



Mathachusetts

Official Newsletter of MASSMATE

Massachusetts Mathematics Association of Teacher Educators

Affiliate of the Association of Mathematics Teacher Educators

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Message from the President : Paula Sennett Implementing the New Massachusetts Framework

Greetings and welcome back to another school year full of promises and challenges. MassMATE will again this year be working with you as you continue to address the challenges that come with preparing ourselves and our teachers for the implementation of the new Massachusetts Framework.

In my last newsletter I wrote: “As teacher leaders it is our responsibility to see that our mathematics programs address the appropriate content and the Guiding Principles. We also need to be sure that our teachers’ instructional practices develop in their students the mathematical proficiencies required for students to be successful in their study and use of mathematics. To do this, teachers will need to incorporate the Standards for Mathematical Practice into their lesson planning and classroom practice. One of the ways to make this happen is to regularly utilize cognitively demanding mathematical tasks. Researching and developing these tasks will be an ongoing effort for both teacher leaders and teachers.

As I was thinking about writing this message I asked myself, “What are some other more immediate ways we can help teachers make the Standards for Mathematical Practice come alive in their classrooms?” I came up with two that could definitely be used to get the ball rolling. These are two of the basic tenants of standards-based instruction and can be used to help teachers shift from a transmission model of instruction to a student-centered model, where students are actively engaged in learning mathematics.

The first one is “less teacher talk, more student talk.” The more students are engaged in meaningful discourse, the

more opportunity they have to make sense of the mathematics. Steven C. Reinhart published a wonderful article called “Never Say Anything a Kid Can Say” (Mathematics Teaching in the Middle School 5, 8 [2000]: 478) and it is rife with great examples of what that means and why it is so important. Steven says ‘My definition of a good teacher has changed from “one who explains things so well that students understand” to “one who gets students to explain things so well that they can be understood.” In the article he expands on these five suggestions:

- Never say anything a kid can say!
- Ask good questions.
- Use more process questions than product questions.
- Replace lectures with sets of questions.
- Use wait time.

The use of effective questioning techniques encourages student talk. Allowing appropriate wait time after asking a question allows all students to process the question and be thinking about how to verbalize a response before any one student responds. Waiting after a student responds allows other students to assess and react to the response. These two practices combined with the use of preplanned “good” questions that require students to explain and justify their responses and the responses of others, are effective ways of encouraging reasoning and sense making in the mathematics classroom.

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Check out our web-home!
www.MassMATE.net



Webmaster: Katie Thompson
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Massachusetts Mathematics
Association of Teacher Educators

and



***MassMATE and Bridgewater State University announce
our 2013 conference for Educators of Mathematics
Teachers and Mathematics Teacher Leaders.***

**Teacher Leaders Making it Happen: Bringing the Guiding
Principles and Standards for Mathematical Practice
into Mathematics Classrooms**

May 23, 2013 8:00 a.m.—3:30 p.m.

**Conant Science and Mathematics Building and Campus Center
@ Bridgewater State University, Bridgewater MA**

As teacher educators, professional development providers, district math specialists, and consultants, our members are regularly involved in supporting teachers as they work to bring the Common Core State Standards alive in their classrooms and with their students. Through this symposium we will explore strategies and resources for supporting our teachers' work and recognizing excellence in the classrooms.

Please visit www.MassMATE.net for more information.

Registration:

Early Bird Deadline April 26th, 2013 \$50.00

Full Price Deadline May 17th, 2013 \$60.00

The last 3 conferences filled early and we had to close registration. Register early and don't miss it!

Registration Fee includes

- ✓ MassMATE Annual Membership
- ✓ Symposium Registration
 - ✓ Breakfast
 - ✓ Lunch

For further information e-mail Conference Chair Polina Sabinin: Symposium@MassMATE.net

Mathematical Knowledge for Teaching: How it made me a better teacher educator



Submitted by Cara Goldberg

“We teach as we were taught.” This expression is often heard when it comes to education. Unfortunately, the methods by which we, as a generation, were traditionally taught and the content that was traditionally covered in our classes are not the most effective for the teaching and learning of mathematics and mathematical practices. The Common Core State Standards articulated the pedagogical strategies I was already using in my classroom. As someone who has an undergraduate degree in mathematics and secondary education, I was determined not to teach in the traditional manner in which I was taught, but rather to develop a deeper understanding of the mathematical content which is supported by the Standards.

