Spring 2006
Volume 15, Issue 2

Connections

AMTE
Association of Mathematics Teacher Educators

Inside this issue:

When geese fly in a V formation, they have a 71% greater flying range than when they fly alone.

President's Column

Sid Rachlin, East Carolina University

As current President of Association of Mathematics Teacher Educators, I have the opportunity to reflect on the variety of things the membership relies on each other to do to "promote the improvement of mathematics teacher education in all its aspects." I am reminded of a handout that a teacher once shared with me (though she could not recall its original source). It was titled "Lessons from Geese" and included a series of facts and lessons we can learn by observing geese.

Lessons from Geese

Fact: When a goose flaps its wings, it creates an uplift. When geese fly in a V formation, they have a 71% greater flying range than when they fly alone.

Lesson: People who share a common community and sense of direction can get here quicker because they travel on the thrust of another.

Fact: When a goose falls out of formation, it suddenly feels the drag and resistance of flying alone and usually gets back in formation to follow the new leader.

Lesson: If we stay in formation and willingly accept the help of others and give help to others who share in the goal, we can go further.

Fact: When the lead goose tires, it rotates back into the formation while another goose flies into the point position.

Lesson: It pays to take turns doing the hard tasks and sharing the leadership tasks. As geese, people are interdependent on their gifts, talents, and resources.

Fact: Geese flying in formation honk to encourage others to keep up their speed.

Lesson: We need to be sure our honking is encouraging. In groups where there is encouragement, the production is much greater. The power of encouragement to stand by one's core values is the quality of honking we seek.

Fact: If a goose gets too sick, or shot down, two geese drop out of formation to protect it. They stay with it until it dies or is able to fly again. Then they form another V or catch up with their own flock.

Lesson: If we have as much sense as geese, we'll stay by each other in difficult times, as well as when we are strong.

The 2006 AMTE Annual Conference

Each January AMTE celebrates our charge by joining together at our annual meeting. Unlike many conferences we participate in, where our attentions are drawn by the variety of hats we wear, the AMTE annual conference provides an opportunity for us to focus on our craft as a mathematics teacher educators—to examine and discuss current issues in mathematics teacher education and professional development and share related ideas and information. Each year our flock relies on members to fall from the formation and take the lead in making sure that the conference provides the maximum opportunity for our own professional growth. Our Tenth Annual Conference held in Tampa, Florida was no exception. We owe our thanks for the local logistics to our *Conference Coordinator*, Susan

(Continued on page 4.)

AMTE Business

Election Results

AMTE held its election for President-Elect this past fall, and 37% more members voted than in the previous year's election. Jennifer Bay-Williams was elected as President-elect and was installed at the Business Meeting of AMTE's Annual Conference.

Jenny Bay-Williams is an Associate Professor at Kansas State University where she teaches undergraduate and graduate courses, and coordinates mathematics and science field experiences in a nationally-recognized Professional Development Schools (PDS) program. Prior to her University experiences, she taught high school, middle school and was the elementary mathematics coordinator in Lima, Peru. She taught middle school in several districts in Missouri. Jenny received her Master's and Ph.D. degrees at the University of Missouri-Columbia and her Bachelor's at DePauw University in Indiana.

Jenny's service has focused on supporting teachers in implementing practices that enable all children to be successful in learning mathematics. She has served as PI and co-PI on six national and state-funded projects to support teachers' content and pedagogical knowledge. She has written a book on using literature in mathematics. Jenny has provided leadership through NCTM, serving as editor for three departments of *Mathematics Teaching in the Middle School*, and writing and reviewing manuscripts across the journals. She was a presenter for the *NCTM Academy for Professional Development*. Jenny served as AMTE secretary from 2001-2005. During her two terms, she chaired two task forces reviewing the ACHIEVE document titled, "Foundations for Success," and co-developed a corporate sponsorship policy. She now serves on the editorial panel for the AMTE Monograph.

Treasurer's Report

This report covers the fiscal year from July 1, 2004 to June 30, 2005 and provides additional information. From the 2005 conference in Dallas, we had a net income of $12,821. We had 375 attendees at our 2006 conference in Tampa with a record 83 graduate students. The total income for the past year was $124,642 and the total expenses were $123,470 for a net of $1,172. Since we began the fiscal year with net of $15,780, our cash position at the end of the fiscal year was $16,952. We have an additional $30,871 in reserve in a savings account. Our membership over the past year has held steady at about 850 members. The treasurer's office now sends out postcard to members to remind them to renew their membership one month before it is due to expire. Members can also find their membership expiration dates on the mailing label of this newsletter. JMTE's Volume 9 is available to AMTE members for the reduced subscription rate of $48. A subscription form is available on the AMTE web site. If you have a problem or question about your AMTE membership, please contact Treasurer Mark Klespis (klespis@shsu.edu).

Connections *is published three times a year: fall, spring, and summer. The Editorial Board will consider a wide variety of types of submssions. Regular features include essays addressing each issue's Theory and Practice question, reviews of resources for mathematics teacher educators, and news articles related to mathematics teacher education. Each submission is reviewed by the editorial board for relevance to the AMTE membership and for quality of work. Please direct all comments, questions, or submissions to the editor at lstalling@kennesaw.edu or 770-420-4477.*

***Connections* Editor, 2006-2007**

Lynn Stallings	Kennesaw State University, Georgia	lstalling@kennesaw.edu

***Connections* Editorial Board**

Laurie Cavey	James Madison University, Virginia	caveylo@jmu.edu
Teresa Gonske	Northwestern College, Minnesota	tlgonske@nwc.edu
Kathleen Lynch-Davis	Appalachian State University, North Carolina	lynchrk@appstate.edu
Troy Regis	University of Missouri-Columbia	tprb62@mizzou.edu
Tracy Rusch	Wright State University, Ohio	tracy.rusch@wright.edu

AMTE's Tenth Annual Conference

On January 27-28, 2006, AMTE hosted its Tenth Annual AMTE Conference in Tampa, FL. A total of 375 people registered for the conference.

This year, 111 sessions were held in a variety of formats; mini-sessions were conducted in one room of the ballroom while other sessions ranged in length from 30 minutes to 90 minutes. A special session focused on AMTE affiliates and was led by officers of our current affiliates who shared information with others interested in becoming AMTE-affiliated groups. In the Business Meeting two additional affiliates were chartered: the Appalachian Association of Mathematics Teacher Educators and the Georgia Association of Mathematics Teacher Educators.

We were honored to have NCTM's current president, Cathy Seeley; NCTM's president-elect, Skip Fennell; and NCSM's current president, Linda Gojak, attending and presenting at this conference.

Pre-Conference Symposium

AMTE's Tenth Annual Conference opened with a Pre-Conference Symposium titled *New Directions and Focus for Standards, Curricula, and Assessments*, which included speakers representing several related projects initiated by either the NCTM or The College Board.

