

Connections



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Association of
Mathematics Teacher
Educators
<http://www.amte.net>

President's Column

Sid Rachlin, East Carolina University

It is hard to believe that three years have passed since I became married to the role of serving as President of the Association of Mathematics Teacher Educators. As with any good marriage, the foundation is *four somethings*.

Something Old...

The honeymoon period (serving as President Elect) has come and gone. During that period I observed with awe how masterfully Karen Karp defined the role of AMTE President. I learned quickly that the success of the organization through my term as President rested on the willingness of the AMTE members to support the goals of the organization in ways that facilitated the opportunities for communication. In the following account, my son Jeff was just beginning second grade.

Beside Jeff's bed hung a chalkboard. If I had been a phys. ed. teacher, I probably would have placed a trampoline there, but as a math teacher a chalkboard won out. Every so often I would come into his room and write a math problem on his board. At another time, he'd come in and solve the problem. Still later, I'd stop back and check his solution. If it was correct I'd erase it and place another problem on the board. If it was incorrect I'd call him in and we'd discuss it.

On one occasion, when Jeff had just been introduced to addition with regrouping (carrying), I wrote the problem:

$$\begin{array}{r} 24 \\ +16 \\ \hline \end{array}$$

When I later returned to the room, I found Jeff's solution:

$$\begin{array}{r} 1 \\ 24 \\ +16 \\ \hline 41 \end{array}$$

After I called Jeff into the room, the following dialogue ensued.

"Jeff, I think there's an error here."

"No, there isn't Dad. Look! Four and six are ten. You put down the one and carry the one. One and two are three and one is four. The answer is 41."

"No, Jeff, I think something is wrong here."

"Look! [Jeff spoke a little louder to make his explanation clearly more acceptable.] Four and six are ten. You put down the one and carry the one. One and two are three and one is four. The answer is 41. You ask Miss Frame, she'll tell you how to do these."

As a math teacher I took this as a sign that a concrete embodiment was needed. After all, using concrete objects makes math make sense. I went and got a pack of toothpicks and a box of rubber bands and returned to sit on the floor beneath the chalkboard. Jeff had grouped by tens before and had no difficulty representing 24 as two tens and four ones and 16 as one ten and six ones. He added (combined the two piles) and got three tens and ten ones or after trading in the ten ones for one ten he had an answer of 40 with the toothpicks. At this point he looked back and forth at his pile of toothpicks and the chalkboard. Finally, he said very seriously, "That's what you get when you add toothpicks, but when you work on the board you get this answer."

To my surprise, I later learned that Jeff's response is not that unusual. A similar experience has been reported by other mathematics teacher educators. This experience serves as an important reminder. Why should children expect that what they get on the board should match what they get with objects? If we are using concrete objects to serve as a foundation for arithmetic operations, we must make sure that the procedure used with the concrete materials parallels the procedure used in the rote algorithms being taught. The multiple

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AMTE Conference Information

REGISTRATION

You may register online at <http://www.amte.net> or download a copy of the registration form from the website. If you would like a copy of the registration form mailed to you, e-mail Nadine Bezuk (nbezuk@mail.sdsu.edu).

	Registration (Postmarked by Nov. 20)	Late Registration (Postmarked by Dec. 18)
Registration and Membership Dues	\$295	\$335
Member Registration	\$250	\$290
Non-Member Registration	\$325	\$365
Full-time Graduate Student Member	\$200	\$240
Opening Session (Thursday, 1/25, 7:00-8:30 PM) Note: Dinner is on your own.	Free Preregistration is required.	N/A
Pre-conference Technology Workshop (Thursday, 1/25, 1:30-4:30 PM) <i>Note: Limited to the first 100 registrants.</i>	Free Preregistration is required.	N/A

HOTEL RESERVATION INFORMATION

To reserve your hotel room for the conference, call the phone number listed below, make your reservations online via the AMTE website, or make your reservations online via the website below. Be sure to mention the "Association of Mathematics Teacher Educators" conference when you call.

We have a block of rooms at the conference rate. Reserve by **Friday, December 29, 2006** to get the conference rate but please be aware that the conference block may be sold out by this date. It is best to reserve early.

Hyatt Regency Irvine
17900 Jamboree Road
Irvine, CA 92614, USA
949-975-1234

<http://irvine.hyatt.com/groupbooking/irvinamte2006>

Single or Double Occupancy: \$139 per night

The reservation deadline for the hotel is **Friday, December 29, 2006**. While we have a block of rooms arranged for the conference, the block may be full prior to December 29. Reservations made after the block is full or after December 29, whichever comes first, will be accepted on a space-available basis at the hotel's prevailing rate.

Remember, reservations at our group rate can be made until December 29, 2006 or until the room block is full.

Call for Manuscripts for AMTE's 2008 Monograph

In its continuing series of monographs, AMTE will be soliciting manuscripts for the 2008 monograph (volume 5 in the series) shortly after the first of the year. Check for the call for manuscripts on the AMTE website (<http://www.amte.net>). It is anticipated that manuscripts will be due June 1, 2007. The issue editors are Fran Arbaugh (University of Missouri) and P. Mark Taylor (University of Tennessee). Also, look for the 2006 monograph (volume 3) in your mailbox later this fall, edited by Kathleen Lynch-Davis (Appalachian State University) and Robin Rider (East Carolina University).

Make your plans now to attend the 2007 AMTE Annual Conference in Irvine, California on January 25-27, 2007.

AMTE PRECONFERENCE EVENTS

Several Preconference Events will be held on Thursday, January 25, 2007, at the 2007 AMTE Conference at the Hyatt Regency Irvine. Each session requires pre-registration; information is below. Please contact the organizers for more information.

