

# Solving the Mathematics Teacher Shortage: Retention Strategies



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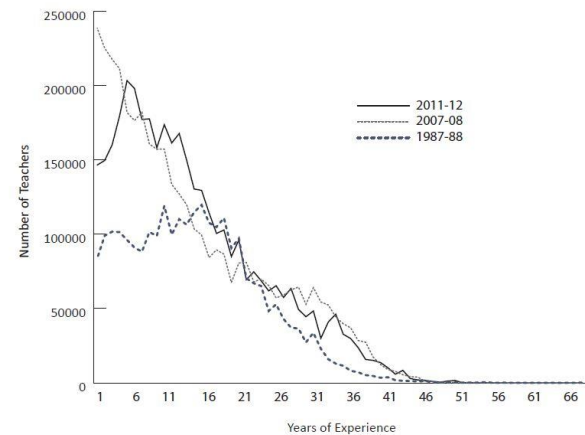
# Most common number (mode) of years of service for teachers in the profession:

- 1987 - 15.2 years
- 2008? - 1 year

— Carnegie Foundation for the Advancement of Teaching

## Why STRIDES?

Figure 6. Teaching Experience of School Teachers, 1987-88, 2007-08, and 2011-12



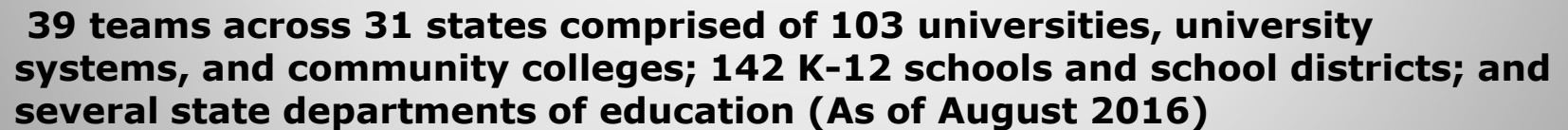
Organized by the Association of Public and Land-grant Universities (APLU)

- *"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.*

**MTE-Partnership**



# MTE-Partnership Teams

- 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



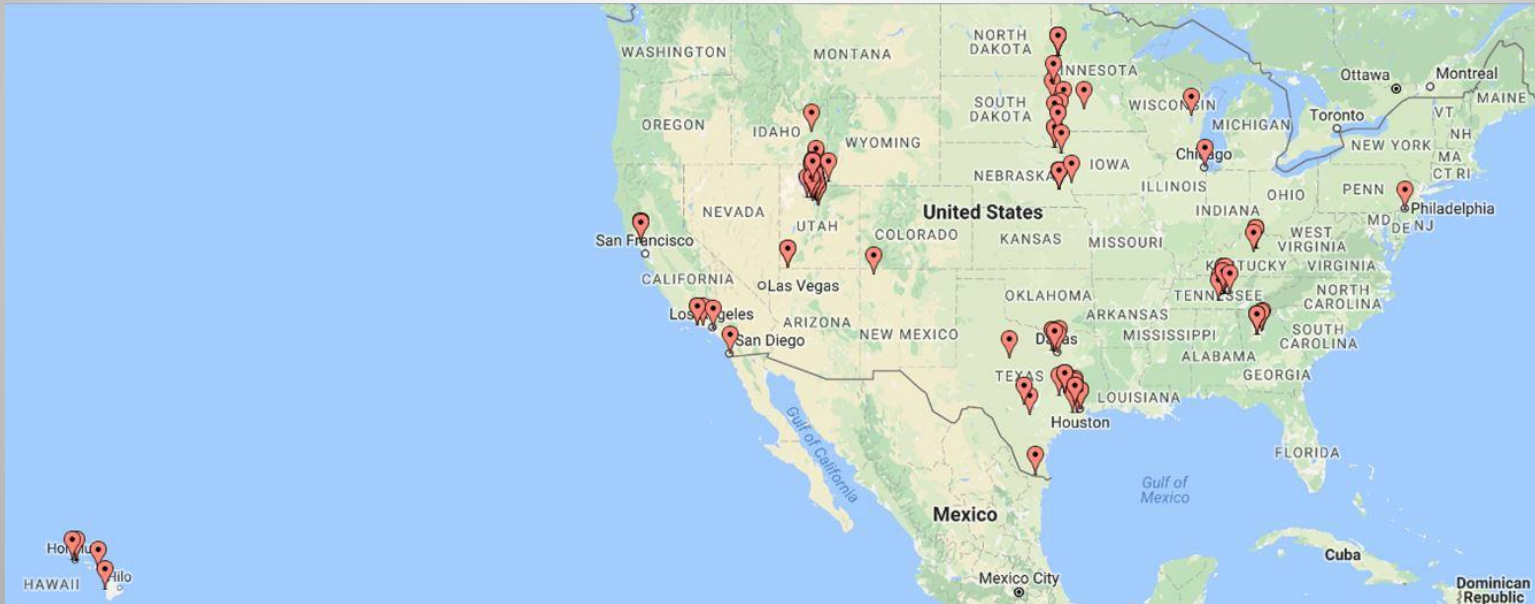
- Fall 2015 & Spring 2016 - Pilot Survey
- Revision History
  - July 2016 MTEP Annual Meeting
  - Focused Group in Summer/Fall 2016
  - October 2016 California Convening
  - Small group meetings at SSMA 2017
- Updated survey released November 2016