Skip Fennell reported on the Curriculum Focal Points Task Force chaired by Jane F. Schielack and charged to develop a document that will identify a small set of curriculum focal points per grade.

Rose Mary Zbiek discussed NCTM's Essential Understandings for Teaching and Learning Mathematics project that will produce 16 to 20 books addressing topics in mathematics that are critical to the mathematical development of students, that often beome barriers to student understanding, and that may be difficult to teach.

Cathy Seeley described a project by the College Board/Mathematical Association of America Committee on Mutual Concerns in which the mathematics needed for college success is backward mapped from grade 12 to 6. Their goal is a more systematic, rigorous, and seamless 6-12 curriculum that is accessible to a broader range of students.

Judith E. Jacobs Lecture

Judith Sowder of San Diego State University was invited to give the 2006 Judith E. Jacobs Lecture in recognition of her contributions to our profession. During this 'lecture,' Judy emphasized the importance of approaching word problems with quantitative reasoning by engaging the audience in solving several problems via a quantitative approach.

This strategy entails first identifying all quantities that are involved in the problem and then thinking about the associated measures. The lesson for students (and educators) is that it can be much more productive to think about the quantities ***first*** and ***then*** 'the numbers'**.** This approach is contrary to the one many students tend to employ, that of immediately jumping to the numbers without actually thinking about what those numbers mean. Several video clips demonstrated how effective such a strategy can be. Watch http://www.amte.net for slides from this session.

Winner of Award for Excellence in Teaching

Congratulations to Randy Philipp of San Diego State University who is the first recipient of AMTE's Award for Excellence in Teaching in Mathematics Teacher Education! Randy gave an invited talk in which he discussed his philosophy of teaching and development as a teacher. He organized his talk around three primary aspects of a teaching philosophy: views of mathematics and mathematics learning, caring, and focus on student thinking. Even after receiving such a high honor for teaching, Randy impressed and inspired his audience by discussing his plans for continued growth as a teacher.

Closing Session

In the closing session, Glenda Lappan, Bill Speer, and Tami Martin presented *NCTM's Standards for the Mathematics Teaching Profession Then and Now: The History, Landscape, and Content of a Living Document*.The session informed members about the revision of the *Professional Standards for Teaching Mathematics* (PSTM) (1991).

Glenda Lappan began the session by discussing the history of PSTM. Next, Tami Martin discussed the purpose of the revision of the PSTM, which is to reflect the six principles, the new content and process standards, as well as the new grade-band structure in the *Principles and Standards for School Mathematics* (2000). In addition, the PSTM revision updates the text and examples and provides an executive summary to support NCTM's political action in this area. The revised PSTM will be released at the 2007 NCTM Annual Meeting in Atlanta.

Congratulations to Randy Philipp of San Diego State University who is the first recipient of AMTE's Award for Excellence in Teaching in Mathematics Teacher Education!

President's Column *(Continued from page 1.)*

At the close of the annual meeting you could begin to observe the movement in the geese as some members moved forward to assume to assume new leadership roles and others returned to the formation with our grateful thanks.

Gay, University of Kansas and to our *Local Arrangements Committee Co-Chairs* Helen Gerretson, University of South Florida, and Enrique Ortiz, University of Central Florida with committee support provided by the Florida Association of Mathematics Teacher Educators. At the core of the meeting was a program that set the bar for future meetings. The lead for this effort was provided by the *2006 Program Committee Chair*, Gladis Kersaint, University of South Florida with critical supporting roles provided by the committee membership: Charlene Beckmann, Grand Valley State University; Sandi Cooper, Texas Tech University; Allen Davis, Eastern Illinois University; Juli Dixon, University of Central Florida; Betz Frederick, Grand Canyon University; Mike Gilbert, Eastern Washington University; Jean Marie Grant, Bradley University; Suzanne Harper, Miami University; Cindy Henning, Columbus State University; Bob Horton, Clemson University; W. Gary Martin, Auburn University; Amy Roth McDuffie, Washington State University-Tri-Cities; Sherry Meier, Illinois State University; Judy O'Neal, North Georgia College and State University; Dana Pomykal Franz, Mississippi State University; Connie Schrock, Emporia State University; Sheryl Stump, Ball State University; Dorothy White, University of Georgia; and Greisy Winicki-Landman, California State Polytechnic University-Pomona (see page 3).

AMTE Leadership Changes

At the close of the annual meeting you could begin to observe the movement in the geese as some members moved forward to assume to assume new leadership roles and others returned to the formation with our grateful thanks. As AMTE welcomed Jenny Bay-Williams, Kansas State University to the role of President-Elect, we acknowledged with gratitude, the role of that Karen Karp, University of Louisville played over the last four years. During her terms as President-Elect, President and Past-President she guided the association through a period of national recognition, firmly establishing and extending the opportunity for members to share information through our newsletters and our website and extending these opportunities through the AMTE monograph series and the AMTE contribution to the CITE Journal.

AMTE Task Force Changes

I would also like to take this opportunity to note that two AMTE Task Forces have completed their charge and disbanded with our thanks. The *Doctoral Programs Task Force;* under the direction of Robert Reys, University of Missouri; was established to gather common information from institutions of higher education related to their doctoral programs in mathematics education. You have only to visit the AMTE website to realize the success of this effort. While Bob has agreed to continue overseeing the monitoring and maintenance of the AMTE doctoral programs link, the committee has completed its charge and deserves our thanks. They include Sandra Cooper, Texas Tech University; Tim Craine, Central Connecticut State University; Alfinio Flores, Arizona State University; Susan Gay, University of Kansas; Doug Owens, Ohio State University; Barbara Pence, San Jose State University and Bill Speer, University of Nevada-Las Vegas.

The second AMTE Task Force that completed its charge this year was the *Professional Teaching Standards Task Force*. This team including Susan Gay, University of Kansas; Kathleen Lynch-Davis, Appalachian State University; Kathy Morris, Sonoma State University; Lynn Stallings, Kennesaw State University; and Jenny Bay-Williams, Kansas State University was asked to review and react to the initial draft of the *NCTM Professional Teaching Standards*. They provided detailed feedback to the NCTM author team chaired by Tami Martin, Illinois State University (see page 3).

