



PENNSYLVANIA ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS

Newsletter

SPRING 2011

PRESIDENT'S MESSAGE

As I write this, I am sitting outside at a nice local pizza shop in Orlando, Florida (I am at a conference on the CCSS. Information is provided in an article later in the newsletter). The food was good and the servers were very pleasant. My plane doesn't leave for a few hours yet, so I am trying to be as productive as possible, despite the 80-degree temperatures. As it is still February, I'm wondering if I can find a job down here for two months before going back to where it is cold. However, my wife and I are bringing my four-year-old son down here in two weeks for Spring Break, so I guess I can tough it out another couple of weeks (although I hear there is a warm spell in PA right now). Besides, I really don't mind the weather changes in PA. I've lived in North Carolina before and I would much rather have the coldness of PA winters than the warmth of NC summers.

If you did not make it to the PAMTE at PCTM session in November of 2010, you missed a very informative panel discussion with members from public schools. They discussed ways in which we could better prepare our students for their schools. The notes from that session have been posted on our website at www.pctm.org. In addition to that session, PAMTE once again sponsored an awesome Pre-Service Day. This Day seems to have become a key piece to the PCTM conferences. As you hear more about this for the next conference, feel free to volunteer to get involved. More help is always appreciated.

For those who made it out to Irvine for the AMTE conference (some flights were cancelled due to weather), it was a good time. There are always a lot of great sessions and the conference is small enough that you get to spend some good time talking to colleagues across the nation. Being a winter conference, it is always a good distance away from us, but if you can swing your travel money to include that conference in your plans next year, I certainly encourage you to do so. So many things there hit home!

Plans for the Fifth Annual PAMTE Symposium have been moving along since mid-December. The dates are

May 12th and 13th and the location is Shippensburg University. We have several people working hard to ensure that we have a successful meeting. Information is included in this newsletter and has been posted on our website at www.pamte.org. More information will be distributed via the listserv in the weeks to come. This meeting is always a personal highlight/end-of-semester-celebration for me. I hope that you are all able to join your colleagues around the state to discuss our important matters.

There seem to be many things pressing on us as mathematics educators at the present time (doesn't that just seem normal to us?). Many of us are still dealing with the new Middle Level programs that have been created. The new secondary guidelines for Field Experience are weighing some of us down. Preparing our students to understand both the PSSAs and the Keystone Exams is a challenge. And the state is trying to figure out how to incorporate the new CCSS into all that our schools do. All of this is keeping us very busy I am sure. The good thing about it all is that I doubt that many of us lead a boring life.

This is a good time to be involved in our organization. All of the activity means that we need each other more than ever. I am not too proud to say that I have stolen several things from many of you over the past few years. In fact, I've stolen so many things that I can't even remember from whom I have stolen them. So, as we have welcomed several new members over the past few months, I would like to welcome them into a community of thieves. If you stay involved long enough, I'm sure you will find many things to steal from someone. And for the most part, we don't even ask for it back...unless you improve upon it!

Enjoy the following newsletter, put together by our very own Mary Lou Metz, as we prepare for spring to come upon us. Finish the semester strong and let's look forward to gathering in Shippensburg in May.

~ *Steve Williams*, PAMTE President



Teaching Tip

Questioning in the Mathematics Classroom:

A Classic Theory Revisited

Lynn Columba, Associate Professor
Lehigh University

Effective questioning in the mathematics classroom requires formulating questions to which students actively compose a response and, thereby, become engaged in the learning process. Students' justification of their responses has a positive effect on how to view mathematics and one's own abilities. Explaining "why?" requires reflective thinking and diminishes guesses or responses based on rote memorization. Teacher questioning promotes thought and the understanding of ideas and allows the teacher the opportunity to probe deeper after an answer is given. Specifically, probing questions are a teaching/assessment strategy that provides insight into the mental process students' use by engaging them in conversation about mathematics.

