

Motivating Students Who Struggle with Math Achievement

Abstract

Student achievement in math is often a reflection on their self-concept of the subject. Middle school students in particular seem to have an overwhelming dislike and struggle in this area. The purpose of this study is to see how motivation can improve mathematical achievement.

Statement of Problem

Although math is present in real-world and academic situations, it may be a source of dread and avoidance by students who struggle with fluency and computational skills (Ahmed, Minnaert, Kuyper, & van der Werf, 2012). Math is all about order and our world runs on order. Math is critical in problem solving which is a life skill. Students lack motivation, interest, and desire to succeed in math even though it is an essential life skill. Students often do not feel a connection to math and thus do not apply much effort. The basic foundations of math are addition, subtraction, multiplication, and division. When students do not master these skills early on, it really makes it difficult when the numbers get larger and more complex. Not only are teachers dealing with students' lack of motivation in their class, they now have to try to go back and reteach the basics before applying it to grade level curriculum and then trying to cover all grade level standards by the end of school. Students with difficulties in math fluency of basic foundational skills at the secondary level tend to not be motivated to work. Students who are not motivated, do not perform well.

Purpose and Research Question

The purpose of this study is to examine the effect of motivational strategies on mathematics skills of secondary students who have difficulties with math fluency. The research

question being investigated is: If motivation can be increased, will skills then be increased leading to an overall improvement in math performance?

Literature Review

Math has long been an academic subject in school that students either love or hate without much of a middle ground area. Usher (2009) found parents, teachers, and peers played into participants' self-efficacy. Ahmed et al. (2012) found low self-concept led to higher math anxiety more than the reverse. Another study demonstrated the importance of a connection to real life problem solving (Bottge, Rueda, Grant, Stephens, & Laroque, 2010). Since accuracy is important in practical applications, teachers must find a balance among direct instruction and constructivist methods.

A study showed implicit questions were positive for students with similar culture and language however, a broader range of students were able to participate with explicit questions (Parks, 2010). An ideal size school could not be identified as best for student achievement (Wyse, Keesler, & Schneider, 2008). Researchers investigated double-dose math finding higher test scores were achieved, however, passing rates decreased for above-norm students and slightly increased in below-norm students (Nomi & Allensworth, 2013).

Motivation has been the focus of several research studies on academic achievement. These studies suggest that teachers' attitudes can impact students' self-efficacy or belief in their academic abilities through a positive, encouraging, and supportive attitude of the teacher (Usher, 2009). An increase in self-efficacy and self-concept may aid in reducing math anxiety (Ahmed et al., 2011). Teachers can use the four different principles of motivation: competence, belongingness, autonomy, and meaningful learning (Turner et al., 2011). The rise in motivation

may foster a positive classroom culture, support improved self-efficacy, and reduce math anxiety for students with and without learning disabilities (Woodward & Brown, 2006).

Research Methodology

The action research will take place in a small private school in Palm Beach County. Approval was granted by the headmaster to conduct the research. The students that will be the focus of the research will be 6th grade students in the lower level math class. There are eight students in the class, two girls and six boys. One girl is an English Language Learner (ELL) and Specific Learning Disabled (SLD). The other girl has no known learning disabilities. There is one boy who is diagnosed with Attention Deficit Disorder (ADD). One boy is SLD with dyslexia. Another boy is ELL and Language Impaired (LI). The researcher has no knowledge of any learning disabilities in the remaining three boys. Two of the boys participate in a supplemental math class twice a week as well. Five of the students regularly seek additional math support during either lunch, after school, or both.

Data will be collected on student performance as well as opinions about math and their abilities.

Results

Research findings will be available in time for the conference and will be presented.

Implications

Math teachers, especially in middle school, have much to compete with. Students' attention is divided in many ways, and math is not one of them. Students at this age are more concerned with social situations. Math teachers have to compete with sports coaches and fine arts teachers for student interest. Homework is less desirable than projects and hands on activities from other classes. Increasing student motivation in math may lead to improvement in

academic performance. If motivation can be increased, skills will increase, and overall math performance will improve. This may lead to increased self-confidence which leads to improved behavior.

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