AMTE Committee Changes

Committee Members are generally appointed to two-year terms. I take this opportunity to acknowledge the willingness of the following individuals to offer their time and efforts in support of our organization: *Technology Committee* (Joe Garofalo, University of Virginia; David Pugalee, University of North Carolina-Charlotte; and Shannon Driskell, University of Dayton), *Membership Committee* (Damon Bahr, Utah Valley State College; Fran Arbaugh, University of Missouri; and Victoria Bill, University of Pittsburgh), *Organization Connections Committee* (Clara Nosegbe, Georgia State University), *Constitution and By-laws Committee* (Bill Speer, University of Nevada-Las Vegas, Chair), *Nominations and Elections Committee* (Denise Mewborn, University of Georgia, Chair; Blake Peterson, Brigham Young University; DeAnn Huinker, University of Wisconsin-Milwaukee; and Dave Coffey, Grand Valley State University) and *(Continued on page 6.)*

AMTE Mathematics Teacher Education Award 2006:

Award for Excellence in Service in Mathematics Teacher Education

Description of Award

The Board of Directors of the Association of Mathematics Teacher Educators (AMTE) has established an award to recognize Excellence in Mathematics Teacher Education, to be awarded annually to a mathematics teacher educator of national recognition at the Annual Meeting of the AMTE. The purpose of this award is to recognize excellence in each area of mathematics teacher education (teaching, service, research). Areas of focus for the award will rotate each year. Awards will be rotated between Excellence in Teaching Mathematics Teacher Education, Excellence in Service to Mathematics Teacher Education, and Excellence in Scholarship in Mathematics Teacher Education. In 2006, the award will be in recognition of **Excellence in Service to Mathematics Teacher Education**.

Criteria

The nominee should be an active member of the mathematics teacher education community and have at least five years of commitment to mathematics teacher education. She/he should have made unique contributions to the field of mathematics teacher education. Unique contributions should be considered in the broadest sense possible.

The nominee for the award for excellence in service should have made a significant and lasting contribution to mathematics teacher education, directly and indirectly. The nominee shall have demonstrated commitment to mathematics teacher education through one or more of the following areas:

a. Active participation in advancing the development and improvement of mathematics teacher education (e.g., membership and leadership roles in state, national, and international organizations).
b. Active promotion and participation in activities promoting quality mathematics teacher education (e.g., creator of programs, coordinator of programs, writing and participating in grants, conferences, symposia, academies).
c. Active participation in the governmental and political areas to promote and protect beneficial legislation, to promote better awareness, and/or to build better communication.
d. Active promotion and participation in school-university-community-government partnerships that have advanced mathematics teacher education (local, state, national level).
e. An unusual commitment to the support of mathematics teachers in the field (such as distinctive mentoring experiences).

Nomination Process

AMTE members may nominate a mathematics teacher educator who meets the criteria above. Self-nominations will not be considered. Nomination materials must include the following documentation:

a. A current vita of the nominee.
b. A letter of nomination documenting the nominee's eligibility for the award.
c. Letters of support for the nomination from individuals knowledgeable of the nominee's contributions relative to one or more of the criteria stated above.

The committee will review applications via a secure online website. Therefore, applicants are encouraged to submit all application materials electronically. If applicants wish to include large documents in hard-copy form, those should be limited to no more than 50 pages in length. Applicants may submit DVDs, CDs, or videotapes, but each clip submitted should be no more than 20 minutes long, in order to facilitate downloading. Please be sure that all items in the nomination materials are clearly labeled with the name of the nominee in the file name. If you have any questions about the submission process, please contact Nadine Bezuk, AMTE Executive Director, nbezuk@mail.sdsu.edu.

Deadline for Nomination

Nominations, including all required materials, must be submitted by June 15, 2006.

The decision will be made by December 1, announced to the Board of Directors, and communicated to the award recipient so that the person can have time to make arrangements to attend the AMTE meeting in January. The winner will be recognized at the 2007 AMTE Annual Conference in Irvine, California, January 25 - 27, 2007, where they will make a featured presentation. The winner also will be recognized on the AMTE website and in AMTE *Connections*.

The nominee for the award for excellence in service should have made a significant and lasting contribution to mathematics teacher education, directly and indirectly.

President's Column *(Continued from page 4.)*

Awards Committee (Beatriz D'Ambrosio, Indiana University-Purdue University, Chair and Jeffrey Wanko, Miami University-Ohio). In the next newsletter, I will recognize those volunteers who have been approved by the AMTE Board to fill these roles for the next two years.

Before leaving this section I want to make special note of the efforts of two committees—the *Awards Committee* and the *Technology Committee*. The Awards Committee under the direction of Beatriz D'Ambrosio, Indiana University-Purdue University was charged with the challenge of reviewing the supporting documentation for nominees for the first AMTE Award for Excellence in Teaching in Mathematics Teacher Education. From a collection of exemplary candidates, the committee unanimously recognized Randy Philipp, San Diego State University for this honor. While I am aware of the difficulty the committee must have had in completing their analysis, I was honored to have been at the award ceremony at the 2006 Annual Meeting in which Randy discussed his philosophy of teaching. I cannot imagine a more appropriate recipient (see page 3).

The efforts of the *Technology Committee* also deserve special recognition. Over the last three years, the committee, under the guidance of Maggie Niess, Oregon State University, has moved the association forward in our vision that mathematics teacher preparation programs must ensure that all mathematics teachers and teacher candidates have opportunities to acquire the knowledge and experiences needed to incorporate technology in the context of teaching and learning mathematics. These efforts have resulted in the official AMTE Position on Preparing Teachers to Use Technology to Enhance the Learning of Mathematics, approved by AMTE Board, January 2006.

AMTE is an association of mathematics teacher educators. The strength of our organization rests in its membership and the lessons we learn from geese.

- While all mathematics teacher educators are flapping as fast as they can to keep up with their busy personal and professional lives, by joining together as an association, AMTE members move towards our goal more quickly because we travel on the thrust of another. If we stay in formation and willingly accept the help of others and give help to others who share in the goal, we can travel farther.
- It pays to take turns doing the hard tasks and sharing the leadership tasks. As geese, people are interdependent on their gifts, talents, and resources.
- We need to be sure our honking is encouraging. In groups where there is encouragement, the production is much greater. The power of encouragement to stand by one's core values is the quality of honking we seek.
- If we have as much sense as geese, we'll stay by each other in difficult times, as well as when we are strong.

AMTE Events at the 2006 NCTM Annual Conference in St. Louis

AMTE Reception and Meeting
Thursday, April 27, 2006
6:00 - 8:00 PM
at the Renaissance Grand Hotel
in Landmark 1-3.
All members and interested persons are invited to attend.

AMTE Special Interest Meeting at NCSM
Wednesday, April 26, 2006
2:15 - 3:30 PM
The America's Center, Room F
(located on Level One, just inside the Washington Avenue entrance)
All members and interested persons are invited to attend.

Call for Manuscripts for the October 2007 Focus Issue of Teaching Children Mathematics*:*

Finding What Works: When Practice and Research Meet

To improve the teaching of mathematics, we must begin with questions that arise in our own classrooms, with our own students.

