

5-9-2012

Student Motivation in the High School Mathematics Classroom

Kristen Bettice
Valparaiso University

Follow this and additional works at: <http://scholar.valpo.edu/sarp>



Part of the [Education Commons](#)

Recommended Citation

Bettice, Kristen, "Student Motivation in the High School Mathematics Classroom" (2012). *Education Senior Action Research Projects*. Paper 2.
<http://scholar.valpo.edu/sarp/2>

This Research Project is brought to you for free and open access by the Department of Education at ValpoScholar. It has been accepted for inclusion in Education Senior Action Research Projects by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at scholar@valpo.edu.

Motivating Students in the High School Mathematics Classroom

How can we motivate students in the mathematics classroom room in order to create a more effective learning environment?

Kristen Bettice

Abstract

This research study was conducted to better understand how to motivate students in the high school mathematics classroom and to encourage student involvement in the subject area. This study was chosen because through observation and conversations with students and other mathematics teachers, I have found that mathematics is not always a strength or interest for students. As such, they have no motivation to do the work required to succeed in mathematics. Therefore, their grades are dropping along with their involvement levels. Students filled out a questionnaire in order to learn what students want from a mathematics course in order to make it more interesting and worthwhile for them. From this research, I have learned that students are motivated by a combination of things: their understanding of the material, the teacher's attitude, and an appropriate amount of homework that supplements learning. The hope for this study is that it will help inform myself and other mathematics teachers about student motivation and how to best create lessons to create a positive learning environment for students in mathematics.

Methods

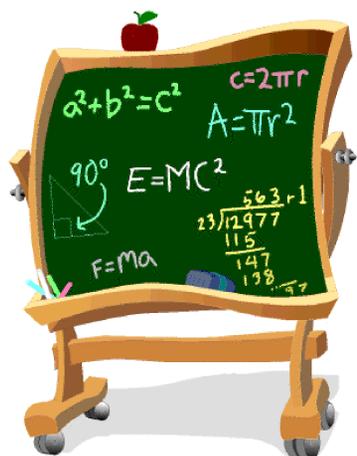
For this research, students filled out a questionnaire which took students an average of twenty minutes to complete. A portion of the questions were one-word answers or about how long students spent on a certain activity in hours. The rest of the questions were open-ended questions where students could express their opinion about improving the mathematics classroom and what motivated them to work harder in class. Some variables involved in this include the variation in the responses from students, the age of the student and their previous experiences in the mathematics classroom. Students volunteered to fill out the questionnaire. They were able to take a sheet at their leisure at the end of class and bring it back to me by the end of the day or the next class period. Once the sheets were filled out, they were collected and the data was quantified based on responses. Using tables, responses were tallied to pinpoint the most common answers from students to interpret the information.

Participants: 25 students: 15 male, 10 female aged 15-18

Questionnaire: 15 short answer response questions

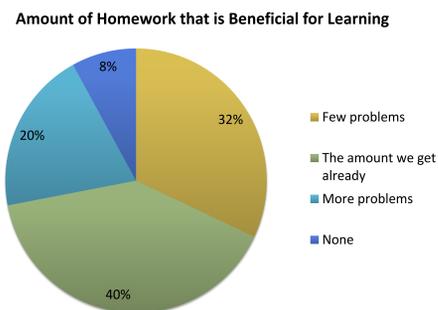
Example Questions: *How much time (in hours) do you spend on homework outside of school?*

What is the best way that you learn mathematics? Explain your answer.
 Example: *I like seeing examples because... or I learn best with real world application because...*



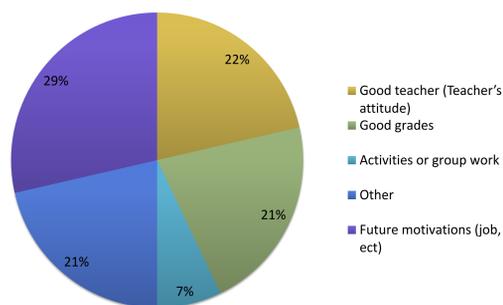
Data

Responses were tallied from the questionnaires of all 25 students who participated. The percentage breakdown of the responses are as follows:



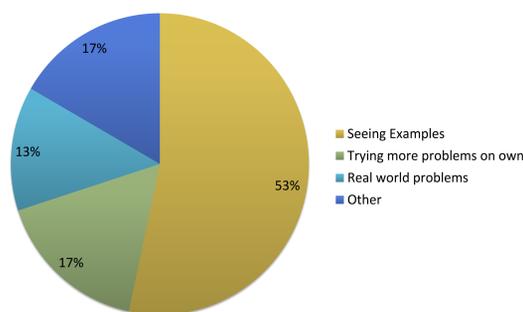
Graph 1. Above, the graph shows the responses for the question *How much homework is beneficial to your learning?* in order to learn how homework motivates students.

