition test is to awake curiosity and inclination to learn mathematics (Nationellt centrum för matematikutbildning, 2013).

However, are those two ways of measuring mathematical abilities compatible? What if a pupil achieves high on the KC but low on the SNM, that pupil may attain low grades in mathematics and may not continue to study advanced mathematics.

So far in Sweden no research has investigated additional methods to find mathematically able pupils. Therefore this study will investigate if mathematically able pupils who underachieve in the Swedish school system can
be made visible through the KC. These pupils could with accurate support and stimulation continue to study mathematics, technology or science at university advanced level; people who are needed for society in the future.

**AIM AND METHOD**

The aim of the study is to investigate the number of pupils who are high achievers on one mathematical test, in this case KC, but are not high achievers on the SNM. The SNM has a large impact on pupils’ grades in mathematics, which in turn will guide pupils in their future choice of education. Thus there is a risk that the Swedish school system loses mathematically able pupils who with accurate support and stimulation could have had a successful education within mathematics, technology or science. The results will imply a discussion about differences in achievement in the two tests. The discussion will be framed by the how mathematical abilities are defined and measured in different contexts (the Swedish curricula vs. Krutetskii).

Individual results of the SNM given in grade 6 (age 12) will be compared to results of KC given in grade 7. The study covers a whole municipality (approximately 700 individuals). Pupils’ results will be compared relatively to each other, which will give ranked data. Data will be analysed with non-parametric tests using SPSS. Data interpretation will connect this study to international research concerning mathematical abilities and mathematical achievement for mathematically able pupils.

**REFERENCES**


