

Summary in English

Title:

”On track of self-efficacy and self-regulating learning as foundations for learning”

The aim of this research project is to increase the knowledge and understandings of the connections between the students self-efficacy and self-regulating learning (SRL) in the case of students striving to solve problems in mathematics. Interpretation and analysis of this intra-psychological knowledge and understanding can uncover and shed light on specific qualities in the teaching that enhance the students problem solving. One hypothesis is that students striving with problem-solving develop (new) meta-cognitive patterns through feedback, feed-up and feedforward-messages from the teacher and from their peers. These meta-cognitive patterns empower and boost positive self-efficacy and provide the students cognitive competencies to select and use strategies adequate to the challenging tasks they face in mathematics. Arnesen, Meek-Hansen, Ottem & Frost (2013) have registered a number of students with a worrying attitude towards scholastic behaviour or behavioural difficulties, but who are not receiving special education. The exact number of these students is unknown. They are seen as a latent group of risks in the future, because their difficulties solving problems in mathematics can be enhanced if they do not receive early attention from the teacher/ school. Difficulties with problem solving in mathematics can be hidden consciously and unconsciously from both the teacher and the students him/herself. Procrastination and avoidance strategies could be an (inadequate) strategy that is adopted so as not be revealed as a poor student.

According to Bandura (1994), *‘perceived self-efficacy is defined as people’s beliefs in their capabilities to produce designated levels of performance that exercise influence over events that affect their lives’* (Bandura 1994).

Pintrich (2002) states that self-regulated learning is an active and constructive process involving several components. These components are: cognition-metacognition (MC), motivation-emotions (ME), and behaviour. According to Pintrich (2002), self-regulated learning allows learners to determine their own learning goals, and to try to monitor, regulate,

and control them. Simultaneously the learner are guided and constrained by the goals and contextual features of the learning environment (Pintrich, 2002).

Although the theme and main concepts in this research-project involve principles from social cognitive learning theory, the project aim to investigate how students encounter the teaching and problem-solving in mathematics when facing difficulties in the subject – both consciously and unconsciously. The research design and the empirical study are planned to be conducted through a phenomenological study involving individual interviews with teachers and students (Brinkmann & Tanggaard 2010). To develop and validate the interview-guide for the individual interview a special designed board-game has been devised. This phase would also be the crucial phase of interpellating students that finds themselves among those facing difficulties in solving problems in mathematics.

During the school year 2017/2018 the randomized study will be conducted involving approximately 50 (with a maximum of 80) 10th grade students at Norwegian elementary school and 5-6 teachers in mathematics and/ or 5-6 teachers connected to classes with students participating in the study (with a maximum of 20).

References:

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