**Surveys to Inform Interventions**



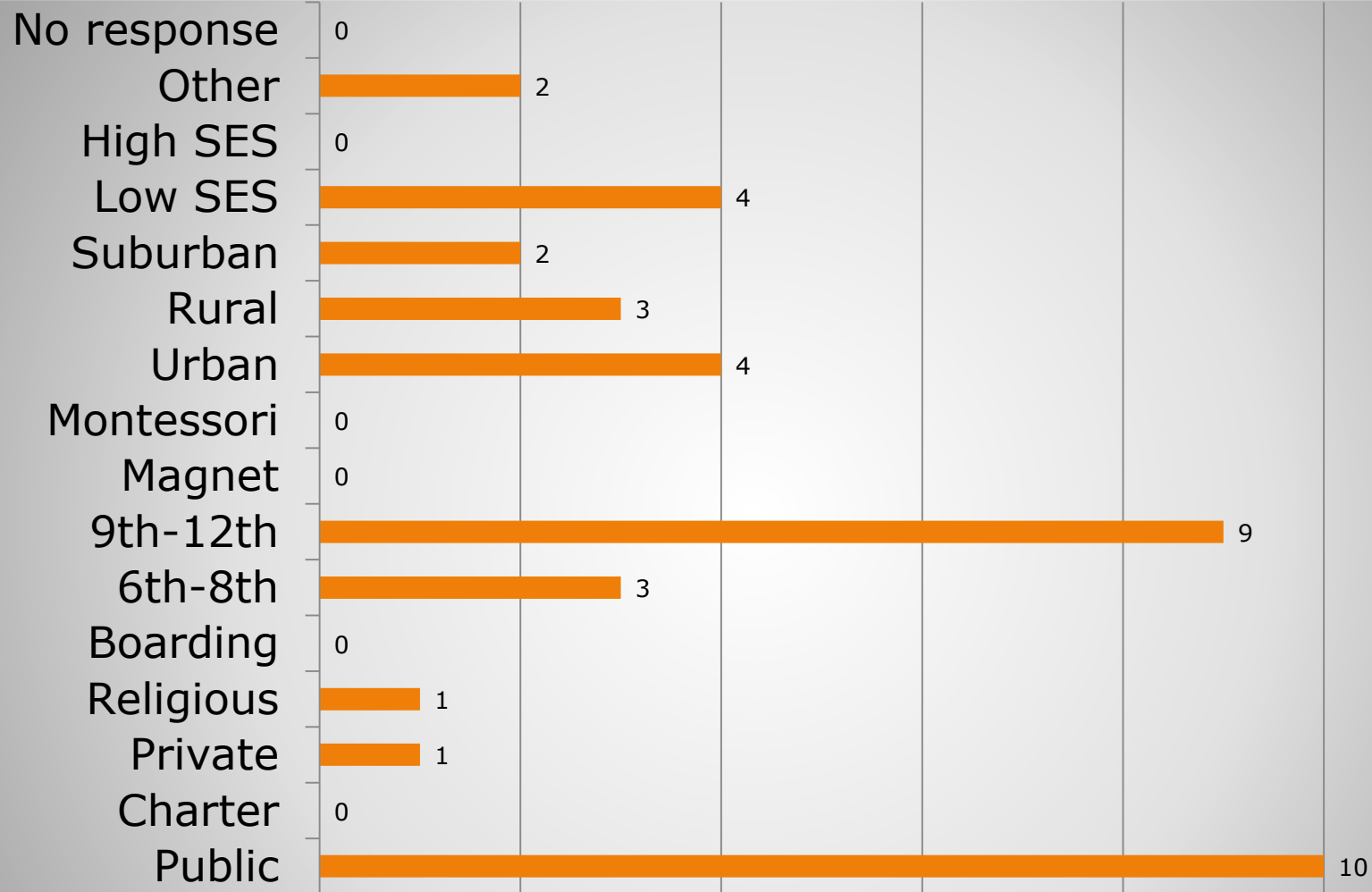
One hundred, forty-one emerging (student teaching) or early-career (first two years) teachers serving diverse student populations with regard to socioeconomic income, race and learning need (ESL/SPED) completed an online survey in November, 2016



## Participants and Locations



# Quantitative Survey Results



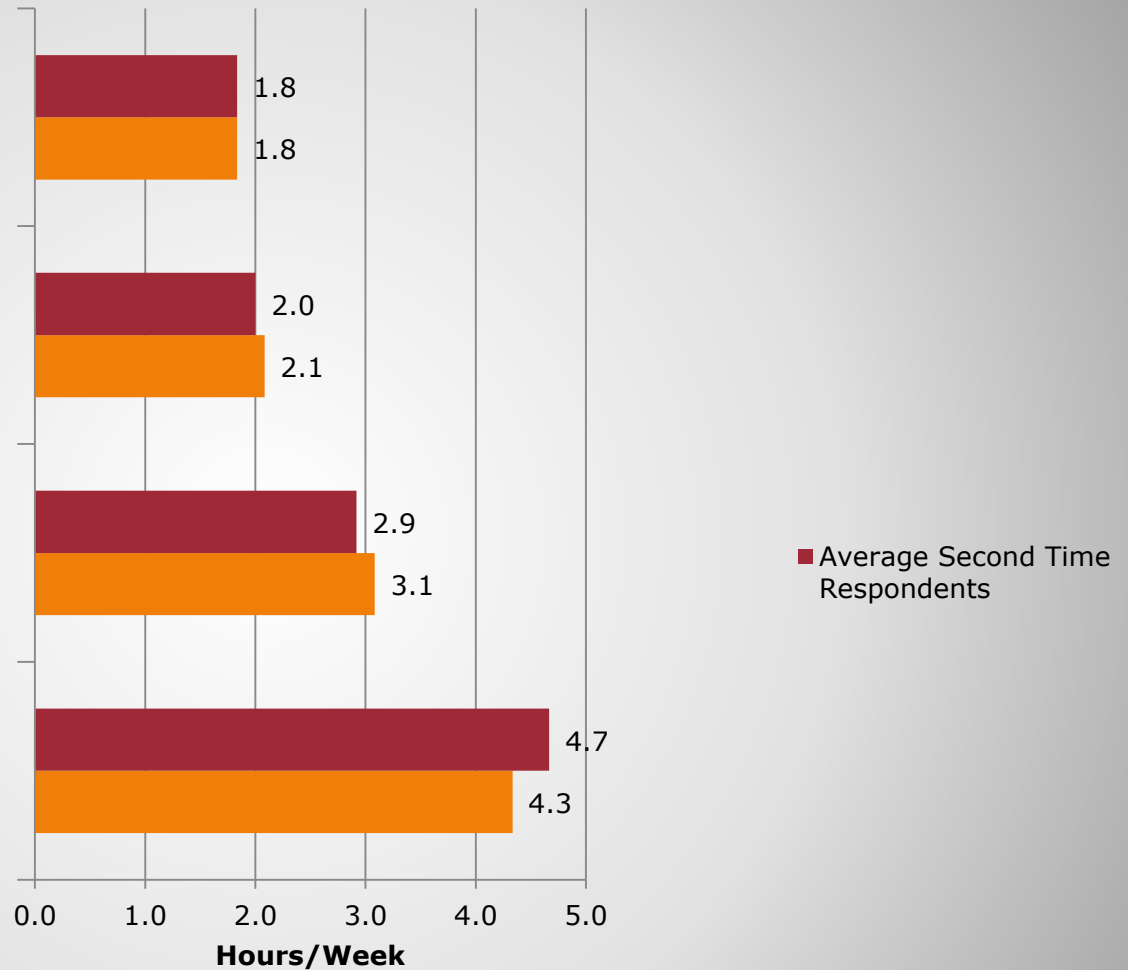
**Participant responses to school descriptions  
(n=11, 1 non respondent, more than one answer allowed)**

Engaged in  
professional learning  
separate from...

