PCSM NEWSLETTER

Leaders in Mathematics Education **May 2006**

PENNSYLVANIA COUNCIL OF SUPERVISORS OF MATHEMATICS

PRESIDENT'S MESSAGE

From the President

- Mary Foley

The robins have returned to northeastern Pennsylvania and the PSSA tests are completed and hopefully passed, so it must be time to wrap things up for this school year and make preparations for the next. NCLB's deadline is 2014, so we have a challenge ahead to meet our goal. Please encourage your teachers to become involved in the many Professional Development Courses being offered this summer. The Governor's School, with Anchor-Based Mathematics Part 2 as its theme, will be held July 10 - 14 at Millersville. In addition, two-day commuter institutes are being held at various sites around the state. Check www.pctm.org as well as the PDE web site for more information.

The PCSM Annual meeting will be held at Seven Springs (outside Pittsburgh) on Thursday October 26 in conjunction with the PCTM Annual meeting. Our main speaker will be Dr. Glenda Lappan, Michigan State University, past President of NCTM and a member of the National Research Policy and Priorities Board. She is co-director of the Connected Mathematics Project at Michigan State, which is an ongoing project to implement the vision put forth in the NCTM documents through the design of a complete mathematics program for students in grades 6 through 8. We are also pleased to have on the program our own Dr. Frank Marburger, who will be sure to see that we are up to date on what is happening here in PA. Once again I encourage you to invite the Lead Teachers in your district to become members of PCSM and to join us for our annual meeting. These are the people who have the most influence on the classroom teachers and need to keep up with the latest in mathematics education. Look for more information in our Fall Newsletter.

Hope to see you all at Seven Springs! Happy Spring and enjoy your summer!

Mary Foley
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Please check the date on the mailing label of the newsletter. If the date is 2006 (06) or earlier, it is time to renew your membership. Save money by renewing for three years. If each of us signs up a new member, our membership will double!

In this Issue:

From the Editor
- Cathy Schloemer

Showery and flowery greetings! I hope that during the past several weeks you have enjoyed a spring break and have been able to return to your schools with a renewed energy for these final few weeks of teaching and learning. Summer promises many excellent opportunities for professional growth – please check out the ones listed in this letter. Also, your colleagues are working hard to put together a great joint PCSM and PCTM conference for us at Seven Springs in October. Plan now to attend, and watch for the registration form in the fall newsletter

I continue to appreciate the support of both Chris Czapleski and former editor Arlene Dowshen as I edit each newsletter. Kathy Heber's faithful updating and prompt mailing of each set of address labels also help so much to get you your newsletters in a timely fashion. With the help and support of others, this job is much less daunting!

I encourage and welcome your contributions as well. Remember, the newsletter is here for you. Please send correspondence to me at:

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Teaching Mathematics "By the Numbers"
(16 Ways to Be a Smarter Teacher)

Jerry Becker, via his email news service, shared this article by Chuck Salter (csalter@fastcompany.com). In the interest of space, I have abbreviated and summarized it here, but you can read the entire article at http://www.fastcompany.com/magazine/53/teaching.html

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Salter says that whether in a classroom, a business, or really any organization, "being an effective leader means being a good teacher." But how do we know when we are good? What is good teaching? Here, according to Salter, are the 16 essentials:

1. **It's not about you; it's about them.**

Good teachers are "guides on the side" not "sages on the stage." The question to ask is not, "What am I going to do today" but "What will my students do today?"

2. **Study your students.**

Knowing the material is not enough. You also need to know the students, and especially to recognize "where they are."

3. **Students take risks when teachers create a safe environment.**

The learning environment needs to be safe physically, emotionally, intellectually, and psychologically. Ridicule and sarcasm, for example, have no place in a safe environment. Also, can you decorate the classroom to make it more inviting? Perhaps you can hang student work on the walls. You may even need to provide food to hungry students.

4. **Great teachers exude passion as well as purpose.**

The difference between a good teacher and a great one isn't expertise. It comes down to passion. Passion for the material. Passion for teaching. If the teacher has it, the students will most likely catch it.

5. Students learn when teachers show them how much they need to learn.

Students learn best when they perceive the need to learn. As the saying goes, "When the student is ready, the teacher will appear." Sometimes teachers need to help students to become aware of what they need, for example by providing students with a pretest or questionnaire that will help them to become aware that their current level of knowledge is not adequate.

6. Keep it clear even if you can't keep it simple.

One of the chief attributes of a great teacher is the ability to break down complex ideas and make them understandable. A good teacher must be a good communicator.

7. Practice vulnerability without sacrificing credibility.

To some people, being a teacher -- or a leader -- means appearing as though you have all the answers. Any sign of vulnerability or ignorance is seen as a sign of weakness. Those people can make the worst teachers.

