

GIFTED IN MATHEMATICS AND YET UNDERACHIEVING: ONCE A HIGH ACHIEVER – ALWAYS A HIGH ACHIEVER?

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In the poster a design for a study in a PhD project will be presented, focusing on underachievement among those gifted in mathematics. The research is a quantitative explorative study and will cover a whole municipality; the results of approximately 750 selected students will be explored at an individual level. The study will show movements in the achievement scale for high-achieving students identified in grade 3, until the students are in grade 8, and explore if some of the high-achievers become underachievers. The poster will briefly present the model of mathematical giftedness used and some preliminary results.

KEYWORDS

Gifted in mathematics, High Achiever, Underachievement

THEORETICAL BACKGROUND

The gifted are not a homogenous group they come in various shapes, forms and size, some are gifted in a single area, and some are gifted in almost everything (Sternberg, 2004). A high achiever in school is someone who succeeds well on tests and other assessed performances. All conceptions agree that exceptional achievements can be explained by giftedness (Heller, Monks, Sternberg, & Subotnik, 2000). New theories about giftedness include some kind of multi dimension models for high ability (Heller, Monks, Sternberg, & Subotnik, 2000).

Most researchers agree that underachievement is a discrepancy between expected achievement and the actual achievement made by the students (Colangelo & Davis, 2003). Research stresses that early identification of giftedness, stimulation and support are important to prevent underachievement (Seeley, 2004).

The definition of mathematical giftedness used in the study leans on a model of mathematical giftedness that combines: natural abilities, mathematical abilities, and mathematical creativity (Pitta-Pantazi, Christou, Kontoyianni, & Kattou, 2011). In this model mathematical giftedness and mathematical talent are viewed as synonyms, and the mathematical abilities are analysed into five distinct abilities (a) qualitative-analytic, (b) the quantitative-relational, (c) the causal-experimental, (d) the spatial-imaginal, and (e) the verbal-propositional (Demetriou, Christou, Spanoudis, & Platsidou, 2002).

METHOD

The students in the study will be identified as gifted in mathematics by high achievement at early ages, namely the 5% highest achievers in the Swedish national test in mathematics in grade 3. The study will explore what happened with this group

of students when they have reached grade 6. The achievement will be measured by the results of the Swedish national test in mathematics, which they performed 2009 (grade 3) and 2012 (grade 6). To follow the achievement in lower secondary school all grade 7 students will take the test “Kangaroo of mathematics” in spring 2013. The Kangaroo test is chosen because it is an international mathematical test and Sweden lacks a national test in grade 7. The test can also be connected to the model of mathematical giftedness used in the study. Further the students’ mathematical grades will be collected in autumn 2012, spring 2013 and autumn 2013. All test results and mathematical grades will be connected to individuals in a coded material. The national and the Kangaroo test results will be analysed using non-parametric statistical methods aiming to show movements in the achievement scale. If a top 5% student from grade 3 is among the lowest 50% achievers in grade 6 he or she is defined as an underachiever.

RESEARCH QUESTION

- How have the achievement developed relative to the peers for a student who were a high-achiever in grade 3 when the student is in grade 6?
- How does the achievement develop relative to the peers for a student who were a high-achiever in grade 3 during the student’s first half of lower secondary school (grade 7 to 8)?

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