An article written by Ball, Thames, and Phelps (2008) provided a framework for me to think about what I needed to know in order to be an effective mathematics teacher educator and what my students need to know in order to be effective mathematics teachers. They call it mathematical knowledge for teaching. The authors describe two main types of knowledge that teachers need: Subject Matter Knowledge and Pedagogical Content Knowledge. Each of these was further broken down. Subject Matter Knowledge includes Common Content

Knowledge (i.e., the knowledge about mathematics that most people, regardless of profession know), Specialized Content Knowledge (i.e., the special knowledge that mathematics teachers need to know in order to identify misconceptions, error patterns, etc.), and Horizon Content Knowledge (i.e., knowledge of how mathematical ideas develop over time and across grades). The authors subdivide Pedagogical Content Knowledge into Knowledge of Content and Students (i.e., knowledge of how students interact with the mathematical content), Knowledge of Content and Teaching (i.e., knowledge of how to present and represent mathematical content), and Knowledge of Content and Curriculum (i.e., knowledge of how mathematical content is presented in the curriculum).

This framework helped me design an effective course for mathematics teachers titled “Algebra for Teachers”. This course was designed to help teachers acquire the mathematical knowledge for teaching that they will need in order to be more effective algebra teachers. The table below highlights how each of these particular types of mathematical knowledge for teaching helped me think about the course syllabus, what was important for my students (who were first-year mathematics teachers) to know and understand, and what I needed to consider as I organized and taught the course.

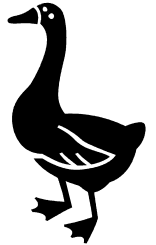
Mathematical Knowledge for Teaching	My Experiences Relating to this Model
Subject Matter Knowledge	
Common Content Knowledge (CCK)	Build upon teachers’ prior knowledge of basic algebraic ideas and definitions
Horizon Content Knowledge (HCK)	Have teachers consider how “Big ideas”, such as generalizing from patterns, are developed
Specialized Content Knowledge (SCK)	Ensure that teachers develop a deep understanding of algebra and its connections to multiple representations
Pedagogical Content Knowledge	
Knowledge of Content and Students (KCS)	Help teachers develop knowledge around common student misconceptions in algebra
Knowledge of Content and Curriculum (KCC)	Have teachers explore curricular materials to see how “Big Ideas” in algebra are presented
Knowledge Content and Teaching (KCT)	Ensure that teachers have understanding of different methods and models for teaching the “Big Ideas” in algebra.

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Math Challenges for Preservice Teachers!

Problem Solving:

- 1) I'm thinking of 5 numbers. The sums for each possible paired-combinations of these numbers are 9, 10, 11, 11, 12, 12, 13, 13, 14, 15. What are the 5 numbers? List them in ascending order.
- 2) If you wrote all the whole numbers from 300 to 400 on a piece of paper, how many times would you have written the number 3?
- 3) A goose is at the center of a circular pond, being stalked by a fox that can't swim. The goose can escape by flying away the instant it reaches the shore. The fox can move 4 times as fast as the goose and will always move in the direction of the ponds edge that gets him closer to the goose. Can the goose escape? (Hint: Think about the path the goose has to take to get to the shore before the fox can reach him).



Submit your or your students' answers and explanations to Newsletter@MassMATE.net and have a chance of being published in the next edition of *Mathachusetts*!

Conference, Reception, Conference!

Submitted by Conference Chair, Polina Sabinin

We are happy to report that 2012 Symposium was our most successful yet! For the third year in a row, we had to close registration more than a week before the conference! Our attendance topped 260 people and we again filled the Bridgewater State University Campus Center to capacity. The theme for the conference was Teacher Leaders Making it Happen: Bringing the Guiding Principles and Standards for Mathematical Practice into the Mathematics Classroom”

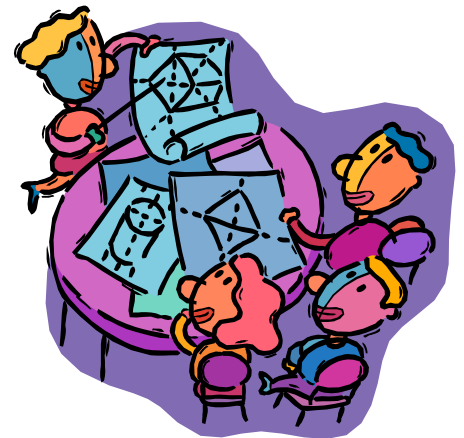
Steve Leinwand gave a thought-provoking, informative, inspiring, and cautionary keynote talk about the Standards for Mathematical Practices. Other sessions were lead by teacher educators who are leaders in their field and we are grateful to them for being willing to share their time and expertise with our members.

We would also like to thank Dr. Anna Bradfield, the dean of the College of Education and Allied Studies and Dr. Art Goldstein, the dean of the College of Science and Mathematics at Bridgewater State University for their continued support of the conference. With the help of many people at BSU the conference was a resounding success. We are excited to continue hosting the conference at Bridgewater State University and in 2013, the College of Science and Mathematics has invited us to the brand new, state of the art, science and mathematics building.