Sometimes the best answer a teacher can give is, "I don't know." Instead of losing credibility, she gains students' trust, and that trust is the basis of a productive relationship. Teachers do need to be knowledgeable about their subject areas, but closer student-teacher relationships are forged when the teacher can also still be a learner. No one is perfect, so it isn't honest to pretend that we are.

8. Teach from the heart.

The best teaching isn't formulaic; it's personal. Maybe, Salter says, the jazz musician Charlie Parker put it best: "If you don't live it, it won't come out of your horn."

9. Repeat the important points.

"The first time you say something, it's heard," says William H. Rastetter, who taught at MIT and Harvard before becoming CEO of Idec Pharmaceuticals Corp. "The second time, it's recognized, and the third time, it's learned."

9. Repeat the important points.

10. Good teachers ask good questions.

Effective teachers understand that learning is about exploring the unknown and that such exploration begins with questions. Not questions that are simply lectures in disguise. Not yes-or-no questions that don't spark lively discussion. But questions that open a door to deeper understanding, such as, "How does that work?" and "What does that mean?" And GM's Grates's personal favorite, "Why?" You might even ask, ""What if we did the opposite of what you're suggesting?"

11. You're not passing out information.

You're teaching people how to think. The last thing you want to do is stand up and tell people what to do. Or give them the answers that you want to hear. The best teaching leaders help people learn how to think on their own rather than telling them what to think.

Says Gene Roberts, a longtime editor at the *Philadelphia Inquirer* and the *New York Times* who now teaches journalism at the University of Maryland at College Park. "You have to know when to let go so that people don't become dependent on you."

12. Stop talking -- and start listening.

When it comes to teaching, what you do is nearly as important as what you say. One way to show that you care about the students and that you're interested in them is by listening. Allow wait time for students to think. Wait 10 seconds. Thinking occurs in the silences in our classrooms.

13. Learn what to listen for.

How do the students explain the mathematics to you? And also, what emotions are being expressed as the students learn? Where are their frustrations and what do they feel good about?

14. Let your students teach each other.

You're not the only one your students learn from. They also learn on their own and from their peers. They may work together in small groups, or one student may talk with the entire class. Also, a small group may become the experts on a given topic, and then students intermingle in groups to teach each other.

15. Avoid using the same approach for everyone.

Good teachers believe that every student can learn, but they understand that students learn differently. Some are visual. Some grasp the abstract. Some learn best by reading. So the instructor might adopt a multidimensional approach, something along these lines: Lecture for 20 minutes, then pose a multiple-choice question to the class, which is displayed on the board or on a slide. Next, ask everyone to write down an answer to the question, and then have people take turns explaining it to someone else in class. After several minutes, poll the class to find out who chose which answer. Then ask someone from each of those groups to explain their answer. Rando calls this "active lecturing."

16. Never stop teaching.

Effective teaching is about the quality of the relationship between the teacher and the student. "I try to stay away from a 9-to-5 attitude, which means that for the hour you're here, I care about you, but don't bother me afterwards," says Kaplinsky, the Juilliard professor. "One of the most important ingredients of teaching is loving it. I come from Israel, where we have a saying: 'More than the calf wants to suck its mother's milk, the mother wants to impart the milk to the calf.' "

That concludes our lesson on teaching. Any questions? Anyone? All right then. Class dismissed.

HeyMath

Is there anyone who does not know that Singapore scores at the top of the TIMSS tests for mathematics and science in grades four and eight? If you think Singapore is content with its current status, think again – Singapore wants to be better and to stay the best.

How can the very best students be better? With rote learning well in hand, the next step is to promote creativity in both teachers and students. A program with that end as a focus is HeyMath.

Thomas L. Friedman, in "Still Eating Our Lunch," explains, "HeyMath … was started four years ago in Chennai, India, by two young Indian bankers, Nirmala Sankaran and Harsh Rajan, in partnership with the Millennium Mathematics Project at Cambridge University.

"With a team of Indian, British and Chinese math and education specialists, the HeyMath group basically said to itself: If you were a parent anywhere in the world and you noticed that Singapore kids, or Indian kids or Chinese kids, were doing really well in math, wouldn't you like to see the best textbooks, teaching and assessment tools, or the lesson plans that they were using to teach fractions to fourth graders or quadratic equations to 10th graders? And wouldn't it be nice if one company then put all these best practices together with animation tools, and delivered them through the Internet so any teacher in the world could adopt or adapt them to his or her classroom? That's HeyMath."

He adds, "HeyMath's mission is to be the math Google - to establish a Web-based platform that enables every student and teacher to learn from the 'best teacher in the world' for every math concept and to also be able to benchmark themselves against their peers globally.

