

Title of Study: *Maximizing the Benefits of Grouping by Ability in Math*

Dates of Study: 2017-2018

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Purpose of the Action Research: *The purpose of my action research study is to provide a possible solution to the problem of students' growth in mathematics at my school, in the most inclusive environment with maximizing every students' learning regardless of their mathematical ability. My intention is to create and implement a modified version of grouping by ability at our school that takes advantage of the benefits of grouping by ability and avoids the pitfalls of this practice.*

Research Question/Hypothesis: *The question for my action research study is: How does a modified version of grouping by ability in a high school math class positively impacts students' achievement and class dynamics?*

The Existing Need: *Today, the debate over tracking or de-tracking America's public schools continues and the topic will remain as a complex, multidimensional issue for years to come. But one thing is certain that further research is essential for educators and policy makers to make inform decisions about benefits and disadvantages of grouping by ability.*

Research Connection: *As the debate goes on, the opponents of grouping by ability focus more of their research predominantly on considerations of equity, self-concept, and class dynamics. Meanwhile the supporters of grouping by ability focus on homogeneous classrooms that are custom-made to every groups' specific needs that translates into higher tests scores and more positive student achievements. Acknowledging that there are circumstances that require students to be grouped by ability, and other circumstances where it is more appropriate and beneficial for students to work in mixed groupings, helping students to learn from each other. This process requires consideration of every student and their needs across all aspects of the mathematics curriculum, by ensuring that assessment of students' ability informs teaching, the way students are grouped, and holding high expectations for all students.*

Participants: *Currently, there are 116 students in ninth grade, one 102 students in 10th grade, 91 students in 11th grade, and 90 students in 12th grade. There are 33 freshmen, 30 sophomores, 27 juniors, and 23 seniors in the accelerated groups and the rest of the students are in the second mixed ability groups. The math department at my school consists of two female and one male math teachers. All students and math teachers at my school are participants in this action research.*

Sex: *There is approximately a 60 to 40 ratio between male to female students at the school.*

Ethnicity: *Approximately 18% percent of the students in 12th grade, 14%percent in 11th grade, 16% percent in 10th grade, and 19% percent in ninth grade are students with special needs.*

Intervention: For the purpose of intervention in this action research, high school students from all grade levels at our school will be divided instead into two groups and only for the subject of mathematics. This is a yearlong intervention which starts at the beginning of the school year after students are grouped based on their performance on their diagnostic test which is also used as the base line for the purpose of this action research.

Results: The results of my data analysis answered my research question. The intervention clearly had a positive impact on students' achievement and class dynamics. Our intervention resulted in a 3% increase in the top two categories compared to pre-intervention data. It is also important to note that the intervention resulted in a 3% decrease in students who did not meet the standards and they scored in the red column pre-intervention. My post-intervention data showed a significant shift to the right side of the graph. The intervention resulted in 8% increase in our blue bar which represents a majority of our honors track. Additionally, the data indicated that there was a significant decrease of 11% among students who were receiving a C or B after intervention. Seven percent of students in the middle moved down to below standard which indicated that the intervention was not successful for them. The results of my interviews answered my research question, especially the impact of my intervention on the class dynamics. All interviewees agreed that the intervention had a positive impact on class dynamics. Students were more active and lessons were more engaging for students in the non-honors classes. All teachers agreed that the intervention allowed for more positive interactions between students with special needs, teachers, and the paraprofessionals. They also noticed that honors students benefited from the intervention in a positive manner by receiving lessons that were more engaging and challenging which allowed them to extend their knowledge of the content at a faster pace

Conclusions: Students should be assigned to mixed ability classes (non-honors) to benefit from the positive class dynamics that allows them to benefit from their peers' knowledge and skills. In addition, assigning students to honors classes should have clear educational benefits with social and emotional supports to justify this separation. The result of this intervention plan will be shared with the principal and the math department at my school to decide if it is feasible for the school to continue next year with this modified version of grouping by ability or not.

Recommendations: The result of this data point indicated room for detailed investigation to identify the source of this conflicting result. In order to assure that this intervention is ready to be considered for adoption or scaling up by other educators, there needs to be clarity about the concerns raised by teachers regarding students' self-confidence and self-concept in the honors group and an investigation into the 7% of the student population who were affected negatively by this intervention. In addition, before implementing this intervention, a closer look at the data is required to identify the cause for each individual student who received a D or F after intervention. This negative impact could be the result of instructional methods.