In 2012, we partnered with ESANE, filling our exhibitor space to capacity. We thank the exhibitors who contributed items for the conference bags, amazing raffle items, and sponsored wonderful speakers for the exhibitor sponsored sessions.

The MassMATE board does not rest for long, however, and we are busy planning our Dine and Discuss partnerships with ATMIM and our 2013 conference. Keep an eye out for more information on both of these initiatives.

Now, get those calendars! Our 2012 symposium will be on May 23rd, 2013 at Bridgewater State University! We will continue to develop the theme of “Teacher Leaders Making it Happen: Bringing the Guiding Principles and Standards for Mathematical Practice into the Mathematics Classroom”. Although we are increasing our capacity by 50% in 2013, we are expecting another record attendance, so make sure to register early!



For more information on the past and future happenings, visit us at www.MassMATE.net.

Message from the President Continued...

A second practice comes from the saying, “less is more.” Teachers should work to limit the number of problems or tasks with which students are to work and create tasks that are rich enough to warrant exploration. Practicing procedures is important, but should not be the primary mode of operation for classwork and homework. This would help to ensure that problem solving activities are more regularly incorporated into daily lessons so that students have an ongoing opportunity to, for example, “make sense of problems and persevere in solving them”.

As you work with your teachers this year to help them address the Standards for Mathematical Practice, emphasizing the above two practices may be a simple way to help them to help their students to be able to reason and make sense of mathematics and effectively communicate

their thinking. They are a good jumping off point and a good point of entry for conversations about the Standards for Mathematical Practice

Have a great school year and we look forward to seeing you at our annual Symposium at Bridgewater State University on May 23, 2013 and at some of the other events we hope to host throughout the year.



Contribute to Mathachusetts



We value our member’s thoughts and contributions! Please consider writing an article for *Mathachusetts*.

Also, let us know of any noteworthy events, projects, or programs occurring in your district or school, so that we may consider including it in *Mathachusetts* or on our website!

Please contact Alejandra Salinas at newsletter@MassMATE.net with your submissions.

Mathematical Knowledge for Teaching Continued...

One way that the teachers in my course strengthened their mathematical knowledge for teaching was by learning to be flexible and respond to their students’ ideas instead of moving forward with the lesson without student input. In order to do this, teachers had to understand what the student was saying, identify any misconceptions, and apply appropriate strategies, models, and representations to help clarify the misconception. In this way, discussion about students’ common mathematical mistakes and conceptual misunderstandings fostered these teachers’ flexibility in the classroom.

Another way that the teachers in my class improved their mathematical knowledge for teaching was by learning to consider research around the teaching and learning of algebra. They learned to see how research can inform their practice and then reflected on their own practice in light of the research. At the beginning of this course, my students presented lessons without considering prior research and without any anticipation of students’ common mistakes. These teachers were placing classroom management at the center of their lessons while content and pedagogical techniques were placed on the backburner. I began meeting with students prior to their lesson presentations and we discussed research, students’ common mistakes, and focused on placing algebra at the forefront of their lessons. I saw positive results almost instantly. These teachers are

unpacking their algebra knowledge and repacking it in a better way for their students. Teachers have noted that their students were able to handle higher levels of mathematical thinking than they anticipated.

My experiences with mathematical knowledge for teaching and with the success of my “Algebra for Teachers” course have shown me that lifelong learning is a “job” requirement for both mathematics teachers and mathematics teacher educators. I am excited about the new knowledge and understanding that I am acquiring as a doctoral student, in using what I’m learning with my students, and in seeing the effects that this has on their future students. It is my hope that we will see the fruits of these efforts as the teachers in my class and other new teachers begin to “teach as they are taught.”

Reference:

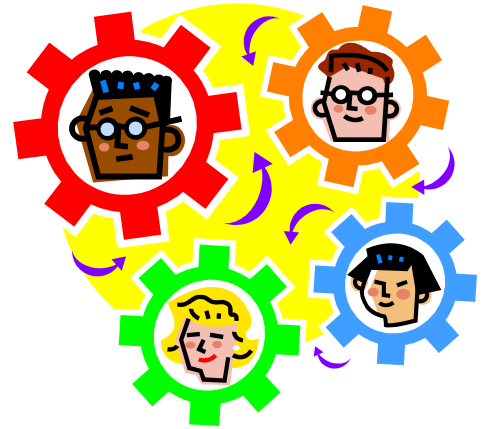
Ball, D.L., Thames, M.H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59, 389-407.

Cara Goldberg is a doctoral student at Boston University. She is in her tenth year teaching high school mathematics at Lexington High School and sixth year as a visiting professor at Salem State University. Cara can be reached at cgoldber@bu.edu.