Preparing Teachers to Teach Mathematics With Technology

Organizer: AMTE Technology Committee. Maggie Niess, Chair (niessm@onid.oregonstate.edu)

Workshop Leaders: Maggie Niess, Marcia Weinhold, Oscar Chavez, Christine Browning, Bob Ronau, Suzanne Harper, Shannon Driskell, David Pugalee, Joe Garofalo, Gary Martin

Time: 1:30 - 4:30 p.m.

Session limit: 100 participants.

How should teachers be prepared to teach with technology-throughout teacher education courses- in the spirit of the **AMTE's Technology Position Statement**? What effective efforts are in progress? What more should be done? What research is needed to help mathematics educators better prepare future mathematics teachers for thoughtful integration of technology into their teaching? This workshop is designed to engage participants in reviewing ideas, developing ideas, contributing to a review of the literature, and proposing a research agenda toward identifying effective teacher education courses in preparing teachers to teach mathematics using appropriate technologies as learning tools. Participants are encouraged to bring their ideas for inclusion in this workshop.

To Register: Indicate your interest on the AMTE Conference Registration Form (Registration is limited to 100 people.)

The Pedagogical Preparation of Prospective Secondary Mathematics Teachers

Organizers: Bob Ronau (bob@louisville.edu) and P. Mark Taylor (pmark@utk.edu)

Time: 1:30 – 4:30 p.m.

Session limit: 30-40 participants

The purpose of this symposium is to contribute to the field's understanding of what are commonly referred to as "methods" courses for prospective secondary mathematics teachers. What theories and principles guide the design and enactment of these courses? Presenters will offer several perspectives.

To Register: Email P. Mark Taylor (pmark@utk.edu).

NCTM's NCATE Program Reviewer Training Workshop

Organizer: Monique Lynch (mlynch@nctm.org). Sponsored by the National Council of Teachers of Mathematics

Time: 9:00 – 11:30 a.m. OR 1:30 - 4:00 p.m.

Session limit: 30 participants/session

The mathematics program review process for NCATE has undergone a complete change since the completion of spring 2004 reviews. The pilot year for the new system (2004-2005 academic year) is complete, and the new system is in place. This session is designed to prepare potential program report reviewers.

To Register: E-mail nctmncate@nctm.org and indicate whether you will attend the morning or the afternoon session on January 25. There is no charge to attend either workshop, but pre-registration is required. For more information, see <http://www.nctm.org/about/ncate/>.

The Power of Visualization Moves to a Higher Level:

Multiple Representations and Connections using the New TI-*nspire* CAS+

Organizer: Ed Laughbaum (elaughba@math.ohio-state.edu). Sponsored by Texas Instruments

Presenter: Chuck Vonder Embse, Central Michigan University

Time: 2:00 - 5:00 p.m.. Refreshments will be provided.

Session limit: 32 participants

Registration Fee: \$10

The new TI-*nspire* CAS+ is a platform that incorporates the true power of multiple representations in one affordable package. This unit will change the way you think about the power of visualization. Come and experience this new technology for yourself in this hands-on workshop.

To Register: Email Ed Laughbaum (elaughba@math.ohio-state.edu) and send the \$10 fee to Ed Laughbaum, The Ohio State University, Department of Mathematics, 231 West 18th Avenue, Columbus, OH 43210.

AMTE PRECONFERENCE EVENTS

CAMTE Presession

Organizer: Nadine Bezuk (nbezuk@mail.sdsu.edu). Sponsored by the California Association of Mathematics Teacher Educators (CAMTE), an AMTE-affiliated Group

The CAMTE Presession includes the following:

- 12:30 – 1:00 p.m. Registration
- 1:00 – 2:30 p.m. CAMTE General Session, featuring keynote address by Jack Price (see below).
- 3:00 – 4:30 p.m. Breakout Sessions: Choose between two breakout groups (see below).
- Session limits: 100 participants (keynote session); 50 participants/breakout group
- Registration Fees:** \$25 for current CAMTE members, \$40 for all other participants.
- To Register:** Contact Nadine Bezuk (nbezuk@mail.sdsu.edu) for registration form.

CAMTE General Session

Keynote Address:

Teaching and Learning Mathematics: Fifty Years in a Minefield

Speaker: Jack Price (Cal Poly Pomona)

In this General Session, speaker Jack Price will offer a memoir of fifty years of change in mathematics education and mathematics teacher education along with a vision for the future and an exploration of one person's biases.

Breakout Session 1:

Using Video Clips and Written Student Work of Children's Thinking to Motivate Prospective Elementary School Teachers to Learn Mathematics

Organizer: Lisa Clement Lamb (San Diego State)

Speakers: Lisa Clement Lamb, Randy Philipp (San Diego State)

Participants will consider the use of video and student written work artifacts of children's mathematical thinking to support the goals we hold for our mathematics and mathematics methodology courses. After briefly presenting our rationale and data supporting the use of children's mathematical thinking, the session will turn to examples of artifacts and a discussion of how instructors might use them.

Breakout Session 2:

Blending or Bending? Tackling the Challenge of Developing Blended Single Subject Mathematics Programs

Session Organizer/Moderator: Carol Fry Bohlin (Fresno)

Panelists: Jorgen Berglund (Sacramento), Scott Farrand (Chico), P. Michael Lutz (Bakersfield)

A panel of mathematics educators from universities throughout California will share how their campuses are approaching the challenge of developing and implementing blended (mathematics/education/field experience) undergraduate teacher preparation programs for Single Subject mathematics teachers. Come learn from their experiences and/or to share your own!

Invitation to Participate in a Survey Related to Mathematics Education Positions

Reys (2006) reports on the current state of open higher education positions in mathematics education. One finding of his study was the apparent disparity between the applicants' qualifications and job responsibilities. Reys suggests that job announcements be carefully worded to include exact qualifications and responsibilities. Based on this study, a research team was formed to investigate the preferences of institutions of higher education when evaluating potential candidates in mathematics education.