The goal of the *question* is to deepen students' understanding of the mathematics concepts. Preparing these *effective questions* is an integral component of

designing quality mathematics lesson plans for the classroom.

There are many different philosophical orientations and instructional theories to guide the preparation of quality mathematics lessons. One of these instructional learning theories is *Bloom's Taxonomy of the Cognitive Domain* (Bloom et al., 1956). Bloom identified six levels of intellectual behavior within the cognitive domain, from simple recall of specific information, as the lowest level, to more complex mental levels of which the highest order of critical thinking is represented as evaluation. As mathematics lessons are prepared, presented, and reflected upon, Bloom's Taxonomy can serve as a guide for designing questions to invite students to think. Since the goal of our questions is to deepen student understanding of mathematical concepts, preparing questions effectively is crucial. At a time when differentiation is becoming more important in the classroom, Bloom's Taxonomy can motivate our students to become critical thinkers.

References

- Bloom, B. S., Engelhart, M. D. Hill, W. H., Furst, E. J., & Krathwohl, D. R. (1956). *Taxonomy of educational objective: Cognitive domain*. New York, NY: Longman.
- Kastberg, S. E. (2003). Using Bloom's taxonomy as a framework for classroom assessment. *Mathematics Teacher*, 96(6), 402-405.

Effective Questions to Invite Students to Think

The table below illustrates briefly each of the processes outlined in *Bloom's Taxonomy of the Cognitive Domain* (Bloom et al., 1956; Kastberg, 2003) with example questions from an elementary mathematics classroom that teachers can implement to engage students at all levels of the cognitive domain.

Levels	Definition	Sample Question
Knowledge	Recall of facts	What is $3 + 2$?
Comprehension	Understanding, transforming information	Can you use cubes/counters to create a combination of $3 + 2$?
Application	Using information to solve new problems	Can you show that $3 + 2$ is the same as $2 + 3$?
Analysis	Breaking down the idea into component parts	Explain the "Turnaround Property." (Commutative Property)
Synthesis	Combine parts to form new solutions to a problem	Write the four members of the fact family for $3 + 2 = 5$ (Addition/Subtraction Fact families); What are other ways to arrive at the answer of 5?
Evaluation	Suggesting well-reasoned decisions	What is the best way to arrive at the answer of 5? Justify your answer.

PAMTE ANNUAL SYMPOSIUM

From **Erie** to **Quakertown**
with **Uniontown**, **Indiana**, **Tyrone**, and **York** in Between

You will not want to miss PAMTE 2011.

May 12th late morning until May 13th early afternoon

At Shippensburg University

With our always amazing "PA Math Ed Family Dinner" on the 12th

This year's theme is something that unites us all: EQUITY!



Our Featured Speaker:

Dr. Lynne Ipina, University of Wyoming

Lynne will be discussing Math Circles as a means for providing equity.

Our Spotlight Speakers:

Dr. Diane Erchick,
Ohio State University
discussing Learner
Response Pedagogy

PA's own...Dr. Rose Zbiek,
Penn State University
discussing the Common Core
State Standards

All of this in addition to our usual array of invigorating roundtable discussions!!!

Mark your calendars now... so you can come be part of this event.

For Registration Information, see next page (or go to:

<http://academics.sru.edu/pamte/teacher/education.htm>

or contact Mike Long, malong@ship.edu)

Hotel Information for PAMTE 2011 Symposium:

Shippen Place Hotel:

32 East King Street, Shippensburg, Pennsylvania, 17257

Phone: 717-532-4141

www.shippenplace.com for information only; Reservations must be made by phone;

\$82 for double occupancy; You must mention PA Math Teacher Educators or PAMTE to receive this rate otherwise the rack rate is \$89; this special rate only holds until April 21st.

Please note: This hotel has changed management since the last symposium.