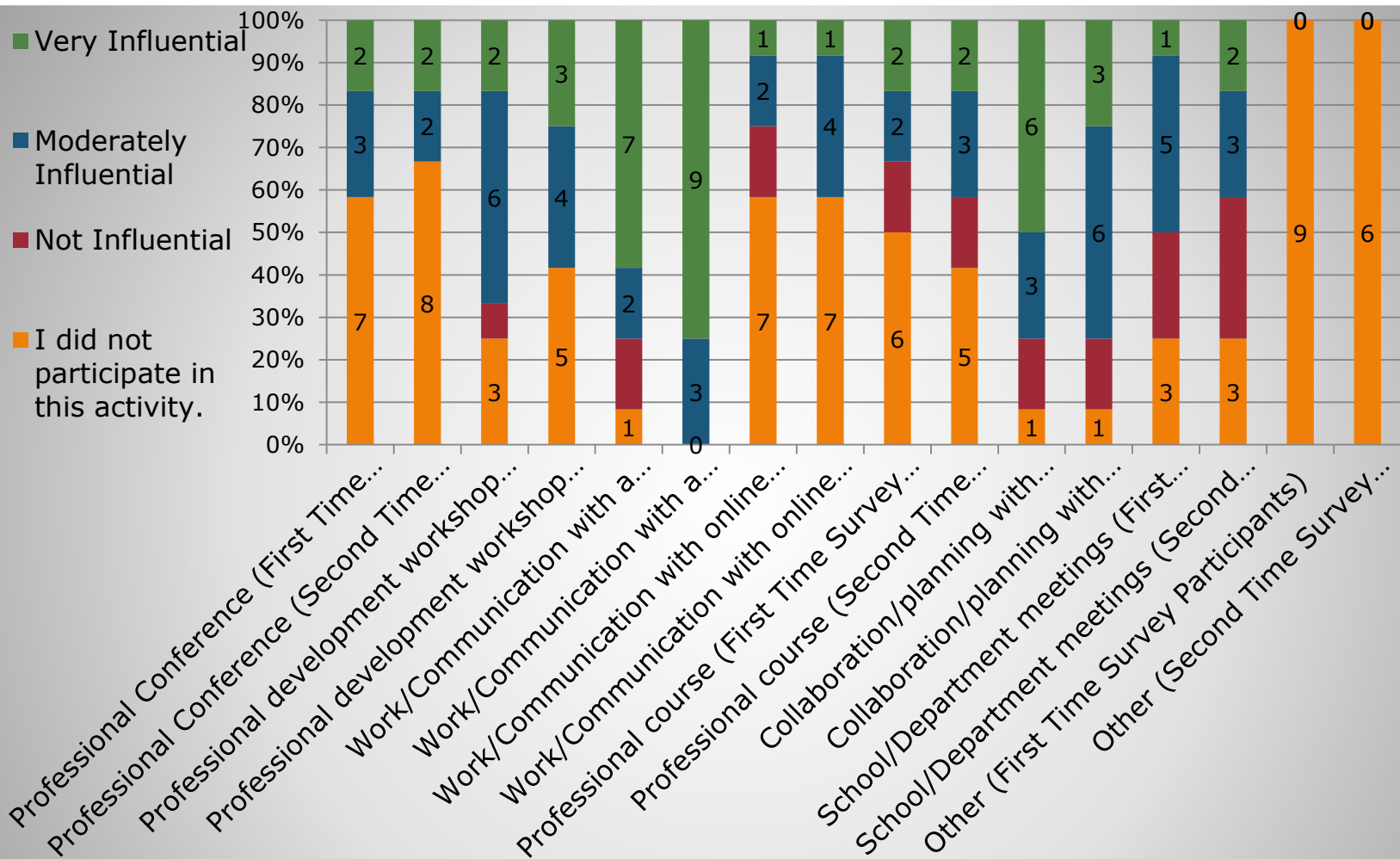
Planning with  
colleagues

Planning by myself

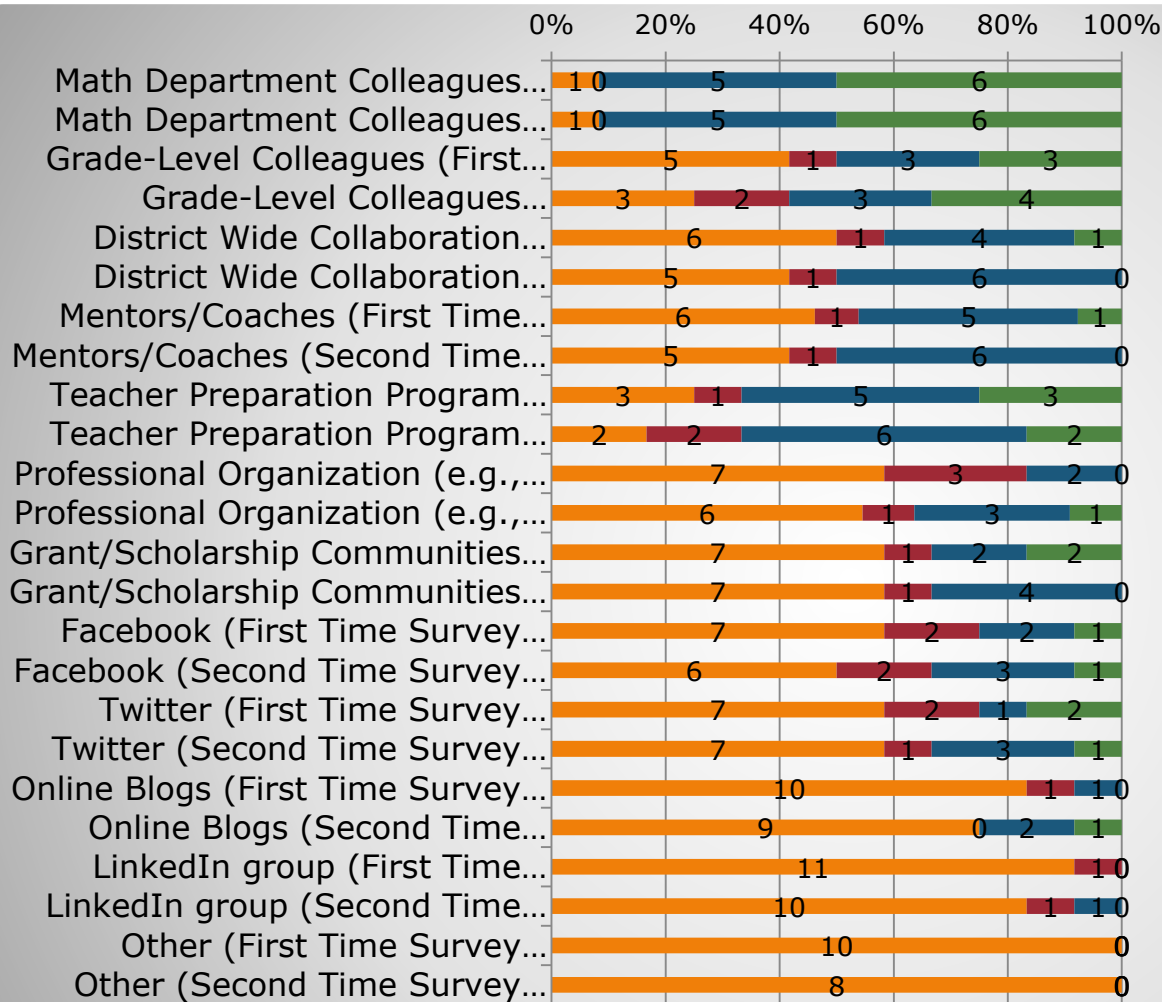
Teaching



**Average participant responses to "In a typical professional week, about how many hours do you spend..."**

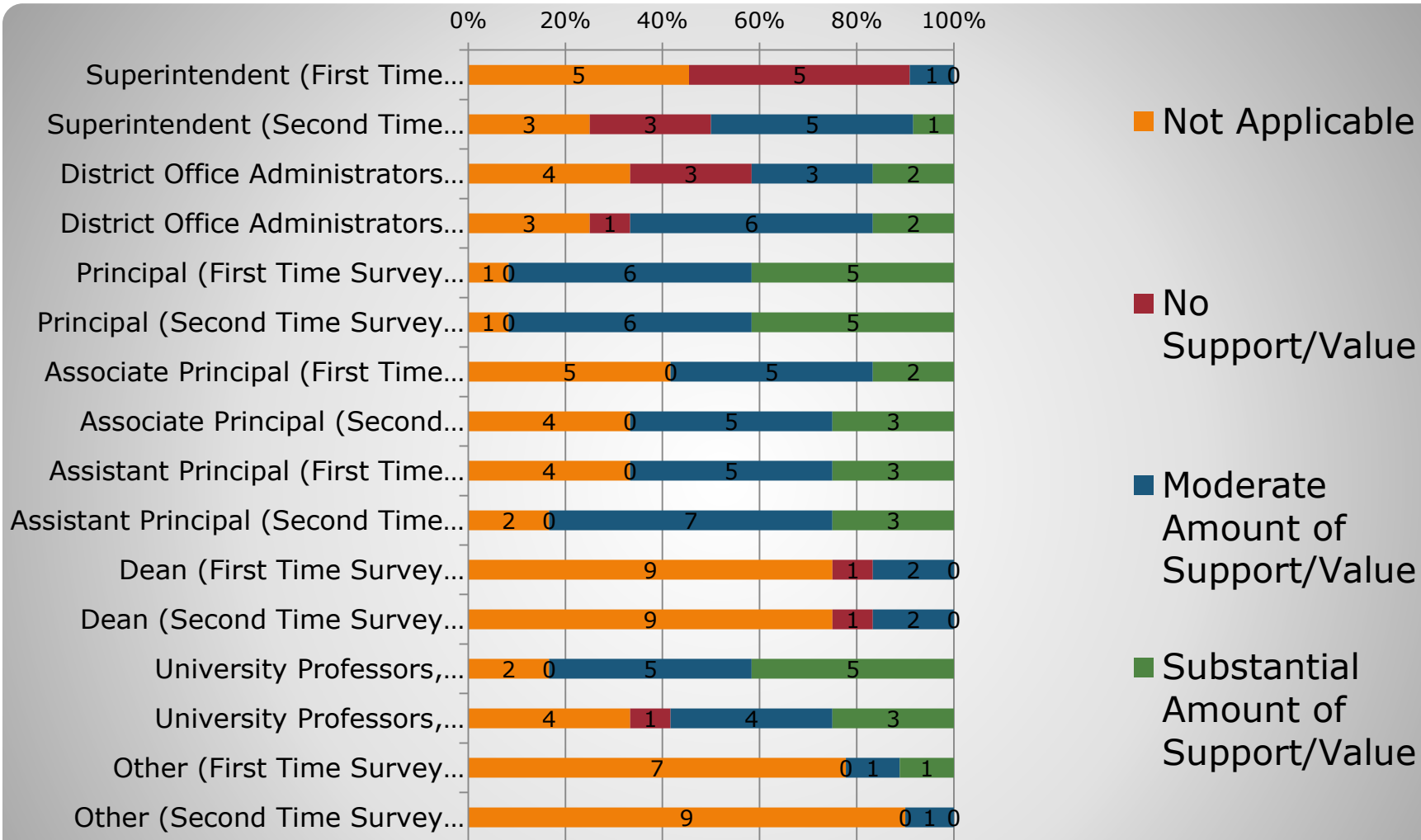


**To what degree did each set of professional learning activities you participated in recently increase your enthusiasm for teaching mathematics?**



