



RICE UNIVERSITY  
SCHOOL MATHEMATICS PROJECT

# Techniques that Support Novice and Struggling Mathematics Teachers

November 18, 2015  
San Antonio, Texas

**AIE** ADVANCING  
IMPROVEMENT  
in EDUCATION



**Susan Troutman**

Rice University School Mathematics Project

Director of Secondary Programs

[troutman@rice.edu](mailto:troutman@rice.edu)

**Carolyn L. White**

Rice University School Mathematics Project

Director of Elementary Programs

[clwhite@rice.edu](mailto:clwhite@rice.edu)



In your experience, what are the greatest needs of novice and struggling mathematics teachers?

In your experience, what techniques have you found to be most successful in helping novice and struggling mathematics teachers?



## What do novice and struggling mathematics teachers need?

Knowledge for  
Teaching

Skills for  
Managing  
Instruction

Skills for  
Developing  
Collaborative  
Relationships



## What do novice and struggling mathematics teachers need?

Knowledge for  
Teaching

Skills for  
Managing  
Instruction

Skills for  
Developing  
Collaborative  
Relationships



# Knowledge for Teaching

*Novice and struggling mathematics teachers need help:*

- collaboratively planning engaging lessons that incorporate effective pedagogical practices to develop mathematics content;
- presenting applications for mathematics concepts;  
and
- considering students' prior conceptions about mathematics when planning curriculum and instruction.



## What do novice and struggling mathematics teachers need?

Knowledge for  
Teaching

Skills for  
Managing  
Instruction

Skills for  
Developing  
Collaborative  
Relationships



# Skills for Managing Instruction

*Novice and struggling mathematics teachers need help:*

- using cooperative learning groups;
- using hands-on activities to develop mathematics concepts;
- managing a class of students who are using manipulatives;





# Skills for Managing Instruction

*Novice and struggling mathematics teachers need help:*

- using technology as an integral part of mathematics instruction; and
- using strategies which incorporate innovative and emerging formative and summative assessment techniques.