Best Motivation in the Classroom



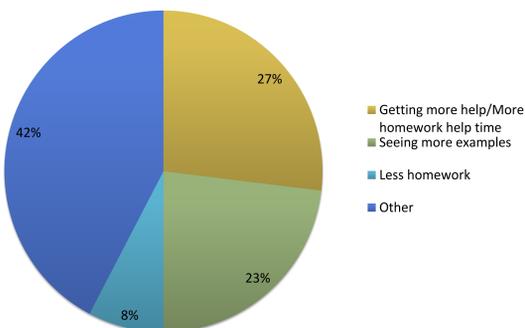
Graph 2. The graph above represents the responses to the question *In your opinion, what is the best motivation in the mathematics classroom?* The other suggestions included: nothing and understanding the information such as "when I know the material and can do it, then I want to learn more. If I am bored I don't want to learn."

What is the best learning strategy in the classroom?



Graph 3 Above, the graph shows responses to the question *What is the best way that you learn mathematics? Explain your answer.* Example: *I like seeing examples because... or I learn best with real world application because...* The other category included: doing group work, asking questions and staying after school for one-on-one help

What could be done to improve your leaning in the classroom?



Graph 4 The above graph represents the responses to the question *In your opinion, what could be done in order to improve your learning in the mathematics classroom?* The other category included: Less talkative classmates, group work and doing more activities with ways to remember the information.

Results

- The graphs to the left show student responses to a selection of questions that best show student motivations and how the classroom can be improved to help motivate them and create a stronger learning environment.

- The first few questions, such as how long do you spend on extracurricular activities and what is your favorite class, gave a good view of who the students are and where their interest lie.

- Students stated that a few problems for homework are most beneficial. They also included that they would like these problems to be very similar to the problems shown in class in order to better understand them when they try on their own.

- The best motivation in the classroom for these students was their future ambitions such as getting into the college they want or finding a good job. This shows that the students are internally motivated as well as motivated externally by things such as grades or the teachers attitude.

- Seeing examples was the learning strategy that the students preferred. In their responses, students expressed their desire to see problems exactly like the ones that will be on homework. This was the most overwhelming consensus of all of the questions on the questionnaire.

- Finally, students were asked how the class could be improved. Students stated that getting more one-on-one help with the teacher would be helpful. They also asked for more homework time at the end of class in order to ask the teacher more questions before trying work on their own.

Conclusion

- In general, students are motivated by their own internal goals and positive outside influences. Students responded to positive attitudes and willingness to help. Knowing what the students preferred from the teacher made planning lessons easier and more effective for their learning needs. Being able to incorporate their ideas into the lessons helped me learn as a pre-service teacher how to create a learning environment for my students.

- Many factors influenced this study. The participants are very limited in demographic and a small sample size. Including more students or doing this questionnaire over an entire school population would make these results more accurate. Also, these results may not apply to all groups of students. Since this sample of student has such a specific demographic, their suggestions may not work for another group of students with different internal motivations. Knowing the students is one of the most important components of this study. The most important lesson this research taught me was that I need to know what motivates my students, whoever they may be, in order to better create a learning environment that meets their learning needs.

Contact Information

Kristen Bettice
 Senior, Mathematics and Secondary Education
 Valparaiso University
 Email: Kristen.Bettice@valpo.edu

Sources

Bong, M. (2008). Effects of Parent-Child Relationships and Classroom Goal Structures on Motivation, Help-Seeking Avoidance, and Cheating. *Journal of Experimental Education*, 76(2), 191-217.
 Cho, S., & Liu, C. (2011). Influence of Family Processes, Motivation, and Beliefs about Intelligence on Creative Problem Solving of Scientifically Talented Individuals. *Research Review*, 33(7), 65-58.
 Engle, P., De Corte, E., & Verschaffel, L. (2006). Accepting Emotional Complexity: A Socio-Constructivist Perspective on the Role of Emotions in the Mathematics Classroom. *Educational Studies in Mathematics*, 43(2), 193-207.
 Luzzo, A., Dempster, N., & Neumann, R. (2011). Pathways to formal and informal student leadership: The influence of peer and teacher-student relationships and level of school identification on students' motivations. *International Journal of Leadership in Education*, 14(1), 85-102. doi:10.1080/1360124.2010.482674
 O'Neil, H. F., Abell, J., Miyoshi, J., & Mastenberge, A. (2005). Monetary Incentives for Low-Stakes Tests. *Educational Assessment*, 10(3), 185-208.
 Simpkins, S. D., Davis-Koon, P. E., & Eccles, J. S. (2009). Math and Science Motivation: A Longitudinal Examination of the Links between Choices and Beliefs. *Developmental Psychology*, 42(7), 70-83.
 Trautwein, U., Lüdtke, O., Marsh, H. W., Köller, O., & Baumert, J. (2006). Tracking, Grading, and Student Motivation: Using Group Composition and Status to Predict Self-Concept and Interest in Ninth-Grade Mathematics. *Journal of Educational Psychology*, 98(4), 788-806.
 Waters, C. A. (2009). Advancing Achievement Goal Theory: Using Goal Structures and Goal Orientations to Predict Students' Motivation, Cognition, and Achievement. *Journal of Educational Psychology*, 94(2), 236-250.
 I have neither given nor received nor have I tolerated others use of unauthorized aid- Kristen Bettice