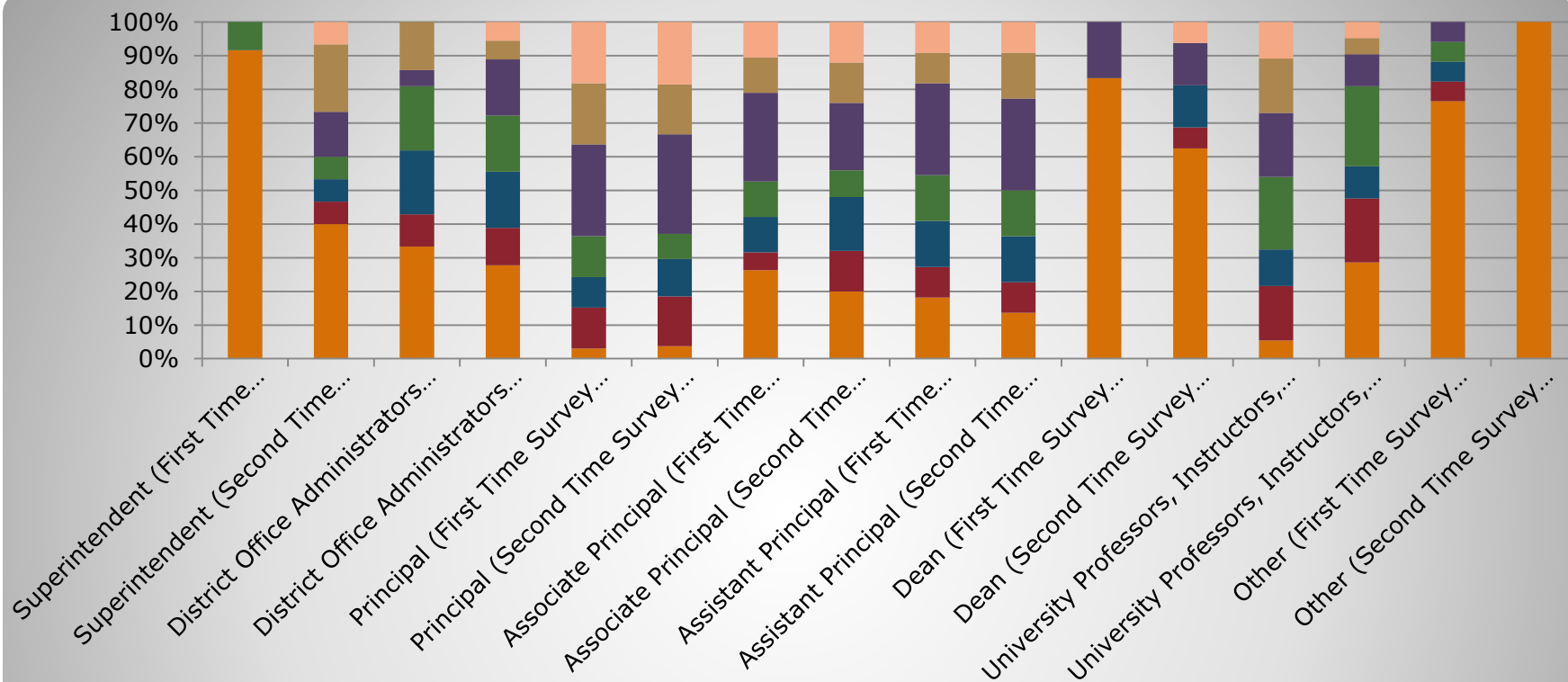
- I do not participate in this community.
- I participate in this community but get no support.
- I participate in this community and get moderate support.