Have you been engaged in this kind of inquiry in pre-K-6 classrooms? If so, then the Editorial Panel of Teaching Children Mathematics would like to invite you to share some of your ideas and experiences. We would be particularly interested in hearing about how you collaborated with classroom teachers in their process of learning how to implement research-based methods related to

- calculators/technology,
- manipulatives,
- cooperative learning,
- instructional grouping,
- teaching via problem solving,
- implementing an integrated mathematics program,
- incorporating new assessment strategies,
- or other strategies/tools that support implementation of the NCTM *Principles and Standards for School Mathematics*.

Manuscripts should tell the story from beginning to end including:

- the research-based methods you have implemented in classrooms,
- how this specific research became of interest,
- the process of implementation and refinement,
- and the impact of this experience on teaching and learning in classrooms.

Manuscripts should be no longer than ten double-spaced pages with figures and photographs included at the end. Send six copies of the completed manuscripts to *Teaching Children Mathematics* [TCM], 1906 Association Drive, Reston, VA 20191-1502, by July 1, 2006. On a cover page, please state clearly that the manuscript is being submitted for the October 2007 TCM focus issue on Finding What Works. Author identification should appear only on the cover page. For manuscript preparation guidelines, visit http://my.nctm.org/eresources/submission_tcm.asp.

MET Gift to AMTE

The Mathematics Education Trust (MET) of the National Council of Teachers of Mathematics (NCTM) has received a generous contribution from the estate of Raymond H. Schulz, Jr. Mr. Schulz was a former high school mathematics teacher, then a mathematician for several federal agencies. He was very proud that several of his articles were printed in the *Mathematics Teacher.* He was also very interested in mathematics education and libraries. In order to utilize this generous contribution in a manner that honors both of his interests, MET donated copies of the two-volume NCTM publication, *A History of School Mathematics* for placement in the libraries of colleges and universities that offer teacher preparation programs in mathematics.

AMTE members who were also members of NCTM were able to request those volumes for placement in either the library of the mathematics education department or the main university library of their campuses. Each volume has a bookplate that reads: "Donated by the Raymond H. Schulz, Jr. Fund of the Mathematics Education Trust of the National Council of Teachers of Mathematics, Reston, Virginia." AMTE thanks Mr. Schulz and the MET for this generous gift.

Welcome to AMTE's newest two affiliates!

Appalachian Association of Mathematics Teacher Educators
Georgia Association of Mathematics Teacher Educators

Theory & Practice Question:

Challenging Preservice Teacher Expectations for Their Students

Are we making progress in ensuring preservice teachers see all students as capable learners and doers of mathematics? Especially students who historically have not been expected to succeed? How are we preparing preservice teachers to change these patterns of failure? What successes can we document? What issues persist despite our efforts? What specific strategies have we found to be useful for addressing them?

Response by Kathy Morris, Sonoma State University, morrisk@sonoma.edu

Imagine the absurdity: while dining out, most of the women and many of the men at the table glance at the menu and glibly announce: "Oh, I can't read this. I'm awful at reading! I can't even read my mail when it comes in." It sounds too ridiculous to believe. And yet, especially as mathematics teacher educators (MTEs), we routinely observe analogous situations when our tablemates glance at the bill: "Oh, I can't figure this out. I'm awful at math. I can't even balance my checkbook." What seems outlandish in the realm of literacy is positively mundane when we're talking about mathematics. Think about the dichotomy. Americans with low literacy skills go to extraordinary lengths to hide their struggles while math inabilities and phobias are worn like badges of honor. What a powerful testament to the tacit approval our society grants *fashionable innumeracy*.

The nascent ideas cultivated in the methods class are fragile, and the dominant cultural script provides an ever-present and compelling counterargument.

In raising this issue, I don't presume to have any answers when it comes to effecting widespread societal change; but I do have questions because I think this pervasive "wink and nod" towards innumeracy has significant and unexamined implications for our work as MTEs. I believe it presents unforeseen challenges to teachers who, though successful in math content and methods classes, are ill-prepared to disrupt this troubling cultural stance in their classrooms and school communities. Thus fashionable innumeracy also presents an invisible yet formidable obstacle to achieving the vision and principles for school mathematics set forth by NCTM in the *Principles and Standards for School Mathematics*, especially in the area of equity.

As MTEs, we observe fashionable innumeracy every day. The semester starts and, at least in my methods classes, many prospective elementary and special education teachers enter tittering that they can't even balance their checkbooks, whispering that they hated, feared, and/or never understood math in school. They know they will teach math — a critical subject in their students' future. While they're anxious to learn teaching practices that will help their students succeed in math in ways they never did, they confide that they have worried about this requirement more than any other. I'm not surprised. As products and members of a society that tacitly accepts innumeracy, they are (sometimes legitimately) anxious about their own efficacy as math teachers.

As MTEs we have long recognized the role we can play in helping our students transform their own views of and dispositions toward mathematics content, teaching, and learning. Trusting that all children can be learners and doers of mathematics, we seek to imbue our students with our beliefs. Prospective teachers want to believe that all students in their care will succeed. They want to believe that by learning the practices I advocate, they will make a difference — especially for groups who historically have not excelled in school mathematics. Thus, throughout the methods course, they willingly suspend the cultural script that tells them not everyone will, can, or even needs to succeed in math. They accept the "countercultural" assertions undergirding my class because they want what I say to be true — that all children can learn mathematics when we teach for understanding and that they can learn to teach that way.

But the nascent ideas cultivated in the methods class are fragile, and the dominant cultural script provides an ever-present and compelling counterargument. In the real world, society remains untroubled by declarations of innumeracy and math phobia. For many of the children, parents, and administrators with whom they'll work, innumeracy will be fashionable. Have we adequately prepared them for this reality? When we dare to admit it, we know that even teachers we have personally prepared are not teaching in the ways we are advocating in our classes. They fall back on more traditional practices, and in so doing, replicate the status quo. As a community of MTEs, we routinely attend big issues that we believe are central to effecting change. For example, we help teachers avoid using curricula in ways that treat mathematics as merely facts and formulas to be memorized and regurgitated, and we problematize policies such as high-stakes testing, tracking, and using mathematics as a gate-keeping subject.

But what about far subtler elements of practice that I conjecture may be impeding our progress toward the goal of *mathematics for all*. How can

Theory & Practice Question:

Challenging Preservice Teacher Expectations for Their Students

MTEs help our students understand the impact of apparently innocent actions? A 4th grade teacher tells her students, "Oh, I know how hard this is for you. I still struggle with fractions." A 6th grade teacher nods understandingly when a parent says, "My daughter's just like me. I was never good at math either." While superficially supportive of student learning, these acts effectively reify children's emergent notions that despite what anyone says, you don't really need to be good at math to be a caring and successful adult — to be a role model.