Membership Report

Submitted by Membership Chair, Stan Dick

We are still growing! Due to another sold out conference this year, and our policy of including annual membership with symposium registration, we now have 250 members. Do you know teacher educators, perhaps leaders you work with, or even a supervisor, who would benefit from becoming members of MassMATE? Please tell them about MassMATE, and direct them to our website at <http://www.massmate.net/> where they can learn more about MassMATE, become members, or be added to our mailing list. And we hope you will visit our website regularly to learn more about the upcoming annual symposium on May 23, 2013. The Early bird registration fee will remain at \$50! :o) (My New and improved smiley face.)



Advertising in Mathachusetts

Mathachusetts will be publishing advertisements related to Mathematics Education. For more information, formats, fee schedules, and to obtain an application, please contact us at sponsor@MassMATE.net

Please note that by publishing an advertisement, MassMATE does not imply endorsement of the advertised product or the company.

Upcoming Conferences

✓ *Dine & Discuss:*

PARCC and the New Assessment System
Tuesday, October 16, 2012
Hopedale, MA
www.atmim.wildapricot.org

✓ *Dine & Discuss:*

PARCC and the New Assessment System
Tuesday, November 13, 2012
Cambridge, MA
www.atmim.wildapricot.org

✓ *NCTM Regional Meeting*

National Council of Teachers of Mathematics
October 24-26, 2012
Hartford, CT
www.NCTM.org/regionals.aspx

✓ *NCTM Annual Meeting*

National Council of Teachers of Mathematics
April 17-20, 2013
Denver, CO
www.nctm.org

✓ *2013 Joint Mathematics Meetings*

January 9-12, 2013
San Diego, CA
<http://www.maa.org/meetings/jmm.html>

✓ *AMTE 2013 Conference*

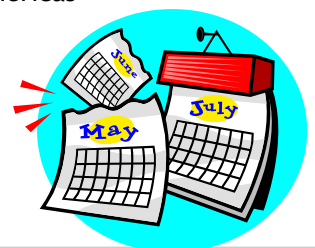
Association of Mathematics Teacher Educators
January 24-26, 2013
Orlando, FL
www.AMTE.net

✓ *ATMIM Spring Conference*

Saturday, March 23, 2013
Assabet Valley Regional Technical High School
www.atmim.wildapricot.org

✓ *MCA 2013*

Mathematical Congress of the Americas
August 5-9, 2013
Guanajuato, Mexico
www.MCA2013.org



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MASSMATE's Purposes and Goals


The Massachusetts Mathematics Association of Teacher Educators (MassMATE) is a nonprofit organization whose purpose is to provide a forum for mathematics teacher educators to communicate with each other and collaborate with other groups interested in the teaching of mathematics in the state of Massachusetts. Specifically, the goals of MassMATE are to:


- promote **leadership** among mathematics teacher educators;
- serve as a **forum** for ideas and resources in mathematics teacher education;
- encourage **research** related to mathematics teacher education;
- promote quality **undergraduate** and **graduate** programs in mathematics education;
- encourage and support professional development programs for **in-service** teachers;
- encourage and support professional development programs for postsecondary **faculty** involved in mathematics education;
- facilitate **communication and collaboration** among **professionals** involved in mathematics education and mathematics teacher education at all levels;
- facilitate **communication and collaboration** among members of educational **administrative** units, such as departments of mathematics and departments of education;
- coordinate activities and work collaboratively with **other associations** and organizations concerned with the preparation and professional development of mathematics teachers;
- work cooperatively with the **federal and state** agencies to enhance the mathematical, pedagogical, and clinical **preparation of teachers** of mathematics at all levels with respect to criteria for credentialing and licensing teachers in Massachusetts.




Share these with a colleague and have them join MassMATE today!


Useful Links:

 Massachusetts Mathematics Association of Teacher Educators (MassMATE)
www.MassMATE.net


 Association of Mathematics Teacher Educators (AMTE)
www.AMTE.net

 Association of Teachers of Mathematics in Massachusetts (ATMIM)
www.ATMIM.org


 National Council of Supervisors in Mathematics (NCSM)
www.mathedleadership.org


 National Council of Teachers of Mathematics (NCTM)
www.NCTM.org

 Massachusetts Department of Elementary and Secondary Education Professional Development
www.doe.mass.edu/pd

 National Council on Teacher Quality (NCTQ)
www.NCTQ.org

 MathForum
www.MathForum.org

 Association of Teachers of Mathematics of New England (ATMNE) www.ATMNE.org

 Triangle Coalition for Science and Technology Education
Triangle Coalition Electronic Bulletin (TCEB)
www.triangle-coalition.org