To evaluate the hiring preference of institutions for open positions in mathematics education, a survey aimed at tenured and tenure track faculty involved in the hiring process has been developed. From this survey the research team hopes to find common ground on what qualifications are preferred in order to provide institutions with guidance in refining doctoral programs. All mathematics education faculty who have participated in the hiring process of tenure track mathematics education faculty are invited to participate in this study. The link to this brief survey can be found at <http://web.utk.edu/~mathed>. Once on the website, click on the Math Ed Faculty Preferences Study link.

Reference

Reys, R. E. (2006). A report on jobs for doctorates in mathematics education in institutions of higher education. *Journal for Research in Mathematics Education*, 37(4), 262-269.

Upcoming AMTE Elections

This fall, AMTE will hold an election for Treasurer and a Board Member-at-Large. The ballot will be available on AMTE's website on November 1. Please see <http://www.amte.net/constitution.shtml> for the responsibilities of each office.

Candidates for Treasurer

Elizabeth Jakubowski



Professional background and accomplishments: I received my Ed.D. in Mathematics Education from the University of Georgia in 1988 and have been a member of the Mathematics Education faculty at Florida State University since 1987.

During my tenure at FSU I have served as Chair of the Department of Middle and Secondary Education and as an Associate Dean for the College of Education. I am currently the Mathematics Education program coordinator.

During my tenure at Florida State I have served as PI or Co-PI on numerous state and federal grants focusing on mathematics teacher education and teacher education in general. Within the state of Florida I annually serve as a member of teacher education program review teams. I am the current President of the Florida Association of Mathematics Teacher Educators (FAMTE) and previously served on the board of directors of FAMTE. I am a member of AERA, NCTM, FCTM, PME-NA, AMTE, and FAMTE. In 1995 I served as the President of PME-NA and organized the annual meeting. My research interests focus on the professional preparation and development of mathematics teachers and the preparation of future mathematics teacher educators.

Vision for AMTE: Every future and current mathematics teacher I work with means that I also have a potential impact on the mathematics learning of thousands of PK-16 students. The importance of what we do as mathematics teacher educators must not get lost or be ignored. Our voice is essential for the further development of mathematics education not only nationally but internationally.

AMTE provides a means to establish and maintain strong collaborative relationships among mathematics teacher educators whereby we are able to achieve common goals for the field. It is important that the organization continue its rich history of

involvement in mathematics education and provide the multiple venues (e.g., conferences, monographs, position papers) for the dissemination of the vital work we do as mathematics teacher educators. I believe we need to encourage the establishment of and support additional local MTEs in order to maximize the synergistic activities that are found in the individual states and/or regions.

W. Gary Martin

Professional background and accomplishments: I received my Ed.D. in

M a t h e m a t i c s Education from the University of Georgia in 1985. I am currently a professor in the Department of

Curriculum and Teaching at Auburn University, where I teach undergraduate and graduate mathematics education courses. I also serve as the Principal Investigator and Director of TEAM-Math (Transforming East Alabama Mathematics), an NSF-Funded Math and Science Partnership, overseeing a multi-million dollar budget. Prior to coming to Auburn, I served as the Director of Research at NCTM and directed (including managing the budget for) the project that produced *Principles and Standards for School Mathematics*. I have served as a member of a number of national committees and initiatives (such as NCTM's Standards Impact Research Group, the NAEP Interpretation Writing Group, and the Task Force on Focal Points for High School) and as co-editor of the 2007 NCTM Yearbook. I have been active in AMTE, including presenting at annual meetings, serving as the program chair for the 2004 AMTE conference, and serving as a Board Member-At-Large on AMTE's Board of Directors from 2004-2007.

Vision for AMTE: The organization's growth in membership, level of activity, and national visibility over the past years has been truly remarkable. The



This fall, AMTE members will hold elections for Treasurer and a Board Member-at-Large.

(Continued from Martin, previous page.)

key to AMTE's success has been its provision of resources and opportunities that promote the growth both of individual mathematics teacher educators and of the profession. As a member of the AMTE Board, I have been extremely pleased and proud of the organization's efforts.

However, I believe AMTE has now reached a level where more rigorous budgeting and tracking of finances will be essential to ensure the fiscal resources needed for continued growth. I would like the opportunity to use my financial and organizational skills to help develop the financial infrastructure needed for the long-term success of

AMTE. In order to maintain growth in membership, I will support existing initiatives to enhance our outreach to potential new members (e.g., through related organizations or an "Each One Reach One" campaign) and also to improve our retention of existing members through better management of the membership base (e.g., renewal and expiration notices) and continuing emphasis on the value and importance of membership in AMTE. Finally, I will support efforts to improve AMTE's financial efficiency through on-line options for membership renewal, conference registration, and other financial transactions.

Candidates for Board Member-at-Large

Thomasenia Lott Adams

Professional background and accomplishments:

I received my Ph.D. in Mathematics Education from the University of Florida and began my career in academia in the College of Education at the University of Florida in 1993. I currently hold the rank of Associate Professor in the School of Teaching & Learning where I teach undergraduate and graduate mathematics education courses. I also serve as the Director of Graduate Studies for the College of Education.



My mathematics teacher education scholarship includes presentations at national conferences (e.g., AMTE, NCTM, NCSM, SSMA, AERA, ATE), editorial activity (e.g., editorial board for the 4th AMTE monograph, charter editorial panel for NCTM's On-Math online journal, editor for "Math Roots" Department in NCTM's MTMS), publications in refereed journals (e.g., *Action in Teacher Education*, *The Reading Teacher*, *Mathematics Teacher*, *Journal of Computing in Teacher Education*), and principal investigator of funded research (e.g., *Project TALL Math: Teachers as Learners Learning Mathematics* funded by Florida State University). In addition, I have facilitated many workshops, consultations, and writings of professional development curricula for teachers of mathematics across the grade bands. Recently, I was invited to join other mathematics educators in planning a new draft of the Sunshine State Standards for mathematics for the State of Florida.

