

More Than the “M”- Integrating STEM Pedagogy into the Mathematics Classroom

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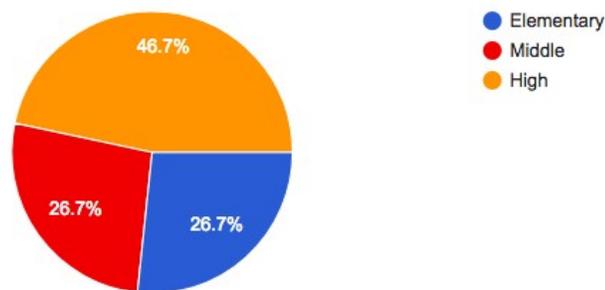
Endeavor STEM Teaching Certificate Program

More Than the “M”- Integrating STEM Pedagogy into the Mathematics Classroom

For my practicum presentation, I led a session titled “More Than the ‘M’- Integrating STEM Pedagogy into the Mathematics Classroom.” I selected this topic because I have learned so much about integrating the engineering design cycle and other STEM ideas into my mathematics classroom from my time in the Endeavor Program and my district is generally very behind in integrating any student-centered instructional strategies. I was granted a 1 hour breakout session during the Saratoga Springs City School District’s superintendent’s conference day. There were 15 teachers there, ranging from 2nd grade to AP Calculus.

Grade Level

15 responses



My goal was to help teachers of all level engage in an STEM activity and see how it can teach both content standards and the Standards for Mathematical Practice- an often-neglected part of our practice. Many of my colleagues shy away from reaching out for new instructional strategies because they feel they are losing time when they could be teaching content. It was important to me that teachers understand that integrating STEM practices is not something “extra” that goes above and beyond their standards, but rather a practical way to teach your own standards while integrating the 21st century skills students will need after your class.

Because the teachers ranged over a variety of grade levels, there were a variety of content standards addressed. The session was based around the NASA “Stomp Rockets” Classroom Activity, which addresses Next Generation Science Standards ([3-5-ETS1-2](#), [3-5-ETS1-3](#), [MS-ETS1-2](#), [MS-ETS1-3](#), [MS-ETS1-4](#), [5-PS2-1](#)) and Common Core State Standards for Mathematics ([7.G.A.1](#), [HSG.CO.D.12](#), [7.G.A.2](#), [4.MD.C.6](#), [6.SP.B.5.C](#)) specifically. Teachers were introduced to the design cycle and given time to build and test their rockets, using a modified launched from [a stomp rocket kit](#) I purchased online. In order to more intensely address math standards, we also took video and completed [video analysis using LoggerPro software](#). We then discussed applications of this technology and the design cycle beyond rockets, with teachers generating ideas for their own course. Teachers were then given time to complete a feedback survey.

In general, teachers responded positively to this professional development. The average rating of the quality of the workshop was 4.7 out of 5. Teachers appreciated being given the opportunity to walk through the activity as a student and realize how powerful an experience it can be. Many also commented on the resources shared from NASA and how helpful they anticipate them being in the future. Some of their favorite aspects are listed below:

I like the demonstration, the demos were hard for me.

Walking through this as if I were a student

materials to use in class

Enthusiastic entertaining leader with hands on help

We used a new program that has actual connections to Algebra. I feel like I could actually use it in my classroom.

The use of technology with the math. It was engaging and fun. So many basic topics can made engaging through the program we learned about today.

exposure to a great activity I wouldn't have learned about on my own

A new representation for students to discover standards

There were areas of improvement in the session. Many teachers expressed a desire for more time or for continued discussion on the topic. They wanted more time to develop a lesson and work with people across their grade band. Also, many of the elementary teachers felt that although this activity was cool, they would have liked if I had presented with a teacher from a lower grade level to be able to speak to their standards more directly. One of the other things I asked teachers was what questions they still had so I could address them after the fact. Here was a sampling of them:

Do you have any other STEM websites that are available for younger learners?

I would like to know how I could relate this more at a middle school level.

More applications.

When are you teaching another pd so we can learn more applications

Just more applications I can use in class

I'd like to see this incorporated into my level of class

Nothing - just would like to see more!

Can this teacher come in and show me how to make more lessons stem related.

If nothing else, I think this course created a desire in a few teachers to try something new in their classroom. I hope they know that I am a resource they can come to brainstorm ideas or to help find resources. I have already received a few emails in the days since asking for help or more resources. As a result, I view this session as a success, especially for the secondary teachers. I wish I'd been able to more readily address the standards of elementary teachers and will be working to improve this before I lead any other general sessions like this in the future. Having STEM and NASA resources to share from the Endeavor program gave me a place to direct these teachers, even if I couldn't speak to their standards directly. It was a powerful experience to serve as a STEM leader in my district and I look forward to continuing to lead in the future.

2 Session Participants:

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