Best Western Shippen Place Hotel:

125 Walnut Bottom Road, Shippensburg, Pennsylvania, 17257

Phone: 717-532-5200

www.bestwestern.com (and then select Shippensburg, PA) for information and reservations;

This hotel offers a state government rate of \$78 for those individuals who work for the State System. Otherwise the rate is \$120 a night.

PAMTE Symposium Registration & Membership Renewal

Check made payable to **PAMTE** must be received by **May 2nd**. (There is no on-site registration.)

Please send registration form and payment to: Mary Lou Metz - PAMTE Symposium
193 Pond Street
Indiana, PA 15701

Name _____ Email _____

University/Institution _____

Home/Cell Phone _____ Work Phone _____

Preferred Address _____

Teaching/Professional Responsibilities: *(check all that apply)*

Teach Elem Methods _____ Teach Middle Methods _____ Teach Sec Methods _____

Supervise Student Teachers _____ Teach Elem Math Content _____ Teach Math Major Content _____

Teach graduate PreK-6 _____ Teach graduate 7-12 _____ Provide PD for Elem _____

Provide PD for Sec _____ Develop Math Curric _____ Independent Consult _____

Mentor Teacher for Pre-service teachers _____ Other _____

Membership Renewal: *Membership year runs May-to-May.

_____ \$20 one year regular membership (May 2011-May 2012)

_____ \$10 one year graduate student membership (May 2011-May 2012)

Circle one: New Membership -or- Renewal

Registration Fees: *(includes all materials, two lunches, one continental breakfast, two refreshment breaks)*

_____ \$60 Full-Symposium Registration

_____ \$35 One-day Symposium Registration choose one: _____ Thursday -or- _____ Friday

Please list any special needs we can assist with during the Symposium: _____

Total enclosed: \$ _____ Make checks payable to: **PAMTE**

CCSS Conference

(Steve Williams)

I recently had the opportunity to attend a conference designed to begin the conversation between higher education and secondary institutions about the assessment of the new Common Core State Standards (CCSS). The meeting was called the PARCC (Partnership for the Assessment of Readiness for College and Careers) Higher Education and K-12 Engagement Meeting Aligning College Readiness Expectations. The meeting was more of a two-day working group in which six-member teams (a state Department of Education Assessment person, a Higher Education Lead Official, a secondary-school math teacher, a secondary-school English teacher, a post-secondary math teacher, and a post-secondary English teacher) from each PARCC state convened to begin the conversation about creating the assessments to assess the CCSS.

PARCC is a group of 25 states committed to building a next-generation assessment system for elementary and secondary schools that is based upon adoption of the CCSS. While Pennsylvania is a PARCC state, it is not one of the governing states. The difference in becoming a governing state is a commitment to unequivocally use whatever assessment is created for the CCSS. It was the beginning conversation about the creation of these tests that was the focus of this meeting.

Although the conversation between higher education and secondary schools—centered around the CCSS—has just began, this seems to me to be some very important work. In a recent speech to the Conference Board on the Mathematical Sciences, University System of Maryland Chancellor William “Brit” Kirwan said: *Closing the gap between high school completion requirements and college entrance expectations is arguably the single most important thing to fix, if we are to address our college completion problem. I feel strongly that higher education must step forward and exercise leadership at this moment in time...A lot is at stake for our nation and the well-being of future generations. Much will depend on how we in higher education respond to the challenge and this moment of opportunity.*

The Common Core State Standards seems to present a fantastic opportunity for higher education to get

involved in collaboration with secondary schools. With the adoption of the CCSS, the next step seems to be creating assessments to assess them. It was clear from this meeting that we will be hearing much more about this in the months and years to come and that we need to be prepared to converse with our secondary school colleagues about these issues.

In short, here is how we spent our time at the conference. During the first day, we discussed the issues facing incoming students to higher education and prioritized the domains and clusters, as well as the Practices, in the CCSS. The second day consisted of discussing the purposes and parameters of the assessments that will be created.