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Fran Arbaugh

Professional background and accomplishments:

Almost twenty years ago I had a pivotal experience in a professional development workshop. That experience had a profound effect on my teaching as well as on my subsequent desire to learn more about the teaching and learning of mathematics. That experience also ignited my passion for teacher education — a passion that guides both my teaching and my research. Since joining the mathematics education faculty at the University of Missouri in January 2001, I have had the opportunity to work with preservice and inservice teachers in various educational settings. I have been the PI or Co-PI on numerous projects that directly affect teachers and their knowledge development. Most recently, colleagues and I were funded by the National Science Foundation to study how students learn to be teachers in our post-baccalaureate certification/masters program for mathematics and science. We anticipate that our work in this area will inform alternative certification programs across the U.S., as well as empirically document the need for alternatively certified teachers to be competent not only in their content area, but also in teaching that content.



Vision for AMTE: AMTE provides a unique venue for our community to share empirically-based and experientially-based knowledge about effective practices of mathematics teacher education. Each year, the Annual Meeting draws hundreds of mathematics teacher educators from across the nation. In addition, AMTE has recently been

(Continued on page 15.)

*Vote online
at <http://www.amte.net>
after
November
1st.*

(Continued from page 1.)

President's Column

representations for problems must be linked within the students' minds, as well as the teacher's.

The story above illustrates that the most important charge for all of us who serve our organization (the members of the board, the chairs and members of the committees and task forces, the editors and members of the editorial boards) is to ensure and enhance the opportunities we provide our members to share our stories and experiences.

Something New . . .

One of the exciting *news* items for this year will be the movement of AMTE to an online management system. If all of our bits and bytes behave as planned, you will soon use your own personal password to

- Access downloadable versions of the AMTE monograph series
- Access current members contact information
- Keep your own contact information current
- Vote for next year's officers
- Renew your membership
- Register for the Annual Conference
- Volunteer for service to the organization

You may notice several changes to the website while this *work* is underway.

While the ability to volunteer online will be new, the need for volunteers is not. With the exception of the Annual Conference Local Support Committee (including technology support at the conference), all committee assignments are made by the beginning of March each year. One of the first challenges that Jennifer Bay-Williams will face next year, as incoming President, is to recommend to the Board the selection of volunteers for the following committees: Awards (4 new members), Constitution and By-Laws (2 new members), Membership (3 new members), Nominations and Elections (5 new members), Organization Connections Committee (5 new members), Technology (3 new members), 2008 Annual Conference Program Committee (10 new members), 2009 Annual Conference Program Chair, AMTE Monograph Series (Volumes 6-8) General Editor, and AMTE Monograph Series (Volume Six) Editorial Board (5 members). AMTE will also be electing some new officers next year including a Secretary and a Member-at-Large. See <http://www.amte.net> for additional information on those committees and the election.

Something Borrowed . . .

The following phone message made its way through the e-mail circuit a decade ago.

RING . . . RING . . . CLICK

Hello, welcome to the psychiatric hotline. If you are obsessive compulsive, please press 1 repeatedly. If you are codependent, please ask someone to press 2. If you have multiple personalities, please press 3, 4, 5 and 6. If you are paranoid delusional, we know who you are and what you want. Just stay on the line so we can trace the call. If you are schizophrenic, listen carefully and a little voice will tell you what number to press. If you are manic depressive, it doesn't matter which number you press. No one will answer.

If you are a mathematics teacher educator . . .

We borrow from each other. Our lessons are often a collection of bits and pieces of borrowed knowledge. Our research borrows and builds on the research of others. Yet in pulling our thoughts together, something new and exciting emerges. The more opportunities we have to borrow, the more options we have to craft and reshape our own understanding.

Several things that you'll notice that appear to be new in reality build on seeds planted by earlier boards. While it is always dangerous to list things for fear of leaving something out, it is also a mistake not to honor the efforts of the many members who serve our organization.

With its third volume soon to be mailed to the membership, the AMTE monograph series has been firmly established as a primary vehicle for communicating the "best practices," challenges, and aspirations of our profession. Members can now expect that each spring of an odd-numbered year there will be a call for authors to submit chapters for consideration in a monograph that covers the wide range of interests of its membership. Members can also expect that each spring of an even-numbered year, there will be a call for authors to submit chapters for consideration in a monograph on a focused topic (for example, the use of cases in mathematics teacher education).

One of the early decisions that Jennifer Bay-Williams and the Board will need to make in January will be the topic for the sixth AMTE monograph. For those of you able to join us in Irvine this January, there will be a time and location identified for you to share your proposals for topics and editors. While there, you will have an opportunity to suggest topics and appropriate editors on next year's volunteer forms.

The Teacher Education Materials Project (TE-MAT), a database for K-12 mathematics and science

One of the exiting news for this year will be the movement of AMTE to an online management system.

professional development providers, isn't new. For those of you who have not done so, I invite you to explore the resources located on TE-MAT. What is new is that AMTE has been awarded a subcontract from NSF (in collaboration with the National Science Teachers Association) to assume the continued review of professional development materials and the maintenance of the TE-MAT website. AMTE's TE-MAT Task Force will be designing procedures for the membership to participate in this review process.

These communication projects join the AMTE Annual Conference, *Connections* Newsletter, and the AMTE-supported section of the *CITE Journal* as important vehicles for fostering and enriching our own professional development.

Something Blue . . .