**How much support do you receive from the following professional communities?**



**To what degree do you feel supported/valued by the following partners as a mathematics teacher?**





Not Applicable

Curriculum

Classroom Management

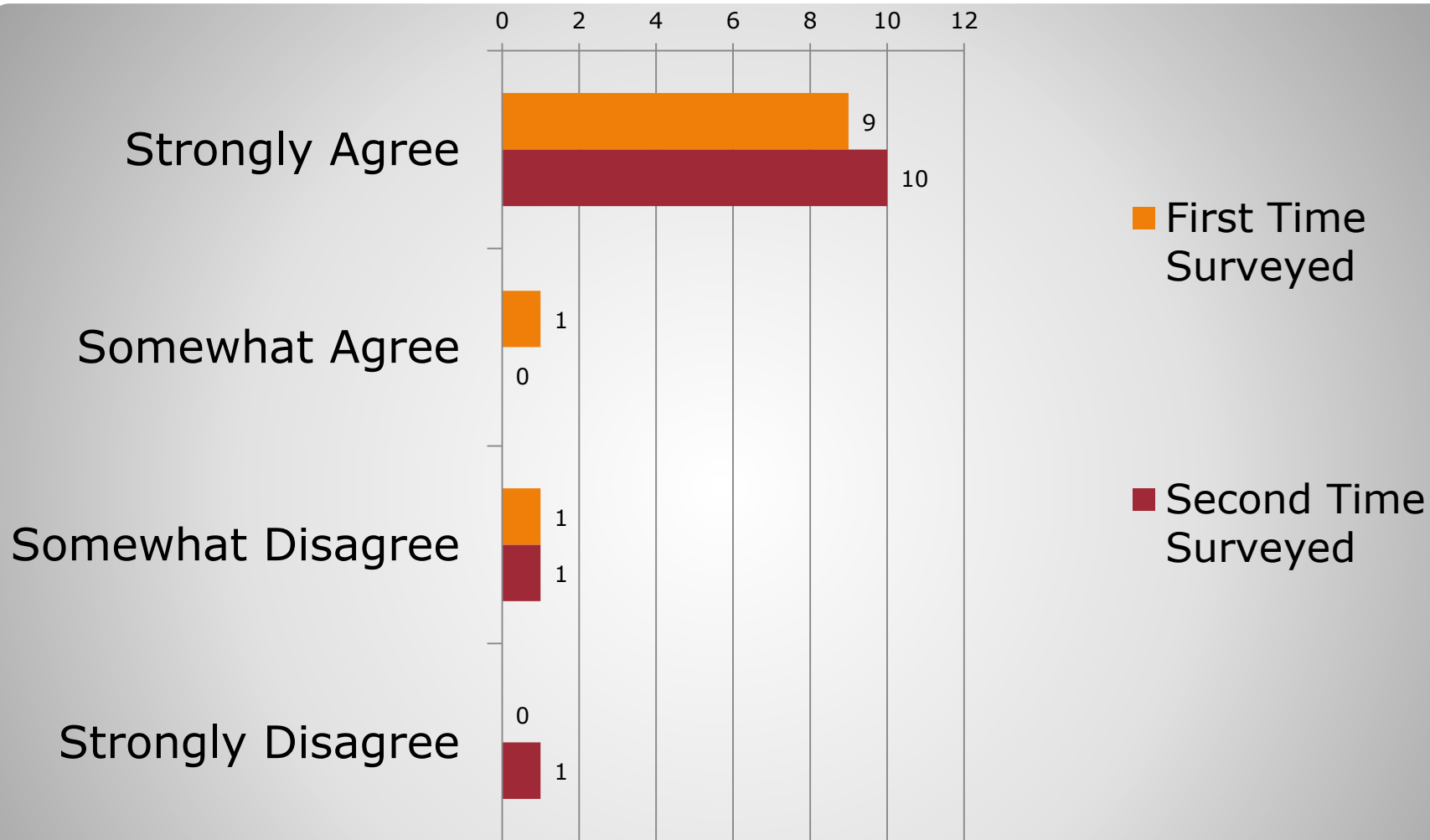
