Association of Mathematics Teacher Educators

TEN Challenges Facing the Mathematics Education Community

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Association of Mathematics Teacher Educators

About AMTE

Mission: Promote the improvement of mathematics teacher education at all stages – pre-service, induction and ongoing professional development.

Members: 1000+ individuals, 19 active state or regional affiliates.

19 years old (and counting).

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What do mathematics teacher educators do?

- Develop and implement preservice teacher preparation programs
- Support new teachers as they enter the profession
- Provide professional development to inservice teachers
- Study and refine teacher development strategies.
- Advocate for high quality teacher preparation and ongoing professional development.

About this Session

Conversation about some pressing issues/challenges related to teaching/learning mathematics.

- What's working? What needs attention?
- What are our roles (NCSM and AMTE) as national professional organizations with similar goals ?

Make your list

Identify 2-4 issues related to teaching/learning mathematics that you feel are critical to address.

- State, regional, national issues
- K-12 or K-16
- Teachers/Teaching, Curriculum, Assessment, Policy, Research, Students/Learning, ….

Issues/Challenges

- [Your ideas]
-
-
-
-

My list influenced by different viewpoints

As a mathematics teacher educator:

As a mathematics educator:

As a mathematics education researcher:

My list is NOT an ordered list.

Issues/Challenges

1. Mathematics teacher content knowledge

Too many teachers don't know the mathematics they need to know, in the way they need to know it, to help students learn.

- not a new phenomenon
- not exclusively an elementary teacher issue
- not solved by taking more advanced college coursework.

Issues/Challenges

1. Mathematics teacher content knowledge

We need to be more selective in admitting people into elementary teacher preparation programs.

We need to demand more rigorous and appropriate mathematics study of preservice elementary teachers.

We need to think about other models – elementary mathematics specialists.

Issues/Challenges

2. **Teacher understanding of student learning and effective teaching strategies (K-12 and college)**

It's not enough to know a lot of mathematics.
A good teacher must also understand how students are thinking about mathematics and how to structure instructional opportunities to support their learning.

Issues/Challenges

2. **Teacher understanding of student learning and effective teaching strategies (K-12 and college)**

Do our preparation and professional development programs have "space" for this focus?
Are we arguing hard enough for this focus?

Issues/Challenges

3. Mathematics teacher shortage continues.

There remains a shortage of people interested in and prepared to teach middle and secondary mathematics.

- *not a new phenomenon*
- *may be more "hidden" than recognized*
- *influenced by economics and perception*

Issues/Challenges

4. Teacher preparation programs.

Initial teacher preparation is not as effective as it could be.

No one model of teacher preparation is sufficient.

We need to identify what makes an effective teacher.

Who should be encouraged to teach?

- qualities, skills, knowledge, dispositions?

What constitutes strong preparation for teaching mathematics?

- program elements, formats, delivery systems?

Who should be responsible for preparation and certification of teachers?

- colleges, K-12 systems, state agencies, private sector?

Issues/Challenges

5. **Induction into the profession of teaching mathematics.**

We lose potentially good teachers because of inadequate or non-existent induction or support programs.

New teachers are expected to do the same job as veteran teachers.

Apprenticeship System

"Teaching should be open to anyone with a pulse and a college degree—and teachers should be judged after they have started their jobs, not before. That means that the profession needs … an apprenticeship system that allows candidates to be rigorously evaluated."

(Malcom Gladwell, "MOST LIKELY TO SUCCEED: *How do we hire when we can't tell who's right for the job? New Yorker*, Dec. 15, 2008)

NEW MODELS OF TEACHER INDUCTION – AN EXAMPLE

University of Missouri – Teacher Induction Program

- A school has an opening for a middle school math teacher (and the appropriate budget to hire the new teacher).
- The school releases an experienced mentor middle school math teacher (creating two openings).
- Two new middle school math teachers are hired (each at half pay); the experienced teacher is assigned as the mentor to the two new teachers for the full year (1/2 time commitment).
- The university agrees to provide a free masters degree to the two new teachers (incentive for half pay).
- The university also gets 1/2 of the experienced teacher's time for campus and school partnership work/collaboration.

Issues/Challenges

6. Evaluation of teaching effectiveness.

To what extent should teacher "effectiveness" be evaluated based on student performance on common assessments?

Issues/Challenges

7. **Student interest in and motivation to learn mathematics.**

Are students less motivated to learn mathematics than in previous generations?

Why are some students more motivated than others?

How is a strong student work ethic developed?

Issues/Challenges

8. Opportunity (to learn) gap

All students do not currently have access to high quality teaching and curriculum.

How do we change this situation?

Issues/Challenges

9. Weak Influence of educational research on practice

Not for lack of effort – There are lots of smart, dedicated researchers.

How do we prioritize and support the systematic study of new interventions and other basic and applied educational research?

We need to establish and promote communities of researchers around central research themes.

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Issues/Challenges

10. xxxxxxxxx

Other Important Issues

Candidates for #10:

- Public perception of mathematics education
  - what is important for students to learn
  - respect for teaching as a profession
  - Support for public schools
- Lack of consensus on mathematics curriculum standards
- Quality of primary instructional materials to support learning.
- Annual assessment as primary accountability vehicle.

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What is the role of AMTE and NCSM in addressing these challenges?

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[Your turn!]

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AMTE Elementary Mathematics Specialist (EMS) Initiative

With funding from **The Brookhill Foundation**, AMTE:

1. Developed standards articulating knowledge and skills needed by EMS professionals.
2. Is collaborating with other organizations to advocate for use of EMS professionals (developing joint position statement with NCTM and NCSM).
3. Is supporting state work to initiate EMS certification/endorsement (hosting conference in June 2010).

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Please join in discussing the challenges, opportunities and solutions.

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http://amte.net

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