One of the problems with using this wedding metaphor is that rather than "til death do you part," this marriage had a planned divorce. My term as

President will end with the passing of the gavel to Jennifer Bay-Williams at the close of the annual business meeting in Irvine. While I can't say that I will feel blue at this event, I can say that I will miss the opportunity it has provided for me to interact with the members of the AMTE Board and those individuals who have served ex officio to the board (Susan Gay, Conference Coordinator; Lynn Stallings, *Connections* Newsletter Editor; Denisse Thompson, Monograph Series General Editor; Susann Mathews, NCTM Representative; and, in particular, Nadine Bezuk, Executive Director) and to meet with the presidents of other professional organizations as the AMTE representative to CBMS and to the meeting of the Presidents of the NCTM National Affiliates. I look forward to transitioning to the role of Past President and take this opportunity to thank everyone who has helped to make AMTE grow as the conduit for the professional development of mathematics teacher educators.

Guest Column

Collaboration with the National Council of Supervisors of Mathematics

by Linda Gojak, NCSM President

Last fall, I was sitting next to Sid Rachlin at the biannual meeting of the Conference Board of the Mathematical Sciences. The attendees were the presidents of all of the professional mathematics societies including several national mathematics education groups. I have worked with Sid on several projects and committees previously and there we were together once more. Throughout the meeting we talked about some of the overlapping purposes of NCSM and AMTE **and** the unique goals of each organization. We realized that collaboration and sharing information would be of interest to both organizations.

The mission of NCSM is "NCSM is an organization for leaders in mathematics education. NCSM is unique in its purpose — supporting mathematics education leadership at the school, district, college/university, state/province, and national levels. Its membership constitutes an international force, collaborating to achieve excellence in mathematics education."

NCSM envisions a cadre of well-trained, broadly informed, and perceptive leaders of mathematics education at all levels. These leaders must be empowered and held accountable for facilitating the implementation of quality mathematics education programs for all students. NCSM offers leaders in mathematics education the unique opportunity to collaborate with other leaders at all levels.

Many members of NCSM are AMTE members as well. Our website (<http://www.ncsmonline.org>) not only offers information on the current projects and initiatives, but also offers access to archived journals and newsletters at no charge. One recent addition to the website is the Kansky Report Summary Service, summaries of recent reports in mathematics education with links to the reports summarized. These are written by Bob Kansky (thus the name!). Members of AMTE may find many of these reports of great interest.

Other opportunities offered by NCSM include the Leadership Academy, based on the Professional Learning Communities model. This year's academy will be held July 19-21 in Utah. Our listserv is an open forum for discussion of issues and information on leadership in mathematics education. The listserv is located on the NCSM website under the "Get Involved" tab. Each spring NCSM's annual conference precedes the NCTM annual meeting. This year's meeting will take place in Atlanta, Georgia on March 19–21, 2007. More information on all of these initiatives can be found on the NCSM website.

We would love to have you join us in Atlanta or at other NCSM events! Find out more about NCSM on our website or contact me at lgojak@jcu.edu for more information about NCSM or how AMTE members can benefit from collaboration with NCSM.

Rewriting State Curricula

More than forty states have revised all or some of their K-12 curricula since 2000. If your state has undertaken such a revision, what was the motivation? How does your state's new curriculum differ from the previous one? What has been instructive or challenging about the revision process and the implementation of the new curricula in your state?

Response by Tom Ottinger (tpo@reinhardt.edu),
Reinhardt College, Waleska, Georgia.

Mathematics curricula in U.S. schools have been described as “a mile wide and an inch deep.” That term was particularly appropriate in Georgia several years ago. An audit of Georgia’s Quality Core Curriculum (QCC) conducted by Phi Delta Kappa in 2002 found that it would take *twenty-three* years—not twelve—to address the topics included anywhere near the level of depth necessary for real learning to take place. Although not discussed in the PDK audit, an additional problem with the QCC was that content was presented in a list of objectives. There was little indication of how these objectives related to each other, and no indication of their relative importance. As a result, for many teachers the QCC had become a checklist. Consider these QCC standards from Algebra I:

Topic: Patterns and Functions

Standard: Distinguishes between relations and functions, and identifies the domain and range.

Topic: Problem Solving, Connections

Standard: Solves problems that link concepts to one another and to practical applications using tools such as scientific or graphing calculators, computers, and manipulatives.

The Patterns and Functions standard could be taught as part of a single class period. The Problem Solving standard, on the other hand, was intended to be done throughout the entire course. Yet because that was not indicated, there were teachers who “covered” problem solving during the first week of class in order to get it over with! Most of the difficulties resulting from the checklist approach were not this extreme, but the structure of the curriculum tended to inhibit integration of concepts and skills into a meaningful whole.

It was clear that change was needed, and the state school board initiated that change.

During 2003 and 2004, teams of K-12 teachers, with input from state and national experts and consultants, created the Georgia Performance Standards (GPS), an entirely new curriculum for mathematics, English, science, and social studies.

The high school mathematics development team also included higher education faculty in both mathematics and mathematics education. Mathematics writing teams for all grade levels reviewed curricula from other states and countries (particularly Japan). They also examined the NCTM *Principles and Standards* in order to make the new curriculum compatible with the philosophy expressed in the Principles and to make the content compatible with the Standards.

The new curriculum is more focused, in that fewer topics are addressed in each grade but these topics are explored in greater depth. The extensive review and reteaching common in the previous curriculum were eliminated. Content was reorganized so that students are introduced to substantial new material at all grade levels. In fact, by the end of 8th grade, students will have completed all of what is traditionally considered first year algebra and much of what is taught in a geometry course.

The GPS includes four content strands in grades K–2: number and operations, measurement, geometry, and data analysis. Beginning in grade 3, an Algebra strand is added. Within each strand there are typically two or three broad content standards, some of which include several elements providing more specific information about the content. The NCTM Process Standards are included verbatim at every grade level and in every high school course. The intent is that these process standards guide the design and implementation of instruction for all of the content.

The performance standard format was chosen because in addition to content information, performance standards include information about the organization of the curriculum, the depth appropriate for each broad topic, and the level of expectation for student performance. Here is one of the standards from 8th grade:

M8A1. Students will use algebra to represent, analyze, and solve problems.