Course Assignment/Load

Assessment

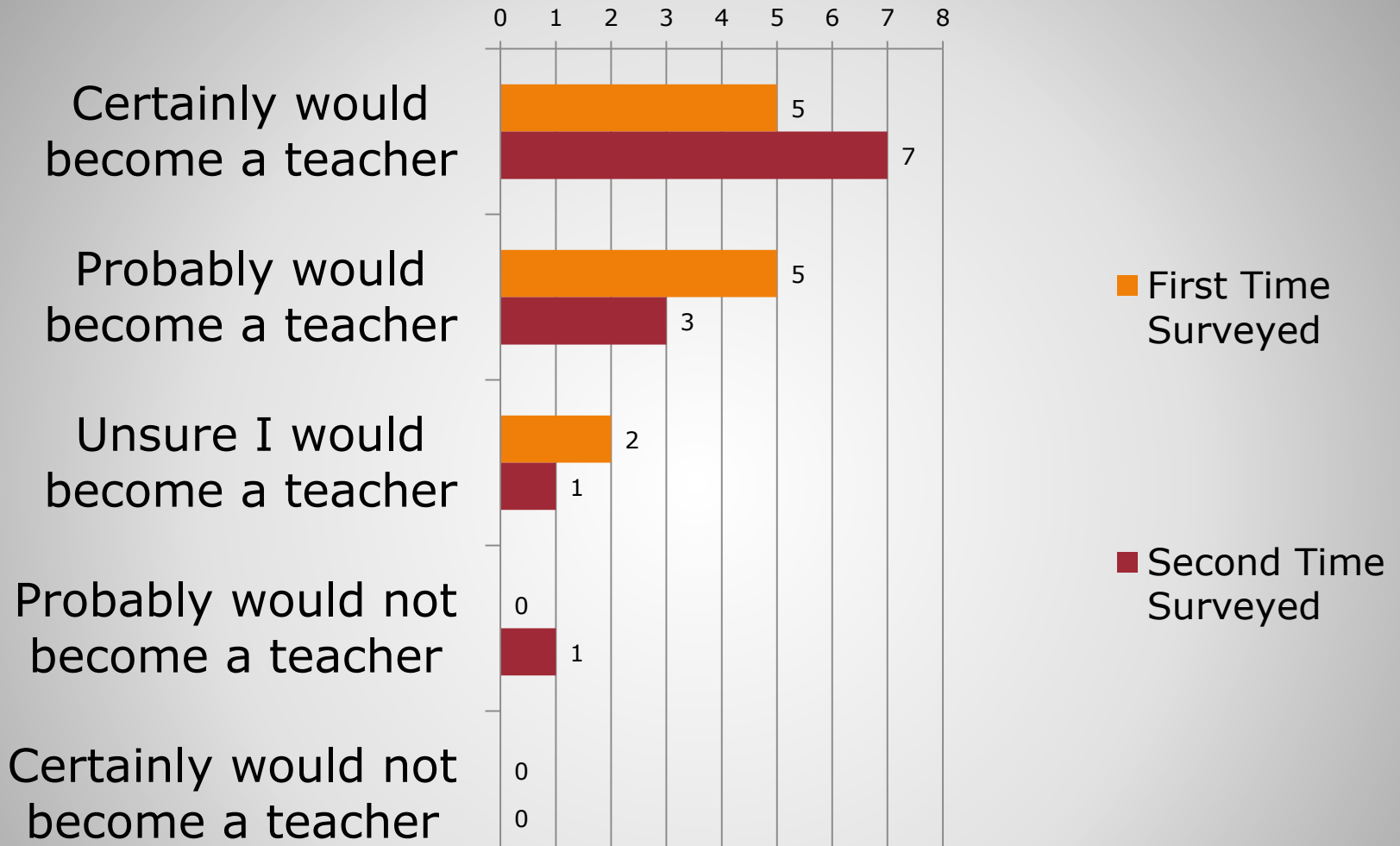
Instruction/Instructional Materials

Collegial Collaboration

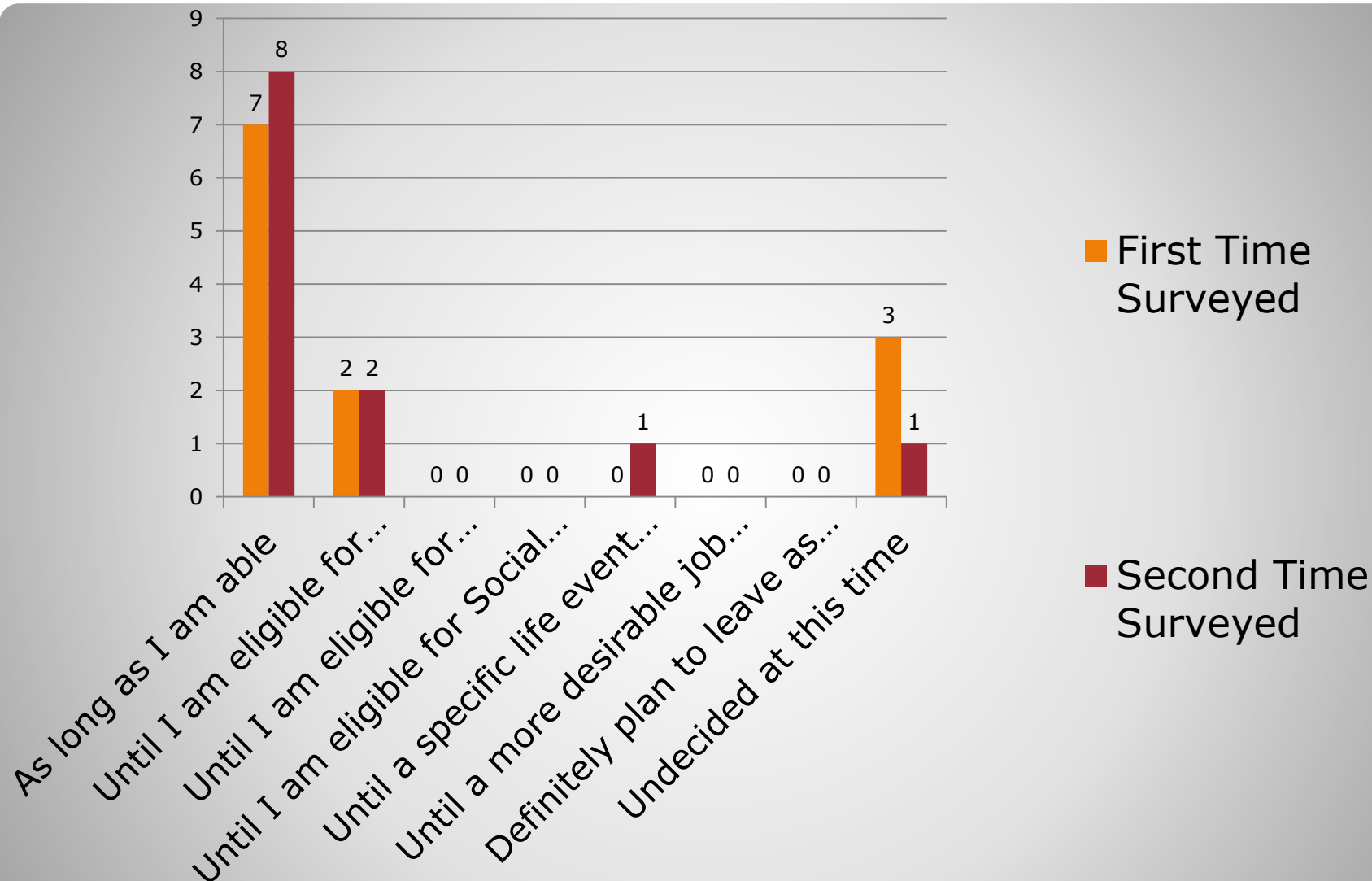
**In what areas do you receive support from these administrators/university partners?**



