Solving the Mathematics Teacher Shortage: Retention Strategies

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Most common number (mode) of years of service for teachers in the profession:

- **1987** - 15.2 years
- **2008?** - 1 year

- Carnegie Foundation for the Advancement of Teaching

**Why STRIDES?**
Organized by the Association of Public and Land-grant Universities (APLU)

- “a research, policy, and advocacy organization representing 230 public research universities, land-grant institutions, state university systems, and related organizations.”

As a part of its Science and Mathematics Teacher Imperative (SMTI):

- In 2008, APLU launched SMTI in response to the National Academies’ recommendation in *Rising Above the Gathering Storm* (2006) to prepare 10,000 new science and mathematics teachers each year.
39 teams across 31 states comprised of 103 universities, university systems, and community colleges; 142 K-12 schools and school districts; and several state departments of education (As of August 2016)
A design developed by the Carnegie Foundation for the Advancement of Teaching through seminal paper “Getting Ideas into Action, Building Networked Improvement Communities in Education” by Bryk, Gomez, and Grunow

MTE-Partnership decided to adopt NIC approach during Fall 2012

Networked Improvement Communities (NICs)
Collaborations of partnership teams to address specific challenges facing secondary mathematics teacher preparation using the Networked Improvement Community model.

**Research Action Clusters (RACs)**
• Developing Effective Clinical Experiences  Mentor professional development; alternative models
• Actively Learning Mathematics  Improving instruction in introductory mathematics classes
• Building Communities and Courses  Addressing specific mathematical needs of secondary teachers (cf. METII)
• Knowledge-for-Teaching-Mathematics Tasks (KTMT)  Assessing mathematical knowledge for teaching
• MATH: Marketing for Attracting Teacher Hopefuls  Moving beyond advertising

• STRIDES: Secondary Teacher Retention and Induction in Diverse Educational Settings

RACs in Progress
Surveys to Inform Interventions

- Fall 2015 & Spring 2016 - Pilot Survey
- Revision History
  - July 2016 MTEP Annual Meeting
  - Focused Group in Summer/Fall 2016
  - October 2016 California Convening
  - Small group meetings at SSMA 2017
- Updated survey released November 2016
One hundred, forty-one emerging (student teaching) or early-career (first two years) teachers serving diverse student populations with regard to socioeconomic income, race and learning need (ESL/SPED) completed an online survey in November, 2016
Quantitative Survey Results
## Participant responses to school descriptions
(n=11, 1 non respondent, more than one answer allowed)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
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<td>6th-8th</td>
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<td>Private</td>
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<td>Public</td>
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Average participant responses to "In a typical professional week, about how many hours do you spend..."
To what degree did each set of professional learning activities you participated in recently increase your enthusiasm for teaching mathematics?
### How much support do you receive from the following professional communities?

<table>
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<tr>
<th>Professional Community</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
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<tr>
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<td>3</td>
<td>1</td>
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</table>

- **I do not participate in this community.**
- **I participate in this community but get no support.**
- **I participate in this community and get moderate support.**
To what degree do you feel supported/valued by the following partners as a mathematics teacher?
In what areas do you receive support from these administrators/university partners?
To what extent do you agree with the following statement: I am generally satisfied with being a teacher at this school (n=23; 11 first time and 12 second time respondents)
If you could go back to your college days and start over again, would you become a teacher?

- Certainly would become a teacher: 7 (First Time Surveyed), 7 (Second Time Surveyed)
- Probably would become a teacher: 5 (First Time Surveyed), 3 (Second Time Surveyed)
- Unsure I would become a teacher: 2 (First Time Surveyed), 1 (Second Time Surveyed)
- Probably would not become a teacher: 0 (First Time Surveyed), 1 (Second Time Surveyed)
- Certainly would not become a teacher: 0 (First Time Surveyed), 0 (Second Time Surveyed)
How long do you plan to remain in teaching?
(n=23; 11 first time and 12 second time respondents)
Qualitative Survey Results
Please describe the most meaningful professional learning activity you participated in recently and why it was influential on your ability to facilitate student learning.

Responses fell into 4 main categories (n=54):
- Collaboration with Colleagues, Mentor Teachers
  - 23 mentions
- Conferences & Trainings
  - 22 mentions
- University Professors/Courses
  - 5 mentions
- Classroom Observations
  - 4 mentions
Please describe the most meaningful, mathematics teaching-related support that you received from an administrator and why it was meaningful for you.

Responses were personal and varied (n=50):

- No meaningful support
  - 8 mentions
- Observation & Useful Feedback
  - 8 mentions
- Affirmation
  - 4 mentions
- All other responses detailed a specific experience where advice was sought out from an administrator, curriculum director and then implemented into the classroom. Examples include behavior management, parent communication, teaching techniques, and curriculum.
Please describe the most meaningful professional community you participated in recently and why it was meaningful for you.

Responses (n=50):

- Mentor Teacher/Colleagues
  - 39 mentions
- Online PLC (Facebook, blogs, NCTM resources, webinars)
  - 5 mentions
- NOYCE
  - 3 mentions
- College Courses, Speakers/Conferences
  - 3 mentions
If I could change one thing about my job, it would be...

Responses fell into 5 main categories:

- Admin Support, Student Motivation/Behavior
  - 13 mentions
- Salary, Resources, Technology
  - 8 mentions
- Focus on Standardized Tests, Curriculum
  - 6 mentions
- Class Size
  - 6 mentions
- More Time
  - 6 mentions
Q5: If I could change one thing about my current teaching job, it would be...
Q7: Specific Online Activities include...
Q8: Recent professional learning activities that had a positive effect on facilitating student learning...
Q9: Recent professional learning activities that had a positive effect on enthusiasm for teaching mathematics...
Q10: Other Support Avenues included...
Q11: Participant’s most supportive professional communities...
93% of participants stated they somewhat or strongly agree that they are satisfied with being a teacher or a student teacher.

81% of participants stated that if they could go back and start college again, they would certainly or probably become a teacher.

Although 20% were undecided, only 1% of participants planned to leave teaching as soon as possible. 79% were either going to teach as long as possible or until they could receive retirement/benefits, or leave when a more desirable job or specific life event (e.g. parenthood, marriage) occurred.

Certain professional learning activities were very influential in increasing enthusiasm for the emerging or early-career teachers, including mentor/coach communications, professional development workshops, and collaboration with colleagues at both district and school levels.

Among on/off site support personnel, school administrators were perceived as leading the way in supporting the emerging or early-career teachers moderately or substantially.
Two Intervention Groups

Opportunities for Administrators

Professional Growth For Teachers
By July 1, 2022, ensure that at least 85% of those completing MTE-P programs and employed in partner school districts begin a third year of employment as a mathematics educator.
Potential Interventions

- Administration
  - “5-minute chats” for principals and early career teachers focused on mathematics content
    - Rapport
    - More than personal connections
  - “5-minute video content summaries” for administrators to view prior to observation
    - Key for administrators with non-math backgrounds

- Professional Development
  - (in process) Led by Lisa Amick, University of Kentucky
- MTEP Annual Conference, Denver, June 24-26
Discussion & Questions

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Number of Semesters Remaining to Complete your Teaching Certificate Program