- Represent a given situation using algebraic expressions or equations in one variable.
- Simplify and evaluate algebraic expressions.
- Solve algebraic equations in one variable, including equations involving absolute values.
- Solve equations involving several variables for one variable in terms of the others.
- Interpret solutions in problem contexts.

The structure of this standard makes it clear that the primary focus is the use of algebra in the solution of problems, and the elements provide information about what algebraic topics are intended and how

During 2003 and 2004, teams of K-12 teachers, with input from state and national experts and consultants, created an entirely new curriculum.

they are to be used in achieving this standard. The content standards are intended to be accompanied by illustrative tasks, student work on these tasks, and teacher commentary on this work. Taken together, all of these components should make very clear what it is that students are expected to know and be able to do. Content standards are complete for all grade levels and are in the process of implementation. Tasks have been developed for most grade levels or courses, but student work and teacher commentary are still in progress.

In perhaps the most controversial decision about the new curriculum, the high school portion uses an integrated curriculum rather than the traditional Algebra I, geometry, and Algebra II. This decision was based on several observations. First, the countries which are consistently among the top performers on international mathematics assessments use an integrated curriculum. Second, curricula in grades K-8 are integrated, so continuing this approach in high school is reasonable. Third, an integrated approach allows teachers to develop mathematical concepts through problem-centered teaching.

New York, which has used an integrated curriculum in high school since the early 1970s, recently decided to adopt a high school curriculum more like the traditional courses in algebra and geometry. Part of the rationale for this change, according to New York's Mathematics Standards Committee, was that the first high school course "currently includes content from several branches of mathematics, which we have heard over and over again from teachers requires them to jump from topic to topic." To avoid that problem, the Georgia curriculum developers selected related content for each course, so that concepts of algebra and geometry could be explored concurrently rather than separately. Indeed, this connected approach is one of the advantages of curriculum integration.

The most challenging aspect of the new K-12 GPS is successful implementation, and vital to that success is teacher training. There is a year of training and familiarization with the new curriculum at each

grade level, followed by full implementation and testing the second year. The table below shows the plan for phasing in the GPS.

	<u>Training (Year I)</u>	<u>Implementation (Year II)</u>
2004-05	6 th grade	
2005-06	K, 1, 2, 7	6 th
2006-07	3, 4, 5, 8	K, 1, 2, 7
2007-08	9, 10, 11, 12	3, 4, 5, 8
2008-09		9
2009-10		10
2010-11		11
2011-12		12

If the GPS is to be implemented successfully, teachers must adopt a student-centered, activity-based approach. Although common in some Georgia classrooms, this approach is by no means universal. Changing mindsets about what effective teaching is can be very difficult, and there is concern that the training year provides insufficient preparation for this new teaching style. Further, because some content has been shifted to different grade levels, some teachers may find themselves required to teach topics for which they don't feel adequately prepared. To make the GPS work effectively, teachers will need to have continual professional development in the form of collaborative learning communities, teacher coaches, and content workshops tailored to individual needs.

The Georgia Performance Standards represent a coherent, focused, cutting-edge mathematics curriculum for a new century. The GPS embodies an approach consistent with the findings of mathematics education research and consistent with recommendations of NCTM and other professional organizations. It is based on best practices of high performing states and countries. Despite the challenges of implementation, the GPS offers the opportunity for meaningful mathematics education for all Georgia students.

References

Mathematics Standards Committee Report to the New York Board of Regents, Oct. 27, 2004. Retrieved from <http://www.regents.nysed.gov/2004Meetings/November2004/1104brd4.htm>.

In perhaps the most controversial decision about the new curriculum, the high school portion uses an integrated curriculum rather than the traditional Algebra I, geometry, and Algebra II.

Winter Issue Theory & Practice Question:

The National Mathematics Advisory Panel will report to the President of the United States in January 2007 on their recommendations, based on the best available scientific evidence, on the critical issues in our field (more at <http://www.whitehouse.gov/news/releases/2006/04/20060418-5.html>). What should be included in that report?

AMTE members are encouraged to respond to this question with an essay of 1000-1200 words. Submit your response to *Connections* Editor Lynn Stallings (l Stallings@kennesaw.edu) by January 31st to ensure consideration for the winter issue.

Syllabus Study: A Structured Look at Mathematics Methods Courses

P. Mark Taylor, University of Tennessee and Robert Ronau, University of Louisville

What activities are included in a typical mathematics methods course in the United States? What common goals do mathematics methods courses share? What are the common characteristics of mathematics methods courses in the United States? At this time, these questions have no answer. While a few attempts have been made to find out the goals that people have for methods courses (Watanabe & Yarnevich, 1999) or how they go about moving towards these goals (Harder & Talbot, 1997), the truth is that we have been operating in isolation, not knowing what our colleagues are doing, and not benefiting from each other's experiences.

The Syllabus Study

The 2004 AMTE Annual Conference included a session entitled "Syllabus Exchange" that featured a discussion among colleagues about the critical components of mathematics methods course syllabi. The attendees discussed elementary, middle, and secondary mathematics methods courses. Emerging from this session, we decided to engage in a study of methods courses with syllabi being the main source of data and members of the Association of Mathematics Teacher Educators (AMTE) as the most appropriate group to survey. We developed a description of our purpose and requested copies of their mathematics methods course syllabus. The request was distributed to the AMTE membership through the association listserv requesting electronic copies of their mathematics syllabi and sharing the five questions that we posited for the study:

1. What are the common elements of mathematics methods courses?
2. What elements might encourage the development of leadership skills?
3. What elements might lead to increased capacity or inclination to collaborate?
4. What elements contribute to a commitment to continual professional development?
5. How might these elements vary among methods courses for different grade levels?