I wish there were an easy fix — a way to inoculate prospective teachers against the tacit approval of fashionable innumeracy. But there isn't. So I strive to help my students *understand* what is problematic about society's approval; I strive to help them become *sensitized* enough to be able to recognize it in their own lives and their own classrooms. But then what? Put simply, the heightened awareness, knowledge, pedagogies, and dispositions students gain in our content and methods courses are necessary but insufficient. And I find myself left with lingering questions. What do we want them to *do* with that understanding? And what is reasonable for us to presume they could do as beginning teachers? What are the tools they will need to not only recognize and critique the status quo, but to disrupt it? What tools do they need to maintain and strengthen their own resolve once they leave our classes and reenter a world where role models profess their innumeracy? What tools do they need to maintain their perspectives in the face of public policies that seem to undermine teaching mathematics for understanding? Just what can our prospective teachers do to transform the dominant stance so that innumeracy and math phobia become as culturally unacceptable as illiteracy? And perhaps, more to the point, what can we, as a community of mathematics teacher educators, do to disrupt our cultural complacency and make possible our vision of mathematics for all?

Response by Troy P. Regis, University of Missouri-Columbia, tprb62@mizzou.edu

How do we make preservice teachers see all students as capable when many teacher education programs do not allow enough experience teaching students of different grade levels, and more importantly, a variety of learning and ability levels? As a teacher I did not believe all students were capable until I had gained some years of experience with several classes of students. I taught eight years at multiple grade levels 4th through 8th grades. The two school districts I was employed in both had low-socioeconomic, diverse populations. However, I can honestly say I did not believe that all students were capable learners and doers of mathematics until probably my last three years of teaching. When I finally realized this, I believe my teaching advanced to a higher level. Unfortunately, we cannot afford for all teachers to spend the first five years of their careers learning students' potential for learning mathematics. Alarmingly high rates of teachers leave the profession in their first five years for many reasons, but one of the main reasons may be their frustration about effecting student learning.

The reason that my beliefs changed was a direct result of what my students were doing in my own classroom, in other classes I observed, and at the school level as a whole. My school in Phoenix was the lowest in the entire district in overall scores on the annual Stanford-9 and Arizona's AIMS test, as well as the lowest in each of the third through eighth grades. Test scores were typically below the 20th percentile when I was hired as a 6th grade teacher and Mathematics Teacher Leader. As a result of endless hours of hard work by the entire school faculty in designing and implementing a plan for

(Continued on the next page.)

The reason that my beliefs changed was a direct result of what my students were doing in my own classroom, in classes I observed, and at the school level as a whole.

Summer Issue Theory & Practice Question:

Teacher Certification: What are the Essentials of an Effective Program?

Mathematics teacher shortages nationwide mean that mathematics teacher educators are being asked to provide nontraditional programs to prepare students for certification. What are the essential parts of preparation for initial licensure? What are the core components of successful programs? What are your recommendations for a colleague charged with developing such a program?

AMTE members are encouraged to respond to this question with an essay of 1000-1200 words. Submit your response to *Connections* Editor Lynn Stallings (lstalling@kennesaw.edu) by May 1 to ensure consideration for the summer issue.

Theory & Practice Question:

Challenging Preservice Teacher Expectations for Their Students

Response by Regis

(Continued from previous page.)

our specific school, the students began learning mathematics, doing mathematics, and successfully demonstrating their mathematics knowledge. When I left the district, the school still was not achieving at an acceptable level in the eyes of the Arizona Department of Education, but our scores were at the 50-60th percentile at all grade levels on the Stanford-9, and rising rapidly on the AIMS. It was not until this past year that the school reached the state category of "excelling." Why is this story important? Because the school is a Title I school, qualifies for a school-wide free and reduced lunch program with 75% of the population meeting the criteria, has a diverse population that is about 55% Hispanic, 30% Caucasian, 11% Native American, and 4% Black and other cultures. The qualifying English Language Learner (ELL) population is approximately 30% and about 16% of the students are eligible for Special Education services. Most of the students are those who "historically have not been expected to succeed."

How do we share the success of such a school with preservice teachers and allow them to experience the success so they will believe all students are capable of learning and doing mathematics?

How do we share the success of such a school with preservice teachers and allow them to experience the success so they will believe all students are capable of learning and doing mathematics? My first reaction is that it does not happen overnight, in a semester, or probably in an entire school year. I am still amazed at the progress we made over the six years I was teaching in the school. It took me almost three of those years to fully believe it was possible myself! Documentation is very important, but this is a difficult task for many reasons. Teachers at my former school cannot pinpoint exactly what has helped the students learn most effectively and achieve success in mathematics. We created several programs, but because we implemented many new programs concurrently, while adding new ones periodically, we were unable to document exactly which programs were considered best practice and helped produce mathematically literate students. Because of this, the teachers and students continue to juggle the many programs each year and attempting to fight the one persistent issue that never seems to go away, mobility. The school continues to work toward remaining at an excelling level, but battles the number of students who show up late for the start of the school year by three or four weeks, leave for extended winter or spring breaks, move to avoid rent but return two months later, possibly not having attended school during the absence, and other issues such as tardiness. Mobility is not going away, especially in large urban and inner city districts.

Successful schools need to share their wealth of success with the teaching world. This documentation needs to come from research projects, publications in practitioner journals, video of effective teaching, and distribution of all these mediums. I believe a large percent of teachers are not reading professional journals on a regular basis. Universities and teacher preparation programs need to get involved in identifying and partnering with these districts where quality teaching and successful schools are making progress with students typically regarded as incapable learners of mathematics. If preservice teachers are exposed to these districts, they can begin to see and believe that all students are capable of learning mathematics. Whether their experiences will support their beliefs, or cause them to question them, preservice teachers will be given an opportunity to begin to develop beliefs more conducive to teaching all students effectively.

AMTE's 2007 Annual Conference

AMTE's Eleventh Annual Conference will be held in Irvine, California on January 25-27, 2007. The host hotel will be Hyatt Regency Irvine, 17900 Jamboree Boulevard, Irvine, California 92614 (http://irvine.hyatt.com/).

Call for Proposals for AMTE 2007

The Call for Proposals is currently posted at http://www.amte.net. Session formats will include Thematic Presentations (60 minutes), Symposium or Working Groups (60 or 90 minutes), Individual Sessions (30 minutes), and Mini-sessions (15 minutes). Proposals should be submitted electronically by Friday, June 2, 2006.

Affiliate News:

Becoming an AMTE Affiliate

Susan Beal, University of Illinois at Chicago, sbeal@uic.edu

The Illinois Mathematics Teacher Educators (IMTE) was the first affiliate of the Association of Mathematics Teacher Educators (AMTE). The purpose of this article is to explain why and how we formed, and eventually, how we became an affiliate of AMTE. It is our hope that more affiliates will form, helping AMTE become stronger and more active locally as well as nationally.

