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Analysis of the influence of mindsets on a strongly framed and classified subject using social learning theory

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ABSTRACT

Mindsets are crucial in mathematics education and are linked to several processes and factors that are essential to learners in the learning process. However, mindsets are often overlooked in studies on mathematics learning and research with specific focus on mindsets in mathematics education is scarce. This study therefore explores and describes how mindsets may be linked to the learning of a strongly framed and strongly classified subjects (SFSCS), like mathematics, using social learning theory. Dweck's mindsets theories and Illeris's social learning theory were used as theoretical perspectives to understand learners' mindsets and their relations with mathematical learning. A qualitative research method was used with a purposive sample of one High School in Gauteng Province, South Africa. Ten learners, three mathematics teachers and the learners' parents participated in this study. Data sources involved interviews of learners and teachers and a completed questionnaire by the learners' parents. A discursive approach is used to analyse learners' views of their own experiences, in their own words, as well as the mathematics teachers' and parents' perceptions regarding the learners' experiences in the learning of mathematics. Findings of the study revealed that the high achieving learners are balanced and none of them see the cognitive dimension in fixed ways and the low achieving learners lack cognitive and emotional dimensions. More so, the teachers seem to show that the learners are cognitively able, but not always emotionally positive and social support is seen as vital in the learning of subjects like mathematics. The parents show that their children can achieve cognitively and emotionally in the learning process, with support. Notably, the three dimensions (cognitive, emotional and social) are central, as they connect each other, however, the learners' views, as well as the teachers' and ten parents' perceptions incline that the social dimension is crucial in the support of effective mathematics learning and, in turn, increases learners' achievement in mathematics. Mindsets are socially constructed and have an impact on the learning of subjects like mathematics. The findings suggest the need for interventions to support low achieving learners shifting from fixed to growth mindsets, in the cognitive and emotional dimensions of learning.

Keywords: Learning, SFSCS, mathematics, cognitive dimension, emotional dimension, social dimension, mindsets, growth mindset, fixed mindset, race, gender, beliefs, attitudes.