



# ACUMEN

INSTRUCTING, EQUIPPING & INSPIRING TEACHERS OF MATH & SCIENCE

## JUST A LITTLE MAGIC AND 'POOF!', THEY'RE HOOKED!

Each August when the crape myrtles begin to change, I know it is time for school to start once again. This year was another milestone in our household-our youngest started kindergarten. His excitement mirrored that of my daughter when she started. And just like her, the questions inquiring about objects, organisms, and how things work have increased over the last five years. Children are naturally curious about the world. Their curiosity can become a natural springboard to get them excited about learning. Unfortunately, all too often, children lose their curiosity as they get older.

So how can we keep children curious? It starts with getting children hooked into learning and sometimes this takes a little magic! Now I am not saying we all have to be trained magicians in the classroom. Instead we need to act like magicians. Magicians don't begin their act by saying-now for my first trick I would like to show you a trick that is based on Newton's First Law of Motion which is Physical Science Standard of Learning 8.9. Forget that! If they began their act like that we would all be asleep or asking for our money back! I learned early on in my teaching career that if I started my lesson with an activity instead of jumping into a lecture, my students remembered more and learned more. Although I knew this, my children reminded me of this just recently.



## OUR MISSION

The mission of MCMS is to improve the quality of mathematics and science teaching in public and private K-12 schools in the Tidewater region by promoting knowledge, attitudes, skills, and habits of mind necessary for student literacy and success in mathematics and science.

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***It is, in fact, nothing short of a miracle that the modern methods of instruction have not entirely strangled the holy curiosity of inquiry.***

**—Albert Einstein**

This past summer I spent three days attending a workshop in order to learn some new ideas to use to teach science. When I returned home, my children were excited to have me home and were ready for some mommy play time. Still being a bit tired from my trip, I began to wonder what I could do to entertain them without turning on the T.V. Thankfully I had remembered to pack one of the activities in the only bag I had remembered to bring inside when I arrived home. So-with sleep still in my eyes, I pulled out this jar of beads and simply said “do you think I can make these beads jump out of this container?” Of course my children said no and from that moment-they were hooked. See when I pulled the end of this ordinary strand of beads that you might find on your tree at Christmas or in New Orleans at Mardi Gras, and ‘magically’ they seemed to leap from the container, all my kids could say (in their loudest voice)-do it again Mom! This one little jar filled with ordinary beads became my life saver and a learning opportunity for my children. After I had managed to have two cups of coffee, my children had slowed down enough to ask me the question any teacher longs for-“how does this work mom?” And while I make no conscious effort to launch into lectures about science topics each time my children ask me a question, I do try to simply answer their questions. Even today, three months after they first played with the beads, they still remember the basic idea of the second half of Newton’s First Law of Motion-an object in motion stays in motion unless acted on by an outside force. Or as my son says— “The beads go crazy falling out of the jar until the floor stops them!”

...After I had managed to have two cups of coffee, my children had slowed down enough to ask me the question any teacher longs for...“how does this work?”

Long story short: instead of launching into content or reading the text book, why not try getting students doing something first? Allow them to ask the questions and you will find their questions will lead you into the content you need to teach! ■

## PROFESSIONAL DEVELOPMENT FOR TEACHERS: DOES ONE SIZE REALLY FIT ALL?

Most teachers wouldn’t dispute that children all learn in different ways and that each student comes to the classroom with a variety of experiences and a varied knowledge base that impacts the level and speed of their learning. As a result, students’ levels of

achievement are highly affected by how information is taught and presented to them in the classroom. If differentiation is important for student learning, wouldn't it be true for teachers with regard to their own learning, or professional development?

So, what does differentiated professional development look like? Well, just as a teacher must take time to assess students' needs, interests, readiness and background knowledge prior to determining the best approach to designing the lesson, so must we assess teachers' needs, interests, readiness and background knowledge as well before jumping into a prescribed after-school staff development class. Professional development must be designed to engage, challenge, and meet each teacher where he or she is, then move them forward (Flannagan and Kelly, 2009).

So, let's take the topic of technology in professional development. What would it look like to plan a differentiated course on using technology in the classroom instruction? It begins with identifying where teachers are in relation to the topic. This can easily be done by a pre-assessment or survey of questions before the start of the class. The assessment should try to identify the entry point for teachers with regard to their belief about the use of technology in the classroom, their comfort level with technology, and which forms of technology (probes, blogs, Power Point, voice streams, or other forms) they have used or not used before the workshop. Next, using the data, workshop sessions could be tailored to meet the needs of the teachers attending. This does not



mean 25 different learning plans, but rather, it means looking for where the data forms groups of teachers that are similar. For example, in a recent technology workshop held through the Martinson Center; almost all the teachers who attended were novices with regard to the use and design of blogs, wikis, and photostory. One teacher, however, reported that she had been using blogs for a while. To ensure she was continually learning and being stretched, we developed an activity that mirrored what the other teachers were doing, but its design was a little more complex. Instead of just creating a blog, we asked this teacher to mix blogging with what she learned about voice threads. Not only did this keep her engaged during the course, it also kept her learning as it provided a challenge for her. The workshop leader provided support through coaching in order to ensure she was successful. While it would have been easier to develop a session that had the same activities for everyone, this would not have met all of the needs of the teachers participating.