We formed IMTE for (at least) two reasons. First, there was a need to communicate with other mathematics educators throughout the state. We educate mathematics teachers in many ways: through college courses, both undergraduate and graduate; through student teaching experiences where practicing teachers help initiate a novice teacher, not only during the student teaching experience, but through their formative years as teachers; through professional development (PD) experiences; which names just a few of the possible forms of education. How best, then, can we learn from each other and share ideas than through an organization addressing the issues of mathematics education? To this end, and about the same time, two groups were meeting to explore ways to share ideas, one in the central and southern part of the state, and the other in the northern part. The two groups came together with the help of the head of the Mathematics Initiative from the Illinois State Board of Education.

The second reason for forming IMTE. Mathematics Educators in the State of Illinois needed a voice in decisions being made in the state about the teaching and learning of mathematics. There was no ONE way to contact mathematics educators, and as a result, if mathematics educators were contacted, it was, at best, haphazard. Contributing to state decisions about mathematics teaching is an important aspect and cannot be left to chance.

We took advantage of our state council of mathematics teachers' annual conference in 2000, and called an organizational meeting of people interested in promoting quality mathematics teaching in Illinois. About fifty people attended. We discussed our needs for forming such a group, and formed a committee whose task was to write a constitution. We also planned to meet the following year to further discuss some of our concerns as well as vote on the constitution and our formation.

Another important contribution to our formation was a meeting held during early June where we were able to talk with members of the Illinois State Board of Education to discuss their concerns, as well as our concerns, about mathematics teaching and learning in the state.

We met the following October 2001, where we formally organized as IMTE. Our goal is to promote quality mathematics teacher education in Illinois in all aspects. Specifically, the purposes are to

1. Promote quality undergraduate programs in mathematics education for prospective teachers in the State of Illinois.
2. Work cooperatively with the State of Illinois agencies to enhance the mathematical, pedagogical, and clinical preparation of prospective teachers of mathematics at all levels (kindergarten through grade twenty).
3. Promote quality programs for the professional development of teachers of mathematics at all levels.
4. Facilitate communication among mathematics teacher educators and consultants at the elementary, secondary, community college, and college and university levels.

To help meet these goals, the structure of our board was an important consideration. On our board, besides the president, president-elect or past president, secretary and treasurer are two representatives from colleges/universities, one representative from a community college, one representative from state government, one representative who is a professional developer/consultant, and one representative from K-12.

Our constitution can be seen on our website: www.mste.uiuc.edu/imte. The constitution has changed over the years as our needs as an organization have evolved. It is available to you as a starting point for your constitution, if you so desire.

But why become an affiliate of AMTE? For IMTE, we felt we needed to have national recognition, and being affiliated with AMTE would be desirable in getting recognition from the state organizations. As soon as it was possible to do so, IMTE applied for AMTE affiliation. We were so honored in January, 2003. Since then we also have affiliated with ICTM, and we continue to hold our business meeting at the ICTM annual conference. We also meet for a day during the early summer to address a particular issue. The upcoming June meeting will focus on content and methods courses.

Our organization has strengthened mathematics education in the State of Illinois. It is a vehicle for discussion of issues, a way of meeting colleagues, and sharing ideas. We encourage you to do the same in your state or region.

How best, then, can we learn from each other and share ideas than through an organization addressing the issues of mathematics education?

Spreadsheets as Tools for Building Mathematical Connections

Maggie Niess, Oregon State University, niessm@onid.oregonstate.edu
Chair, AMTE Technology Committee

The International Society for Technology in Education Technology, while promoting the use of technology as an integral component or tool for learning within the context of academic subject areas such as mathematics, identified a set of Student Technology Standards (ISTE, 2000) focused on using technology as tools for learning, more specifically, using technology as productivity tools, communication tools, research tools, and problem-solving and decision-making tools. These tools are similar to construction tools such as hammers, saws, and wrenches. Construction tools are useful for making important connections among the various pieces of a particular building project. Now extend this notion to that of spreadsheets in learning mathematics. Spreadsheets offer tools for learning mathematics to support students in building mathematical understandings–helping them explore ideas more productively, communicate their understandings in a variety of formats (tables, graph, and even symbolically), analyze research data, and explore and make decisions about problem solutions. In a sense students can use spreadsheets to construct and build mathematical connections. But will their teachers know how to integrate spreadsheets in the mathematics curriculum?

In mathematics teachers typically give students problems to solve–of course real world problems are the preferred type of problems! The prevailing notion for providing these problems is that students will apply the mathematical ideas they are exploring to solve the problems and when the problem is solved, the problem finished. But spreadsheets offer an environment for challenging students to extend their explorations beyond the initial problem situation.

First consider how a spreadsheet can support students in solving this cell phone problem:

> *Juan and Sylvia each have a cell phone. They were comparing their costs to see who has the better deal. Juan's company charges 30 cents for making a call and then charges 50 cents for each minute of the call. Sylvia's company charges 30 cents per minute but charges 80 cents for making the call. How many minutes can they talk on the phone such that the charges are equal?*

This problem is typical in an algebra unit on linear functions in grades 6-8; students might be challenged to explore the intersection of the graphs of these two functions presented symbolically as functions of time (t):

$$\text{Juan}\,(t) = 30 + 50t$$
$$\text{Sylvia}\,(t) = 80 + 30t$$

Certainly graphing calculators are tools they could use to "see" the graph and switch to a tabular list of values. Yet, with the spreadsheet they are able to "see" these multiple representations concurrently and make changes in the table that are immediately displayed graphically. Figure 1 shows a progression students might use in exploring this problem. First, the table for the time values shows the times increasing by minutes. Both Juan's and Sylvia's companies are represented by formulas referring to time in minutes. Their costs are the same somewhere between 2 and 3 minutes. The second iteration shows the time beginning at 2 minutes, successively incrementing by 0.1 minute. Again in this second iteration, the intersection is graphically displayed and careful observation of the data shows that the costs are equal at 2.5 minutes. At this point, the students know the solution to the problem: Juan and Sylvia should trade off calling, and each call should last only 2.5 minutes. Each call will cost them $1.55.

This solution is just the beginning of an exploration of a system of linear functions. Challenge the students to explore changes in each of the companies.

- Juan's company wants to become more competitive. What change(s) do you recommend?
- Sylvia's company wants to increase their cost per minute. What do you recommend so that they remain competitive?

While students can make changes in the tables they created for solving this problem, these tables are somewhat limited. Now is the opportunity to create more general tables. You might think of these tables as a dynamic function machine! Figure 2 describes how the formulas for creating the table of values can be generalized so that students can explore different recommendations for the cell phone company charges. The use of the $ in the formulas is the key to creating this dynamic function machine. The formula in cell H12 is **=I10** and in cell H13 is **I5*H2*I6**. The dollar sign in **I10** indicates an "absolute reference" to the cell in row **10** and column **I**; this instruction directs the computer to always look at that cell for its value, even if that formula is copied somewhere else in the spreadsheet.