It is important to note that those of us at this meeting are NOT being charged with any of the tasks that go along with the actual creation of the assessments. We worked as more of a consultant group to PARCC and as leaders who can take the message back to our respective states to get the conversation started between secondary and post-secondary schools. Therefore, we should all expect that we will be hearing more of this from our state officials and those of us who were at the meeting.

CCSS Conference

(Steve Williams)

SAVE THE DATE

April 11-13	NCSM Annual Conference <i>Indianapolis, IN</i>
April 13-16	NCTM Annual Conference <i>Indianapolis, IN</i>
May 12-13	PAMTE Annual Symposium <i>Shippensburg University</i>
Nov. 9 - 11	PCTM Annual Conference <i>State College, PA</i> PAMTE Meeting <i>State College, PA</i>
Nov. 10	PAMTE Pre-Service Teacher Day <i>State College, PA</i>
Feb. 9-11, 2012	AMTE Annual Conference <i>Fort Worth, TX</i>

CALL FOR NOMINATIONS

As the terms of Past-President (Nina Girard), Treasurer (Mary Lou Metz), and Member-at-Large (Judy Werner), come to an end PAMTE will be looking for three members to fill those positions. Please consider nominating a colleague, or yourself, to serve your fellow members. This is a great way to get more involved in the organization! Contact Nina Girard at nina@pitt.edu with your nominations.



Mathematics Miseducation: The Case Against a Tired Tradition

(book review by Steve Williams)

Just before the Semester Break in December, I usually roam through the library stacks at my university in hopes of finding a few books that grab my attention that I can read over the break. Sometimes I read them and sometimes I don't (hey, at least my intentions are noble). This past December was no exception. As my meandering inevitably took me to the QA section, I noticed a book with a copyright of 2005 that I didn't remember previously seeing. It was titled *Mathematics Miseducation: The Case Against a Tired Tradition*—an obviously interesting title for any mathematics educator. Coming in at just under 200 pages, the book was interesting enough to read in a quick three days (while spending as much time with a four-year-old as possible).

The book didn't necessarily tell me anything that I didn't know or hadn't heard before by virtue of being a mathematics educator over the past several years. However, it was a great reminder of the importance of my job and a good motivator to improve upon my own teaching. Derek Stolp, a 35-year veteran mathematics teacher from Massachusetts, told a great story about the uselessness of mathematics as currently taught in most schools and offered practical changes to make the subject that we all love more relevant to our students' lives. Granted, Mr. Stolp teaches at an independent school that is not as heavily influenced by outside pressures that most public schools are, but the challenges he posed to the reader served as good motivation from self-improvement.

In the Introduction, Derek puts it succinctly: "Teachers are products of an educational system that has valued conformity rather than independence, obedience rather than inquiry, technical mastery rather than creative thought. Nevertheless, for the sake of our children, we need to overcome our fears and our histories and look hard at our practices" (p.xi). I think that we would all agree that

we struggle daily with trying to get our pre-service teachers to see the changes that they must make and yet still allow them to see the "tired traditions" continued in the schools around us. However, within the struggles that we have lay the joy of our work!

The thesis of Derek's book seems to be the following: Mathematics, as currently taught, is irrelevant to our lives and does not deserve inclusion in the curriculum. Now, this is not to say that Mr. Stolp believes that the teaching of mathematics should be excluded from the curriculum either. For, after the first three chapters of describing the shortcomings of the traditional model, he outlines an alternative, more progressive, model for teaching mathematics. It is clear that Derek is passionate about what he believes and that he is speaking from experience rather than theory.

Again, if you are looking for a new revelation, you probably won't find it in this book. But if you are looking for a concise summary of the shortcomings of traditional mathematics education and a well-written exposition of a progressive alternative, then I encourage you to read *Mathematics Miseducation: The Case Against a Tired Tradition* by Derek Stolp. It can be found under ISBN #: 1-57886-226-4 or at QA11.2.S86 2005.

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