## What do novice and struggling mathematics teachers need?

Knowledge for  
Teaching

Skills for  
Managing  
Instruction

**Skills for  
Developing  
Collaborative  
Relationships**



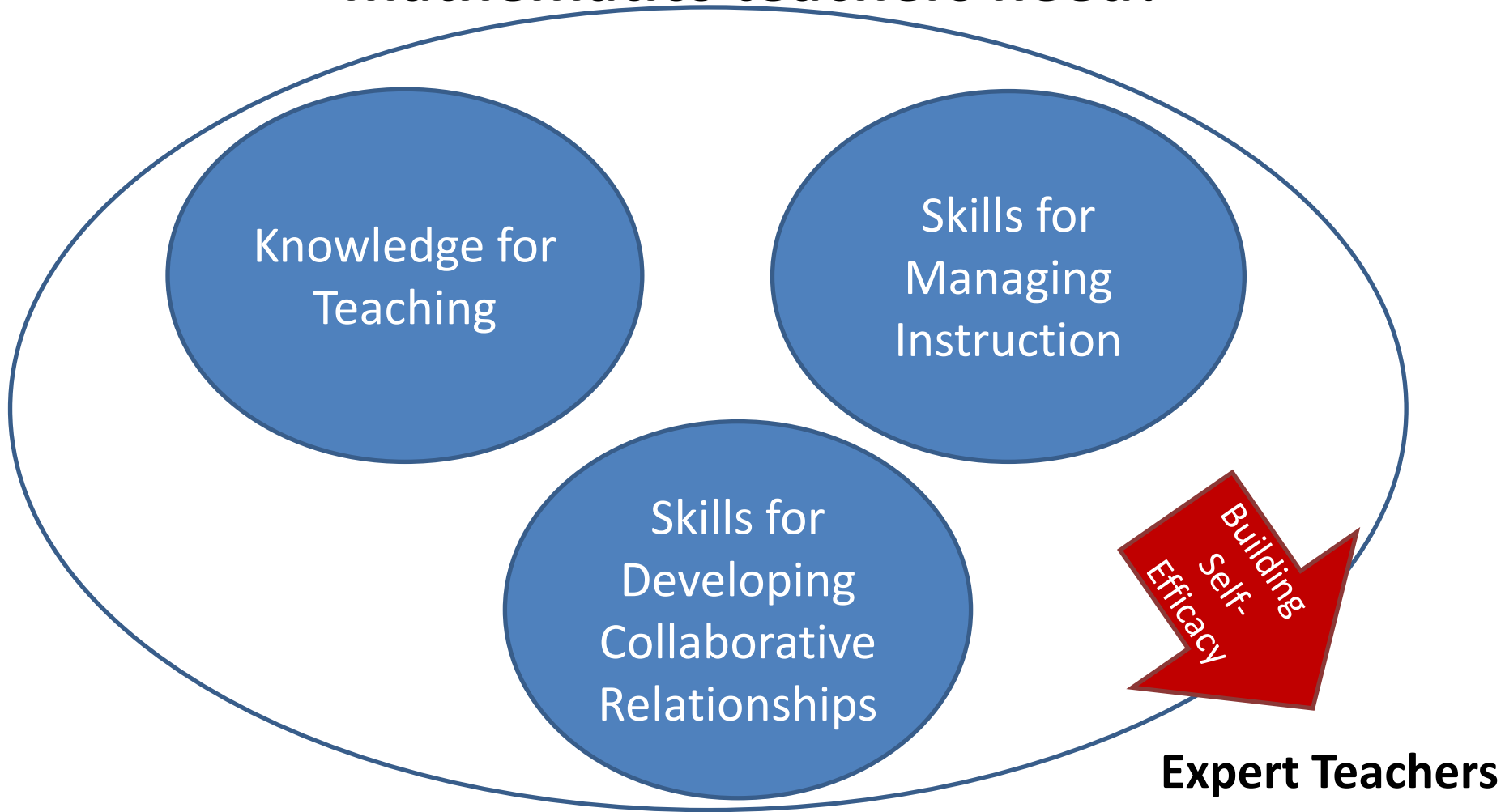
# Skills for Developing Collaborative Relationships

*Novice and struggling teachers need help developing collaborative relationships with:*

- fellow teachers,
- administrators,
- parents,
- the local community, and
- the greater mathematics community.



## What do novice and struggling mathematics teachers need?





# Techniques that Support Novice and Struggling Mathematics Teachers

1. Provide them with a reasonable schedule and manageable class sizes.
2. Integrate them into the school culture and into communities of practice.
3. Assign them appropriate mentors.
4. Help them understand the school curriculum and assessment schedule.



# Techniques that Support Novice and Struggling Mathematics Teachers

5. Assist them in collaboratively planning student-centered lessons.
6. Assist them in establishing classrooms that actively engage students.
7. Help them develop communication skills to successfully interact with others.



## **Techniques that Support Novice and Struggling Mathematics Teachers**

8. Provide support for them in their classrooms (observe, coach, model teach, co-teach).
9. Help them join the greater mathematics and mathematics education community.
10. Develop their self-efficacy by providing them with leadership opportunities.



This presentation is based in part on a project funded by the Teacher Quality Grants program at the Texas Higher Education Coordinating Board (grant#496). The Teacher Quality Grants Program is supported through federal funds under NCLB Title II, Part A.





# RICE UNIVERSITY SCHOOL MATHEMATICS PROJECT



Wiess School of Natural Sciences

## RICE UNIVERSITY SCHOOL MATHEMATICS PROJECT

- HOME
- ABOUT RUSMP
- REGISTER
- RESOURCES
- PRESENTATIONS
- PUBLICATIONS
- RESEARCH
- PHOTOS & SPOTLIGHTS
- CALENDAR
- GIVING TO RUSMP

Handouts  
available here



### Registration for the 2016 RUSMP Summer Campus Program is open!

Registration is now open for the 2016 RUSMP Summer Campus Program (SCP). The SCP is a three-week professional development program in mathematics content and pedagogy for grades 1-12 teachers.

RUSMP is also excited to announce that registration for the first course in the RUSMP Spring course series is also open. *Making Sense of Fractions* is being offered for grades 3-5 teachers.

For more information for both the SCP and the spring course and to register online, [click here](#).



<http://rusmp.rice.edu>