This new version of the spreadsheet provides students easy access for making changes and updating the graph. In the second version in Figure

2, the new values for a, b, c, and d makes changes in both cell phone plans. The changes allow Juan and Sylvia to talk longer and trade off calling. Juan can call Sylvia and talk for 7.5 minutes. Then it's Sylvia's turn to place the call for 7.5 minutes. Each call will call them $1.20.

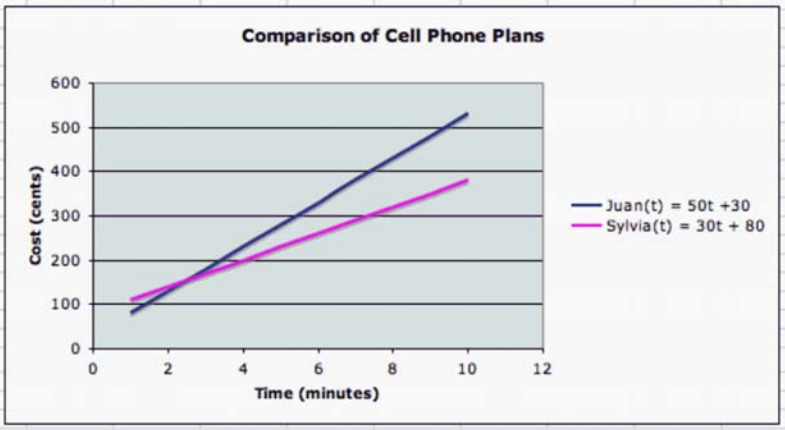
The question for mathematics teachers is whether to provide students with prepared spreadsheets or use the development of such spreadsheets as a learning tool as the mathematics unfolds. If students are simply provided the completed spreadsheet, they can explore systems of linear functions but may also be bound by the Juan and Sylvia problem solution. If students learn about spreadsheets as they learn mathematics, they may gain a new tool for exploring mathematics. This suggestion requires that teachers know how to integrate learning with spreadsheets throughout their curriculum and instruction. When will teachers learn to redesign the curriculum so that student skill with the tool of the spreadsheet is developed in a way that complements and enhances their mathematics learning? When will teachers develop their own facillity with the tool of the spreadsheet in order to achieve these ends?

Mathematics teacher educators need to respond to these questions for the multitude of the various initial teacher preparation programs and the inservice professional development programs.

(Continued on next page.)

Spreadsheets offer tools for learning mathematics to support students in building mathematical understandings.

	A	B	C	D	E	F	G	H	I	J	K
1	Juan and Sylvia and their cell phones										
3	Show both a data and graphical representation of the solution										
5	t=time	1	2	3	4	5	6	7	8	9	10
6	Juan(t) = 50t +30	80	130	180	230	280	330	380	430	480	530
7	Sylvia(t) = 30t + 80	110	140	170	200	230	260	290	320	350	380



t=time	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
Juan(t) = 50t +30	130	135	140	145	150	155	160	165	170	175
Sylvia(t) = 30t + 80	140	143	146	149	152	155	158	161	164	167

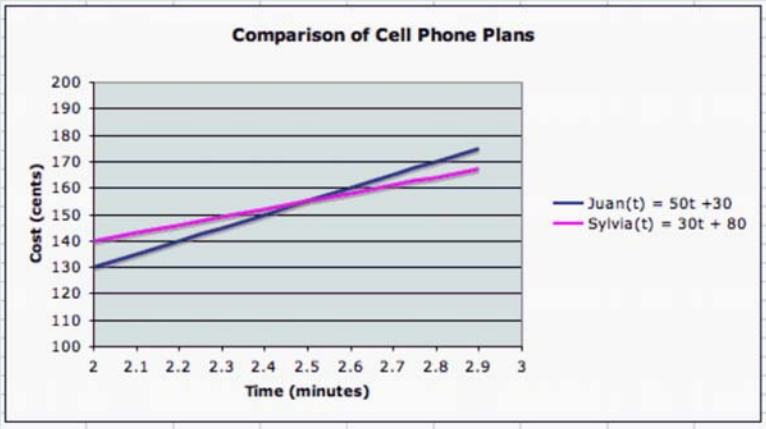


Figure 1. Iterations in search of the cell phone problem solution.

Spreadsheets as Tools for Building Mathematical Connections

(Continued from previous page.)

AMTE's Technology Committee challenges you to become engaged in a discussion about the value of integrating spreadsheets as a learning tool in the mathematics curriculum. Should mathematics teachers or curriculum developers create spreadsheets for students to use for specific topics? Should there be instruction in the mathematics methods courses to guide future teachers in developing the specialized knowledge for scaffolding spreadsheet knowledge within mathematics instruction? If not there where should mathematics teachers learn to integrate spreadsheets as tools for learning mathematics? Is the effort of integrating spreadsheets as tools for learning mathematics worth the return? Will spreadsheets use be similar to the Logo programming of the 1980s–intriguing but requiring too much of the limited and valuable instruction time? Consider using the AMTE website Forum link or submitting an essay to *Connections* to discuss ideas for preparing mathematics teachers to integrate technologies such as spreadsheets as integral tools for learning mathematics.

References

International Society for Technology in Education. (2000). *National Educational Technology Standards for Students: Connecting Curriculum and Technology*. Eugene, OR: ISTE.

AMTE's Technology Committee challenges you to become engaged in a discussion about the value of integrating spreadsheets as a learning tool in the mathematics curriculum.