As this story illustrates, teachers are no exception when it comes to effective and successful learning. If the expectation is given to teachers to differentiate for students, then the same must apply for professional development for teachers. ■

## MARTINSON CENTER FOR MATHEMATICS AND SCIENCE

The Center offers:

- ✦ Workshops dealing with a variety of instructional strategies, tools and models to improve the development of students' critical thinking, problem-solving and best practices in math and science
- ✦ Partnerships with schools and school divisions designed to improve the teaching of math and science
- ✦ Curriculum development and review
- ✦ Lecture series dealing with issues surrounding math and science
- ✦ Graduate courses and institutes to strengthen math and science content knowledge in grades K-12

## Martinson Center for Mathematics and Science

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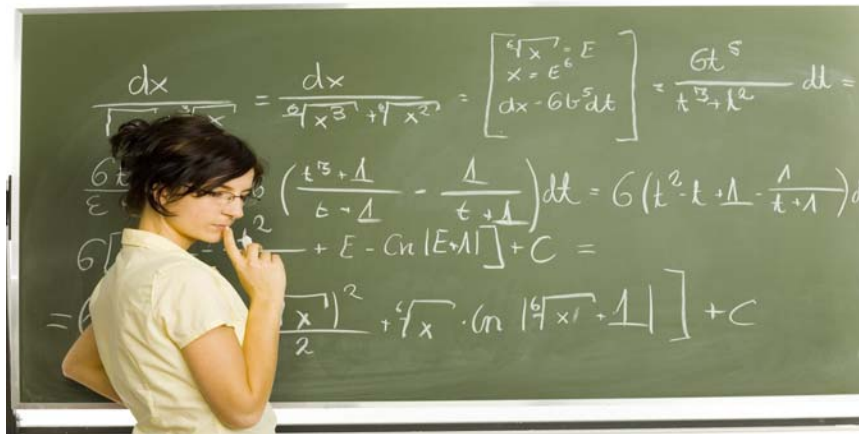
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PROFESSIONAL DEVELOPMENT:  
RIGHT HERE. RIGHT NOW.



## MARK YOUR CALENDARS FOR UPCOMING WORKSHOPS!

### SPRING 2010

#### Writing in Science

In the science classroom, writing is much more than an exercise for students to document their steps during an investigation. It's an important vehicle for describing their thought processes and the evidence that supports their reasoning. *Writing in Science* will show you how to encourage students to grow as scientists and writers by moving beyond recounting *how* they completed their work and toward explaining *what* they learned. And the best part is that you will receive free lesson ideas and materials! Each participant receives 2 free books, new ideas and strategies, print and electronic resources for use in participant's classroom, and 12 professional development points.

**Dates:** February 27 and March 13 **Times:** 9:00 a.m.-3:00 p.m.

#### Differentiation: Models and Strategies for Differentiation in Science K-12

Want to respond to the needs of your students, but not sure how? This course is an introductory course for teachers who want to learn about models and strategies they can use to begin to respond to the learning needs of students. Sample lessons and free materials will be provided.

**Dates:** Tuesdays, February 9-March 9 **Time:** 4:00 p.m.-6:00 p.m.

### SUMMER 2010

#### Differentiation: Models and Strategies for Differentiation in Science K-12 — ONLINE ONLY

This class is essentially the same as the one offered in the Fall, however, this course is completed entirely online. Because this class is asynchronous and open to you 24/7, you may participate from your home or work computer during hours that are best for your work and family schedule.

The class is highly interactive with a significant discussion component. All projects/assignments will be submitted via e-mail. Instructor/peer comments will be available through discussion groups or sent by e-mail.

**Dates:** Online June 29-July 19 **OR** September 27-October 17

#### Kindergarten Science Institute

Learn hands-on experiments that can be easily replicated in your classroom that are de-

signed to engage students' curiosity for science! Free lesson plans and materials!

**Dates:** July 7-9 **Time:** 9:00 a.m.-3:00 pm.

### **Integrating Technology in the 21st Century Elementary Classroom**

For teachers of grades 3-5, this course describes and demonstrates the kinds of new technology that is available for teachers to use to enhance their own teaching while engaging students' interest and preparing them for the use of technology both now and in their future.

**Dates:** July 19-21 **Time:** 9:00 a.m.—3:00 p.m.

### **Reaching All Students in Math: Math Instruction that Works! K-5 Part I**

This two-part institute will address the impact of students' differences on math instruction and how those differences can be addressed through math instruction that emphasizes conceptual understanding along with procedural fluency.

**Dates: Part I:** July 26-27 **Part II:** July 28-29 **Time:** 9:00 a.m.—3:00 p.m.

### **Writing in Science**

This is the same course we are offering in the Spring. *(See description under Spring '10.)*

**Dates: July 28-29 Time:** 9:00 a.m.—3:00 p.m.

### **Problem Based Learning in Kindergarten**

Wanting to learn about problem based learning? Need an idea of how to get your little ones thinking like real scientists? This course will introduce you to problem-based learning and will provide you with a real mystery your students can solve!

**Audience:** *Kindergarten teachers who have completed either the Kindergarten Science Institute or the class Creating a Sense of Wonder*

**Dates:** August 5 **Time:** 9:00 a.m.-3:00 p.m.

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Each of the above workshops are available to you for 1 graduate credit at the reduced tuition rate of \$190.00!

And...if you are thinking about an M.Ed., you can use up to 9 credits from these courses to count towards your degree! What a deal!!!

Starting or finishing your M.Ed. Is a very worthwhile investment in your future....One you can't afford to pass up!



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