**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?**



**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

**Most Meaningful  
Professional Learning Activity**

*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.

## **Administrative Support**



*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*

**Professional Communities**

*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

**Change**

access accountability administration amount behavior class  
classroom college community compensated computer current department discipline  
district everything experience extra getting grade help higher home hours lack  
learning load meetings motivated na nothing paid paperwork pay plan  
problem professional program required resources salary school sizes  
students subject support team test work year

**Q5: If I could change one thing  
about my current teaching job, it  
would be...**



A word cloud featuring various online activities and platforms. The words are in different sizes and orientations, with 'blogs', 'google', 'pinterest', 'teachers', and 'twitter' being the most prominent. Other words include 'activities', 'apps', 'byrdseed', 'century', 'com', 'current', 'ddmeyer', 'department', 'education', 'facebook', 'handles', 'instagram', 'learning', 'math', 'mrs', 'mvp', 'newell', 'pay', 'peers', 'people', 'pintrest', 'reddit', 'rockstar', 'talks', 'teach', 'ted', and 'videos'.

blogs google pinterest teachers twitter

activities apps byrdseed century com current ddmeyer department education facebook handles  
instagram learning math mrs mvp newell pay peers people pintrest reddit rockstar  
talks teach ted videos

**Q7: Specific Online Activities  
include...**



A word cloud of education-related terms. The words are arranged in a roughly rectangular shape, with 'students' and 'learning' being the largest and most prominent. Other large words include 'activity', 'classroom', 'help', 'professional', 'participated', 'strategies', 'facilitate', 'meeting', 'mathematics', 'lesson', 'management', 'different', 'development', 'curriculum', 'currently', 'create', 'conference', 'engage', 'examples', 'experience', 'focused', 'group', 'ideas', 'implement', 'mentor', 'observing', 'practical', 'presented', 'session', 'share', 'solution', 'standards', 'summer', 'talk', 'tasks', 'thinking', 'together', 'training', 'understanding', 'ways', 'anticipate', 'assessment', 'class', 'collaboration', 'district', 'influential', and 'lesson'. The words are in various shades of blue and purple.

activity anticipate assessment class classroom collaboration  
conference create currently curriculum department development different discuss district  
engage examples experience facilitate focused group help ideas implement  
influential learning lesson management mathematics meeting mentor  
observing participated practical presented professional session share solution standards  
strategies students summer talk tasks thinking together training  
understanding ways

**Q8: Recent professional learning activities that had a positive effect on facilitating student learning...**



A word cloud of education-related terms. The words are arranged in a roughly rectangular shape, with some words being significantly larger than others. The largest words are 'students', 'teachers', 'teaching', 'learning', 'classroom', 'mathematics', 'excited', 'love', 'professional', and 'seeing'. Other words include 'book', 'change', 'collaborating', 'colleagues', 'concepts', 'conference', 'course', 'department', 'development', 'different', 'discuss', 'district', 'education', 'engaging', 'enjoy', 'found', 'ideas', 'influential', 'involved', 'kids', 'lessons', 'meet', 'mentor', 'mindset', 'online', 'opportunity', 'participated', 'people', 'positive', 'practice', 'presentation', 'reading', 'resources', 'share', 'strategies', 'struggling', 'talk', 'think', 'topics', and 'training'.

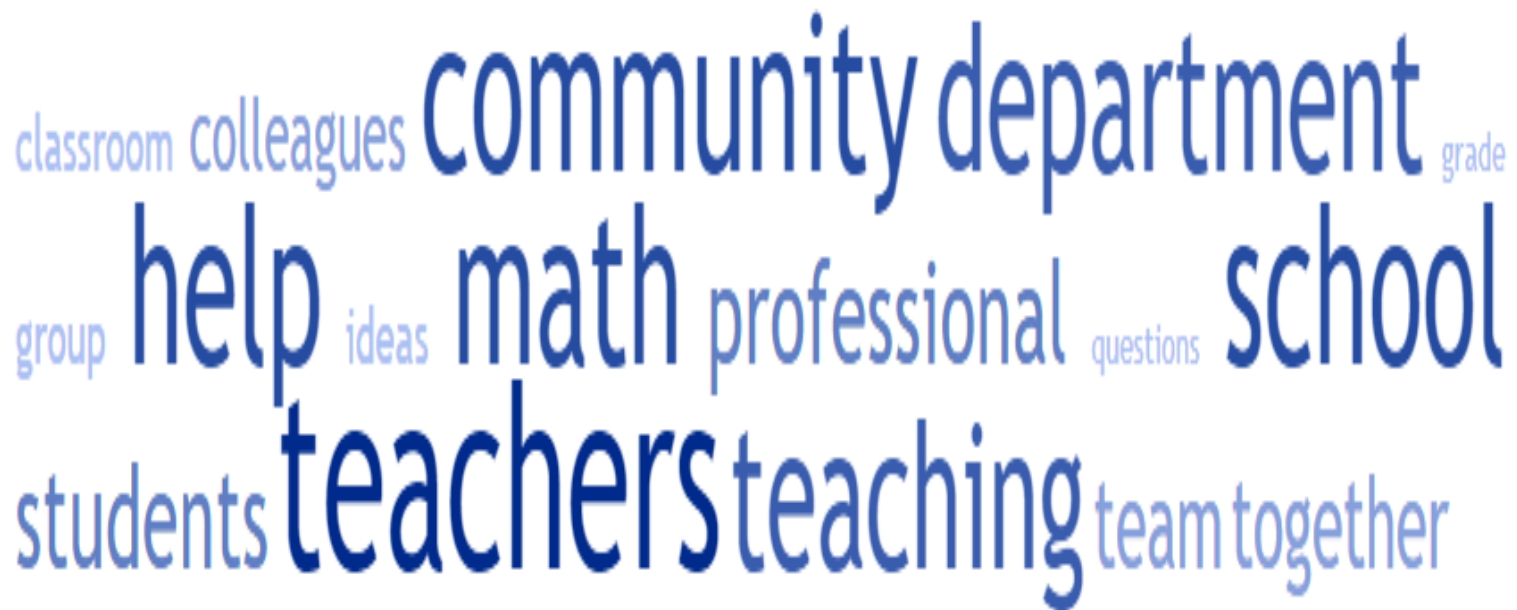
book change classroom collaborating colleagues concepts conference course  
department development different discuss district education engaging enjoy  
excited found ideas influential involved kids learning lessons love  
mathematics meet mentor mindset online opportunity participated people positive  
practice presentation professional reading resources seeing share strategies struggling  
students talk teachers teaching think topics  
training