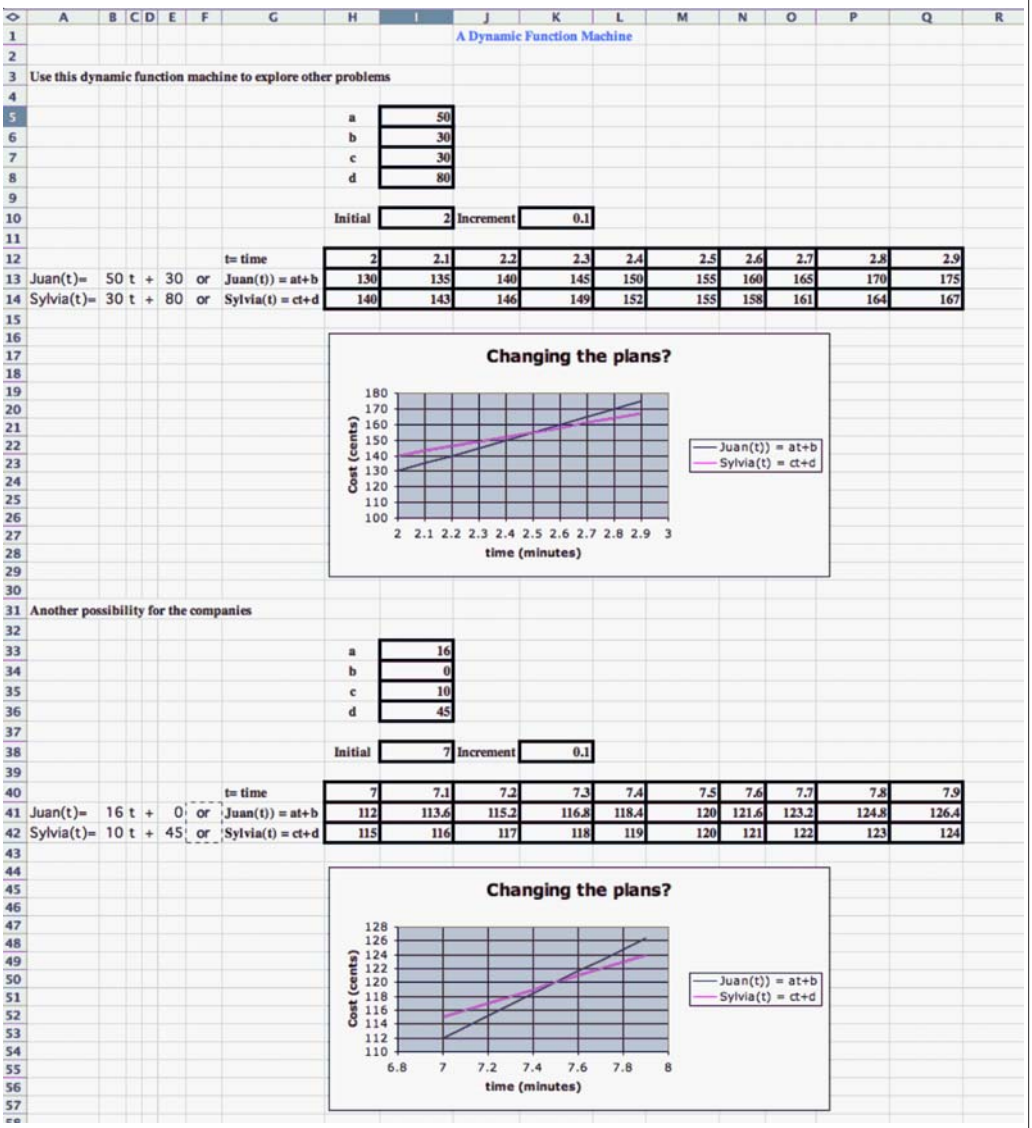


Figure 2. A dynamic linear function spreadsheet.

What Does It Take to Become A Math Teacher?

Janet H. Caldwell, Rowan University, caldwell@rowan.edu

What content requirements have been established for certification in mathematics as a consequence of NCLB? The following data were collected primarily from state's official web sites in 2005 and indicate the minimum requirements for certification. As is evident from the data, the requirements for certification vary wildly from one state to another.

In some cases, a much higher minimum requirement than that shown has been established for initial certification, but already-certified teachers may add mathematics by meeting much lower standards. In some states, such as Utah, there are two or three levels of high school mathematics certification; requirements for the lowest level were analyzed in such cases. The five-number summary listed indicates the lowest requirement, the first quartile (the score below which 25% of the states fall), the median, the third quartile, and the maximum requirement.

	High School	Middle School
Semester Hour Minimum	43 states have a clear minimum. One state has no course requirements. Mean = 28.3 hrs. Five number summary: (of semester hour minimum): 13, 24, 30, 33, 38	No middle level certification in 11 states. 44 states have a clear minimum. One has no course requirements. Mean = 23 hrs. Five number summary (of semester hour minimum): 13, 24, 30, 33, 38
PRAXIS II	Test #10061 is required in 30 states. Mean minimum score = 134. Test #20063 required in 8 states. Mean minimum score = 149. Five number summary (for minimum score): 137, 141, 144, 150, 171	One state requires test #20146 (all subjects). Test #20069 required in 26 states. Mean minimum score = 149. Five number summary (for minimum score): 139, 143, 148, 162, 163.
State's own content test	Ten states.	Eight states.
No content test	Nine states.	Eight states.
PRAXIS I	Required in 30 states. Mean minimum = 173. Five number summary (of minimum score): 169, 171, 173, 174, 178	

CITE CONTEMPORARY ISSUES IN TECHNOLOGY AND TEACHER EDUCATION

CITE's Featured Mathematics Education Article: The mathematics education article in the current issue of CITE is "Technology in Mathematics Education: Preparing Teachers for the Future" by Robert Powers and William Blubaugh of the University of Northern Colorado. Following is the abstract of their paper:

The preparation of preservice teachers to use technology is one of the most critical issues facing teacher education programs. In response to the growing need for technological literacy, the University of Northern Colorado created a second methods course, Tools and Technology of Secondary Mathematics. The goals of the course include (a) providing students with the opportunity to learn specific technological resources in mathematical contexts, (b) focusing student attention on how and when to use technology appropriately in mathematics classrooms, and (c) giving opportunities for students to apply their knowledge of technology and its uses in the teaching and learning of mathematics. Three example activities are presented to illustrate these instructional goals of the course.

CITE is an online, peer-reviewed journal, available at http://www.citejournal.org. This journal is jointly sponsored by five professional associations, including AMTE, AETS, NCSS-CUFA, CEE, and SITE. The journal's online medium also allows authors to demonstrate the technologies about which they are writing, including video and audio segments, animation, virtual reality, Web links, and simulations. The mathematics education editors of the *CITE* are Iris Johnson (johnsoid@muohio.edu) and Ginny Keen (ginny.keen@wright.edu).

Upcoming Conferences

Online at
http://www.amte.net

Membership/Renewal Forms

Position Papers

Position Listings

Resources

Forum for Members

Other Opportunities

2006

April 24-26	NCTM Research Presession	St. Louis, Missouri
April 24-26	NCSM	St. Louis, Missouri
April 26-29	NCTM	St. Louis, Missouri
June 30-July 5	ICTM	Istanbul, Turkey
July 16-21	PME30	Prague, Czech Republic
August 6-10	Joint Statistical Meetings	Seattle, Washington
August 10-12	MAA MathFest	Knoxville, Tennessee
September 20-22	NCTM Regional	Chicago, Illinois
October 5-7	NCTM Regional	Phoenix, Arizona
October 19-21	NCTM Regional	Atlantic City, New Jersey
November 9-12	PME-NA	Mérida, Yucatán

2007

January 4-7	MAA-AMS Joint Meeting	New Orleans, California
January 25-27	AMTE	Irvine, California

Association of Mathematics Teacher Educators
AMTE *Connections*
Lynn Stallings, Editor
MB #0122, Kennesaw State University
1000 Chastain Road
Kennesaw, GA 30144-5588

NON-PROFIT ORG.
U.S. POSTAGE
PAID
KENNESAW, GEORGIA
PERMIT No. 551

Reminder: The date on the label indicates the month that your membership is due to expire.