At the time, AMTE had about 700 members. We received 67 syllabi from AMTE members representing 45 different universities and

colleges. Of the 67 syllabi examined, 65 were of sufficient readability to analyze. Of the remaining 65 syllabi, 58 contained sufficient information to be useful for this study. The remaining 58 syllabi were categorized by grade level: There were 22 elementary syllabi, of which 15 addressed grades K-6 (or some subset of this) and seven addressed grades K-8. Five of the syllabi addressed middle school, 27 addressed secondary, which included two syllabi addressing middle-secondary (3-12), and 25 addressed 7-12 (or some subset). Finally, four syllabi outlined K-12 methods.

The syllabi were given preliminary reviews to develop strategies to analyze them. Once categories were established, the syllabi were divided between the two researchers (even and odd numbers) for inventory. Once the inventory was completed, each researcher reviewed 10 randomly selected inventories of the 30 conducted by the other researcher. Any differences were discussed. If differences between reviews were determined to be significant the inventory was to be repeated. If more than 75% of the reviews needed to be repeated, another sample would be selected for a repeat verification. In fact, the reviews exhibited a high level of agreement (>90%), negating the need for additional sampling audits.

The syllabi represented institutions ranging from 1,100 students to 58,000 students. Table 1 shows institution size and highest degrees offered at the participating 45 institutions. Of the syllabi submitted, 75% were from undergraduate courses, 19% were graduate courses, and the remaining 6% were dual-credit, offered for graduate or undergraduate credit.

Number of Students	Number of Institutions	Highest Degree Granted	Number of Institutions
Less than 10,000	15	Doctoral	27
10,000-25,000	18	Masters	16
Greater than 25,000	12	Bachelors	2

Table 1: Institution Type by Size and Degrees Offered by Institutions

What are the common characteristics of mathematics methods courses in the United States? At this time, these questions have no answer.

Analyses

An abbreviated description of the two analyses is offered in this section. The 58 syllabi were first reviewed using the lens of “assignments,” within the framework of the five original questions outlined in the e-mail request to AMTE members. We used the assignments described in the syllabus to

Assessment Categories	Number of Syllabi with Category	Percent of Syllabi with Category	Median Percent Weight of Category	Average Percent Weight of Category
Participation	41	71%	10.0%	9.4%
Tests, Quizzes	41	71%	20.0%	20.7%
Case Analyses	24	41%	0.0%	7.1%
Lessons	46	79%	20.3%	23.8%
Readings, Critiques	30	52%	4.5%	7.8%
Reflections, Journals	33	57%	4.3%	9.0%
Other	53	91%	20.0%	22.3%
N =	58			100.0%

Table 2: Assessments Listed on Mathematics Methods Syllabi

determine categories of emphasis and reported grade weighting to determine degree of emphasis. We determined very few of the syllabi would address proposed questions two through four (items addressing leadership, collaboration and professionalism), and we focused on the first question, “What are the common elements of mathematics methods courses?” Examining the syllabi as a whole revealed literally dozens of different activities. As the syllabi were reviewed, some common categories of emphasis emerged. These categories were combined under subsequent review, resulting in six categories of assignment and evaluation: 1) Class Participation, 2) Tests and Quizzes, 3) Case Analyses, 4) Lessons and Lesson Planning, 5) Readings and Critiques, and 6) Reflections and Journals. An additional “other” category, was established for those assignments that were too few in number to comprise an additional category, but were not similar to one another either. A listing of the categories can be seen in Table 2.

A second review of the syllabi was conducted using the lens of the stated goals and objectives. A preliminary analysis of the syllabi was used to initiate categories of goals and objectives. Seven goal or objective categories were created using the results of this analysis and examination of the

literature. The goals all centered on developing student competence in the following seven categories: 1) Pedagogical Skill, 2) Knowledge of Content, 3) Dispositions, 4) Professionalism/Leadership, 5) Pedagogical Content Knowledge, 6) Human Development, and 7) Pedagogical Knowledge. Once these categories were established, the syllabi were then inventoried with respect to these categories and their stated goal or objectives. Many syllabi had more than one stated goal or objective that fell under one of these developed categories. Categories were counted as they occurred in goals and objectives and, as can be seen in Table 3, there is a higher category count than there are syllabi. Moreover, some goals specifically addressed more than one of these categories. In a similar manner, goal and objectives were counted in each category that they clearly addressed.

Discussion and Implications

The assumption that all of the major goals and assessments are stated on a syllabus is one that is commonly made, but some teachers have underlying goals that are woven throughout a course without ever being explicitly

written. To uncover such woven threads would require a depth of study that could only be accomplished by meticulously examining a small number of courses. Since the goal of this study was to take a look across many courses in many institutions, we must exclude such unstated or assumed goals. Another limitation of this study was the sample set of mathematics teacher educators because it was not randomized and the return rate was low. One final limitation was that syllabi were only requested from AMTE members.

This study was difficult to complete because what was valued could not be measured by merely examining the goals and objectives or the graded assignments. This was true for three reasons: the

(Continued on next page.)

Mathematics Education Positions

Searching for a mathematics education position? Does your institution have openings? Don't forget the jobs section of the AMTE website:

http://www.amte.net/job_index.shtml

The assumption that all of the major goals and assessments are stated on a syllabus is one that is commonly made, but some teachers have underlying goals that are woven throughout a course

(Continued from Taylor & Ronau, p. 13.)

syllabi contained inadequate detail to analyze fully, lacked connection between goals and objectives, and lacked alignment between goals and assignments. Syllabi that labeled and described goals and assignments in ways that connected them were rare. The instructor's intent with regards to assignments had to be interpreted by the researcher to make such connections. In addition, the sparse details regarding the goals and objectives required that researchers make assumptions about their meanings. Furthermore, the alignment between the two lenses is not a one-to-one relationship. For example, there may be one goal that is connected to multiple assignments, and multiple goals may support one assignment. Therefore, a particular focus on a syllabus may comprise only 10% of the emphasis when examining goals, but 50% of the emphasis when examining assignments. Moreover, we also found that most of the syllabi are not sufficient in detail to answer these questions and several of the syllabi contained inadequate detail to use in this study.