"The HeyMath platform also includes an online repository of questions, indexed by concept and grade, so teachers can save time in devising homework and tests. Because HeyMath material is accompanied by animated lessons that students can do on their own online, it provides for a lot of self-learning. Indeed, HeyMath, which has been adopted by 35 of Singapore's 165 schools, also provides an online tutor, based in India, to answer questions from students stuck on homework."

You can see HeyMath for yourself at www.heymath.com. It is worth a look!

(Summarized from "Still Eating Our Lunch," by Thomas L Friedman, *The New York Times*, 16 Sept. 2005)

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"Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents"

Abstract--In a longitudinal study of 140 eighth-grade students, self-discipline measured by self-report, parent report, teacher report, and monetary choice questionnaires in the fall predicted final grades, school attendance, standardized achievement-test scores, and selection into a competitive high school program the following spring. In a replication with 164 eighth graders, a behavioral delay-of-gratification task, a questionnaire on study habits, and a group-administered IQ test were added. Self-discipline measured in the fall accounted for more than twice as much variance as IQ in final grades, high school selection, school attendance, hours spent doing homework, hours spent watching television (inversely), and the time of day students began their homework. The effect of self-discipline on final grades held even when controlling for first-marking-period grades, achievement-test scores, and measured IQ...

(From a study by Angela L. Duckworth and Martin E.P. Seligman as reported in COMET 7(6), 15 Feb. 2006 (http://csmp.ucop.edu/cmp/comet/))

Technological Puzzle
Let your students solve the mystery of the "magic" (mathematical) crystal ball – it's fun!
http://trunks.secondfoundation.org/files/psychic.swf

Upcoming Conferences and Events:

Governor's Institute "Anchor-Based Mathematics, Part II"
July 10-14, 2006, Millersville University
Apply ASAP online at http://papde.ws .
Also, two-day commuter institutes will be held at various sites. For more information, contact Dr. Frank Marburger, PA DOE Director for Mathematics, at 717-772-6904 or email him at fmarburger@state.pa.us.

IAS/Park City Mathematics Institute
(Institute for Advance Study)
June 25 – July 15, 2006, Park City, Utah
Visit www.ias.edu/parkcity.

NCTM "Leadership for Leaders"
(1)July 7-9, 2006, Reno, NV (Registration deadline June 14, 2006);
(2)August 11-13, 2006, Manchester, NH (Registration deadline July 18, 2006)
For complete info, visit http://www.nctm.org/affiliates/resource/2006/leader_conf_flyer.pdf

NCTM Regional Conference
October 19-21, 2006, Atlantic City, NJ
For more information go to: www.nctm.org.

(More distant NCTM Regional Conferences coming this fall:
Chicago, Sept. 20-22
Phoenix, Oct. 5-7
See http://www.nctm.org/meetings/#regionals)

2006 China – U.S. Education Leadership Conference
June 27-30, 2006, Beijing, People's Republic of China.
Visit:www.globalinteractions.org/Leadership06/Leadership_home.htm.

International Conferences in Mathematics Education - The Mathematics Education into the 21st Century Project
Next conference: September 7-13, 2007, Charlotte, NC
Go to: http://csmp.ucop.edu/cmp/comet/2006/01_23_2006.html#B3) or contact conference coordinator Alan Rogerson at arogerson@inetia.pl

PCSM Annual Conference
October 26, 2006, Seven Springs Mountain Resort, Champion, PA
(Registration form in next newsletter)

PCTM Annual Conference
October 25-27, 2006, Seven Springs Mountain Resort, Champion, PA
For more information visit: www.pctm.org.

ELECTRONIC RESOURCES

Lower Secondary School Teaching Guide for the Japanese Course of Study: Mathematics (Grades 7-9). Read an English translation of the Japanese curriculum for grades 7-9, available at: http://www.globaledresources.com/products/gerbook_TG_LS.html

The 1989 companion text for grades 1-6 is available at

http://www.globaledresources.com/products/shoseki_book.html

T^3 Online Courses
At no cost to you, learn to teach mathematics from middle school through AP Calculus with appropriate TI technology.
http://education.ti.com/onlinecourses

Poster: "What can I do with a math degree?"

The American Mathematical Society's poster, available as a PDF in a small version, answers this often-asked question.

http://www.ams.org/employment/what-mathdegree.pdf

The Art of Asking Thought Provoking Questions in the Mathematics Classroom
This guide suggests ways to ask conceptual-level questions - including modifying traditional questions - from elementary school through high school.
http://hub.mspnet.org/index.cfm/12574

Tutorials for the Calculus Phobe
Check out these tutorials for various calculus topics!
http://www.calculus-help.com/funstuff/phobe.html