**Q9: Recent professional learning activities that had a positive effect on enthusiasm for teaching mathematics...**

co-teacher colleagues cooperating counseling coworkers  
department districts fellow jackson mentor  
nearby parents principal sasa steve students substantial supervisor support  
teachers therapist

**Q10: Other Support Avenues  
included...**





A word cloud featuring various terms related to professional communities. The words are arranged in a non-uniform, overlapping manner. The most prominent words, shown in a larger font size, are 'community', 'department', 'school', 'math', 'teachers', and 'teaching'. Other words include 'help', 'professional', 'students', 'team', 'together', 'classroom', 'colleagues', 'grade', 'group', 'ideas', and 'questions'. The colors of the words range from a light blue to a darker blue.

**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.

**Opportunities  
for  
Administrators**

**Professional  
Growth  
For Teachers**

**Two Intervention Groups**

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.

**STRIDES Improvement Target**

- 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

## Potential Interventions

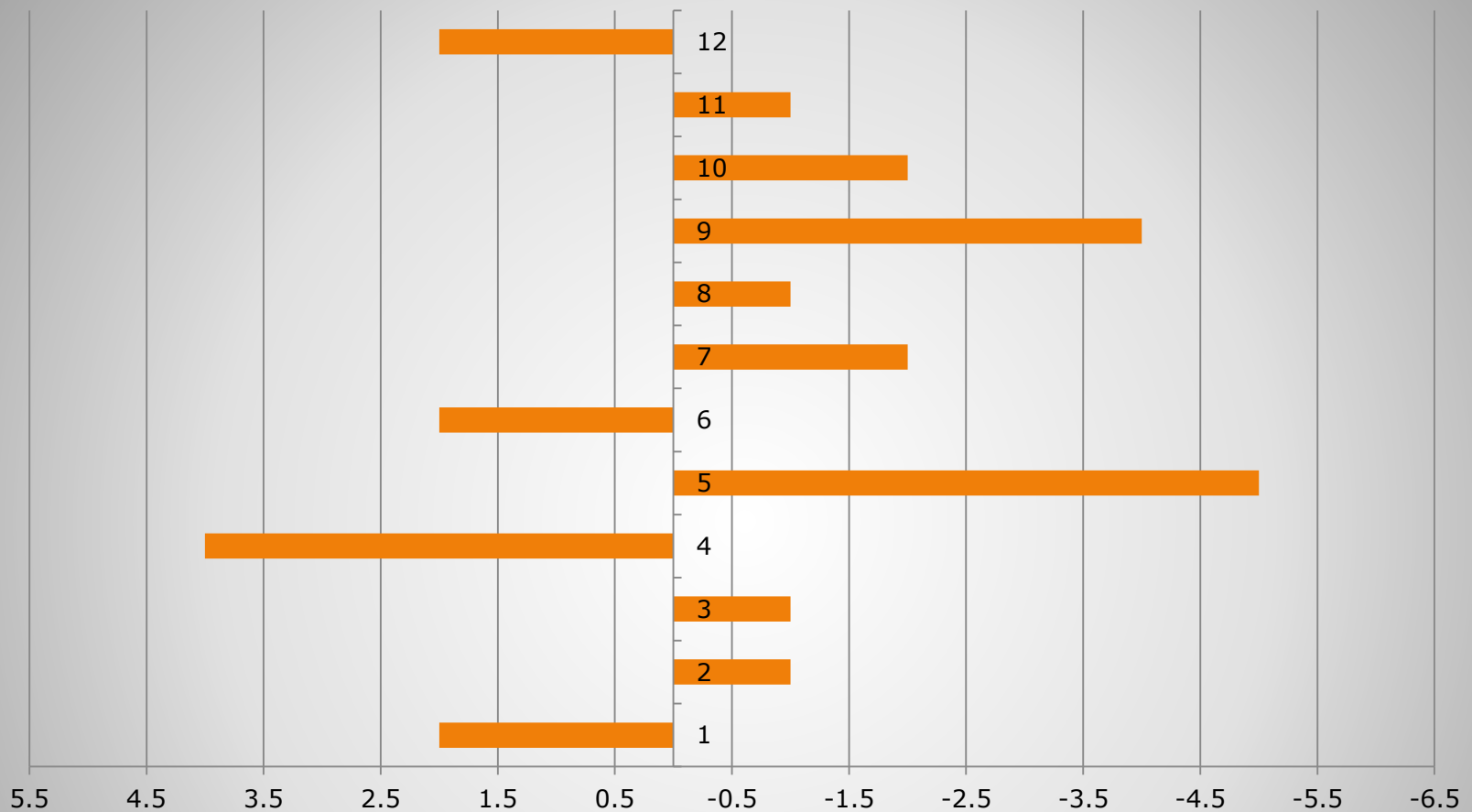
# Discussion & Questions



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**Extra Slides**





## Semesters Remaining

**Number of Semesters Remaining to Complete  
your Teaching Certificate Program**