

17th Annual Mathematics Day – November 12, 2013

Session #1: Hands-On Materials for Developing Spatial Reasoning

In this session, we were able to experience many hands-on materials (the mira, geo-strips, and cut-out shapes). One of the major points that the presenter, Dana Johnson, made was that teachers are facilitators. Many studies have shown that hands-on learning produces the best learning results for students. As opposed to having a teacher tell them the concept, teachers should facilitate the learning by having the students experience the concept first-hand. We have been learning the exact same concepts in CRIN E07. It was encouraging to hear the same material being said by yet another respected mathematics teacher.

In first grade, the Virginia Standards of Learning specifically state “While learning mathematics, students will be actively engaged, using concrete materials...” (doe.virginia.gov). The Virginia Department of Education certainly recognizes the importance of letting students learn by doing and experiencing. I agree with this method as well, and I look forward to implementing hands-on learning into my classroom, no matter which grade I am placed with. I will definitely find a way to incorporate the proper manipulatives and technologies into my mathematics lessons that will allow the students to experience the concept instead of simply hearing about it. For addition, we can use counters or plastic bears. Number lines can be used to further this concept by “counting on”. Subtraction can be done the same way with manipulatives or visuals like a number line.

Session #2: Michael Bolling – Second Keynote

Michael Bolling gave the second keynote address during lunch. I found his discussion about the NAEP-TIMSS study very interesting. The study looked at where students from different countries were testing at the grade eight level. There are so many different factors to consider when looking at a study like this, which is what I have always argued. It is almost impossible to look objectively at these statistics because they are not comparing the same things. A good example of this is the high-scoring country of Singapore. It is about the size of a large-US city, but it is being compared to countries. The teachers here are all passing through the same teacher education program, learning the same teaching approaches. A small country with far fewer variables than the US and a consistent teaching program is probably why they score so high as a country in mathematics. There is always more to a story than reaches the surface.

I also agreed with his discussion of problem/ based learning (PBL). It was very consistent with what we have been learning in all of our curriculum and instruction classes. PBL is a great tool to use if you know how to implement it properly. You cannot simply go from not using PBL to using it as the majority of your class time. Introduce it slowly by using task-based learning, then project-based, and finally problem-based. You have to build the skills that the students will need to work so independently. Incorporating PBL into your math classroom will go directly along with the Virginia Standards of Learning. The Virginia Department of Education says that the “development of problem-solving skills

should be a major goal of the mathematics program at every grade level. Instruction in the process of problem solving will need to be integrated early and continuously into each student's mathematics education. Students must be helped to develop a wide range of skills and strategies for solving a variety of problem types." (doe.virginia.gov). It is important to develop these skills early, in kindergarten, and continue to develop them throughout the students' schooling. The earlier they are developed, the more successful the students will be at implementing them in their mathematics. I would have my first grade students start by giving them the tools and strategies they will need to participate in PBL. This would include independently created and standard algorithms. They would create these algorithms by using hands-on strategies such as manipulatives and illustrations. I would then introduce the standard algorithms that would make the work further down the line easier, while still letting them understand the concept with their own algorithms.

Session #3: Using Math Talk to Address the Process Standards

I really enjoyed the session about math talk. It was encouraging to see how these elementary school teachers were able to enhance their students' comprehension and confidence in math just by using a different method of teaching. It was also encouraging to know that this method could be successfully used in a classroom that ranged from gifted students to struggling students. The process is easy enough: revoicing, restating, agreeing/disagreeing, adding on, and wait time. Each step has its purpose and is a successful formula for enhancing students' comprehension and confidence. The presenters did a great job in offering helpful hints and necessary changes that must be made in a classroom before getting started. I thought that establishing a respectful classroom environment, or a classroom of caring, would benefit not only the Math Talk, but the entire school day. Students learn how to be courteous and respectful toward their peers while in math class, and this carries over to their other lessons and at lunch and on the playground. This was one of my favorite side-effects of math talk.

The Virginia Standards of Learning do not address speaking in any of the first grade objectives. This is disappointing seeing as how successful Math Talk can be for every kind of student. Even though it is not in the Standards, I would still incorporate it into my classroom to encourage problem solving and build the students' confidence. Even first graders could use it, with help and prompting from the teacher of course, when solving their simple addition problems. They can describe how many plastic bears they started with, how many they added, why, and how many they got. Another student could repeat what they observed and then explain their own way of solving the addition problem. They could then take this Math Talk and problem solving knowledge to higher grades and develop it further. Starting early could only be a good thing.