As a result of these difficulties, we are left with questions about the perceived purposes of syllabi and with whom are they intended to communicate. Are they meant to share purpose, goals and objectives, activities, and/or grading components? Are they addressed to students, accreditation agencies, university administrators, fellow instructors at the home institution and/or fellow

mathematics teacher educators? Syllabi may have multiple purposes and audiences, but to what extent do they communicate the actual content and intent of the course. Certainly teachers (of methods courses in this case) may close their doors and accomplish new and wonderful things in their classrooms. Unless we open these doors up for professional discussion, we develop no institutional or professional memory that can be passed along collectively to other instructors. To further enhance the profession, we suggest that syllabi for and approaches to mathematics methods classes be shared in order to support the engagement of mathematics teacher educators in a collective discussion on the content and methods of mathematics methods courses.

What were we able to discern through this analysis? The most remarkable result is the surprising level of variability between mathematics methods courses in terms of emphases on graded assignments, as well as goals and objectives across grade bands and within grade bands, which raises a few questions. Some categories are not included on a significant number of syllabi. Are these categories critical? Syllabi that are clearly different from the de-facto consensus with respect to what they chose to include or, perhaps more strikingly, what they do not include, may offer quite different experiences for their students. We do not know if their students

After a century of mathematics methods courses in their various forms and contexts, what should be common to all?

Goal or Objective Categories	Total Category Count	Syllabi with Category Count	Syllabi with Category Percent	Subset Average Category Count
Pedagogical Skill	127	37	74%	3.3
Content Knowledge	18	9	18%	2.0
Dispositions	24	18	36%	1.3
Professionalism/Leadership	45	26	52%	1.7
Pedagogical Content Knowledge	233	48	96%	4.6
Human Development	32	24	48%	1.3
Pedagogical Knowledge	68	30	60%	2.1
N=	50			

Table 3: Goals or Objectives Listed on Mathematics Methods Syllabi

(Continued from Taylor & Ronau, p. 14.)

benefit from these differences or if they miss something crucial.

On the other hand, we have learned that using the emerging framework enabled us to analyze a syllabus in ways that identify emphasized and excluded items. This framework was developed based on both the research literature related to mathematics methods courses and the analysis of the content of the syllabi that we examined. We do not claim to have established the definitive set of categories. Rather, we expect these categories to evolve over time as our culture changes our goals and research continues to inform our work. We would, however, claim that the idea of establishing such a framework and using it to examine methods courses, individually as well as collectively, is an important device for those that wish to improve the preparation of preservice teachers. Establishing a common framework offers the possibility of developing shared sets of lenses and a common language, allowing us to conduct a broad-based and open discussion about syllabi and about mathematics methods courses in general.

Next Steps

A follow-up study with a more detailed analysis of what is included in syllabi and what is not would be a logical next step. In addition to merely examining syllabi, other kinds of data need to be gathered on the intended curriculum, including surveys and

interviews of methods instructors. Given the wide variety of methods courses in existence, it would be interesting to compare different syllabi with student data.

Finally, it makes sense that our professional organizations (NCATE, NCTM, AMTE, AERA, etc.) establish a syllabus template using this kind of framework. After a century of mathematics methods courses in their various forms and contexts, what should be common to all mathematics methods courses? Should we negotiate common goals and objectives? Should there be a shared assessment scheme or shared capstone assignments? What about the elements of methods courses that do not show up on syllabi such as our instructional formats and unstated objectives? While none of these questions may ever be fully answered, based on our investigation, they do need to be addressed.

References

- Harder, V. & Talbot, L. (1997). *How are mathematics methods courses taught?* Paper presented at the Annual meeting of the Association of Mathematics Teacher Educators, Washington, DC.
- Watanabe, T. & Yarnevich, M (1999). *What really should be taught in the elementary mathematics methods course?* Paper presented at the Annual meeting of the Association of Mathematics Teacher Educators, Chicago, IL.

(Continued from Elections, Adams, p. 7)

Vision for AMTE: My vision for AMTE is aligned with the core of AMTE's mission statement: "...to promote the improvement of mathematics teacher education in all its aspects." At every level and in every area of my scholarly activities (e.g., mentoring mathematics education doctoral students - future mathematics teacher educators, teaching preservice teachers of mathematics, supporting the work of inservice teachers of mathematics, conducting research, presenting, writing, etc.) I integrate this perspective. I applaud AMTE for its success at giving a united and strong voice to mathematics teacher education. The future of mathematics teacher education will certainly be influenced by AMTE - by the high quality of its publications and conference agendas, and the on-going work of its members. As a candidate for AMTE Board Member-at-Large, I look forward to the possibility of exercising my commitment to mathematics teacher education in the context of AMTE and helping the organization expand its influence on mathematics teacher education.

(Continued from Elections, Arbaugh, p. 7)

involved in two efforts to improve communication among mathematics teacher educators: 1) the Monograph series, and 2) the launching of a department in *Teaching Children Mathematics (TCM)* dedicated to the work of mathematics teacher educators. As a member of the editorial boards of the 3rd and 4th AMTE Monographs, co-editor of the 5th AMTE Monograph, and co-editor of the "Supporting Teacher Learning" department in *TCM*, I have seen first hand the quality of our community's work as mathematics teacher educators. The AMTE Monographs and *TCM* provide much needed opportunities for mathematics teacher educators to share their work and learn from each other. The quantity and quality of manuscripts submitted to these professional publications demonstrates the community's desire to communicate, and grapple with, important issues faced by our field. I believe that AMTE must continue to work with NCTM and other organizations to generate outlets for our collective voice. As a member of the board of directors, I will assist AMTE in addressing this and other issues of importance to the membership.

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