



# Connecting Standards to Meaning

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## Abstract

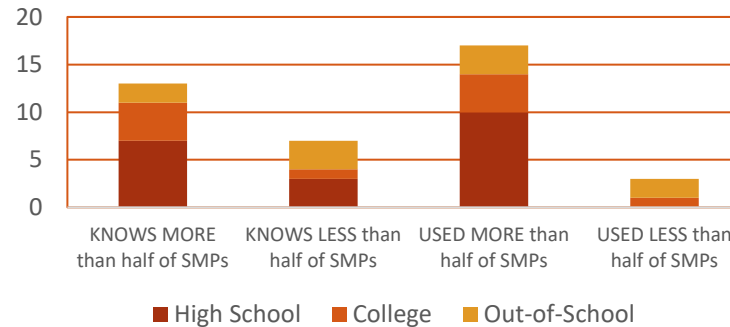
The goal of this study was to find ways to make teaching math a more meaningful process for students while also making sure that they are meeting the appropriate standards. The information used throughout this poster will include the importance of the standards and how they are used differently to make more meaningful connections to students. Many consider how the Common Core State Standards for Mathematics (CCSSM) and Standards for Mathematical Practices (SMP) are a part of a larger political context and without equity can result in a failure of mathematics learning in students (Bartell 2017). Thus, teachers should not only teach to get students to achieve the standards but with equity in hopes of creating a more meaningful learning experience.

## Introduction & Research Question

Students may not find math classes fun to be in due to the restrictions of what they are required to learn. In other words, for students the meaning behind doing math is all about meeting the expectations given by a standard (Bleiler 2015). Teachers often refer to their given curriculum in order to create lessons that students will complete. In mathematics, that curriculum often times comes from a textbook structured by the Common Core Standards. But what can teachers do other than give out worksheets and problems from these textbooks in order to meet the criteria for the expectations given by the CCSSM while also giving meaning to the topics being taught?

If teachers implement the use of the SMPs to achieve the learning intentions set forth by the CCSSM then students learning math will gain a greater understanding of content because the lessons will focus less on the goals and more about the connection students make to the topics.

## Learners' Knowledge of the SMPs



Teacher	Go-To SMP	Impact on Students
Elem. #1	#7: Look for & make use of structure	Helps them learn the importance of patterns everywhere
Elem. #2	#6: Attend to precision	Getting students to be precise now will help them in the future
HS #1	#3: Construct viable arguments & critique others	Builds mathematics vocabulary & observes others' perspectives
HS #2	#7: Look for and make use of structure	Students find different ways to represent data and information
Pre-service #1	#4: Modeling with math	Modeling based on learning style = easier grasp of concepts
Pre-service #2	#4: Modeling with math	More willing to do or try with an example

## Research Design & Data Collection

This research project focused on two perspectives, teachers and learners. A 5-question survey was used to collect data on the knowledge and implementation of the SMPs from the perspective of learners ranging from high school to college and those out-of-school learners to get an understanding of those currently learning and the impact of those who had learned mathematics. About 2 elementary, 2 high school and 2 pre-service teachers were interviewed to gain perspective on what SMPs they usually implement into lessons and the impact its use has on students. Other information was collected through research journals focusing on the importance of the SMPs.

## Discussion and Results

Based on the survey results and interviews, when teachers use the SMPs with specific intentions in mind, the impact is a more meaningful learning experience on the students' end.

- Most teachers believe the use of multiple in their lessons has more effect on student learning, which debunks the myth that "students can engage in only one mathematical practice as they work on a task" (Mateas 2016).
- Most learners liked when their teacher modeled the math first. Some also liked when they used skills from SMP #7 and #3 to help understand the curriculum.

## Conclusions

- The students may have known and used the skills of many SMPs but this does not necessarily mean that they met the standards. This study could be changed to also find such results.
- Teachers do not need to use all of the SMPs to create meaningful lessons, even if they use just one in a lesson, students can be impacted in a positive mathematical experience.



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## References

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