

Mathematics and Science
Teaching Institute for
Beginning Teachers

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The Missouri Center for

Mathematics & Science Teacher Education

University of Missouri-Columbia

Beginning Teacher Institute Overview

The mathematics/science teaching workforce is faced with challenges that constrain quality teaching and learning. The BTI is designed to give teachers in their first few years of teaching the support and resources they need.

Institute Goals

- Promote quality science and mathematics teaching and learning in Missouri.
- Increase retention of mathematics and science teachers.
- Develop support structures for teachers with 0-2 years of teaching experience.

Guiding Principles

- National Standards provide a vision for effective K-12 mathematics and science education.
- Teachers need a wide range of knowledge, skills, and dispositions, which are derived from research, reflection on practice, and shared expertise.
- New teachers also need additional support and resources (e.g., networks of others in similar positions, mentors, professional development, curriculum materials).
- New teachers need effective professional development experiences based on the research on best practice.

Expected Outcomes

- Share a vision for mathematics and science education;
- Build knowledge about mathematics and science teaching and learning;
- Collect ideas and materials to support instruction;
- Network with other teachers who are in their first few years of teaching;
- Engage in conversations with experienced classroom teachers and education researchers;
- Improve mathematics or science teaching;
- Continue to work in the profession to enhance learning for Missouri's children.

Requirements

- Attend Summer Beginning Teacher Institute;
- Attend one follow-up session (at STOM Conference or MCTM Conference)
- Participate in monthly online discussions;
- Create Professional Growth Plan;
- Implement and document process and evaluation efforts for Professional Growth Plan;
- Submit Progress and Final Reports.

Professional Growth Plan

Aspect	What is your goal?	What resources/ strategies will you use to achieve your goal?	What is your timeline?	How will you evaluate your efforts and communicate your progress?
Classroom Norms				
Classroom Management				
Standards-based Teaching				
Student Engagement				
Assessment				
Professional Development				
Professional Networking				

Institute Agenda: Day 1

- **What is quality math and science teaching and learning?**
 - Frame fundamental principles about mathematics and science teaching and learning
 - Engage participants in examining classroom practice and student work
 - Identify necessary elements of effective instruction
 - Build a professional community and network
 - Introduce Professional Growth Plan

Day 1 Sample Activity

- Watch the video while considering these questions:
- What are your reactions to the clip?
- According to the researchers, what does typical American mathematics teaching look like? How does it differ from the rest of the world?
- According to the researchers, what is the problem with typical American textbooks?
- Is the science instruction that is portrayed in the clip typical American science teaching?

Institute Agenda: Day 2

- **How do beginning mathematics and science teachers overcome the classroom management and student motivation challenges that hinder quality teaching and learning?**
 - Develop strategies for overcoming challenges of classroom management and student motivation
 - Engage in conversations with experienced classroom teachers and education researchers
 - Build a professional community and network
 - Continue Professional Growth Plan

Day 2 Sample Activity

- Pat (as narrator): An eighth grade math teacher has invested a great deal of time at summer professional development sessions learning about standards-based mathematics teaching and learning. After returning the school, she convinces the principal to purchase the necessary curricula and technology. This teacher approaches the other eighth grade mathematics teacher to discuss the possibility of teaching standards-based curricula to all the eighth graders.
- Kathryn: I attended some great professional development this summer. I learned about some new mathematics curriculum that is engaging for students. The principal has agreed to purchase the materials, and the corresponding manipulatives and calculators.
- Debi: To tell you the truth, I'm having difficulty managing my class. I've got a few students who I'd like to drown in the class and who really try my patience. If I even leave the front of the room, let alone distribute hands on manipulatives, I'll lose control of the class and there will be pandemonium for the rest of the period.
- Pat (as teacher): Inquiry does not work in real classrooms — it takes too long, students get confused and don't know what they're suppose to be doing. Students aren't capable of doing inquiry. It's just quicker and easier to tell the students what it is that you want them to know.
- James: [Reading a newspaper] Look, I have refined and refined and refined my lesson plans over the years. Simply put, they are a work of art. Do you know how much time would be required to just throw everything away and start doing things differently? I mean, C'mon!!! For god's sake, I am a busy guy!
- John: I tried group work in my classroom yesterday, but it did not work. (I'll likely mention some management problems that arose in my short-lived attempt to engage students in group work.)
- Pat (as narrator): How would you respond if you were this teacher? What would you do?

Institute Agenda: Day 3

- **What are resources/support structures that can help beginning mathematics and science teachers?**
 - Collect ideas and materials from experienced teachers and education researchers to support instruction
 - Identify teaching strategies and resources to support the development of mathematics or science learning
 - Build knowledge of effective methods of assessment
 - Continue Professional Growth Plan

Sample Day 3 and 4 Activities

- Participants attend small group sessions based on content topics that interest them.
- Participants work in the computer lab to identify useful online resources.

www.teach-math-or-science.org

Institute Agenda: Day 4

- **What are challenges you hope to overcome? What are your goals for the coming year?**
 - Introduce resources to support the development of mathematics or science learning
 - Strengthen professional network
 - Continue Professional Growth Plan

WebCT Issues Posed by Participants

- Students cheating
- Parent involvement
- Student success
- Student comprehension
- Teaching students of different abilities
- Need for lesson plans/classroom ideas
- Time management
- Classroom management

WebCT Sample Participant Questions

- What are some suggestions for making the first day of school go smoothly?
- How do I deal with wide-ranging student abilities all in the same class?
- How do you deal with disrespectful students in your class?
- What do you think about a policy of never giving F's to students?

WebCT Sample

- Posted by Corina (2005):
 - Subject: Re: Mixed Ability Levels
 - “Judy - I really like your method for using Science notebooks, and how you have students set them up. I am using science notebooks (journals) also, and tried to keep it simple by telling them to write the title and date for each entry. They have to write the Science Starter (my warm up) in their notebook everyday, and then whatever notes they take or I give during class. But looking through some of their journals, I have found that a lot of them aren't even following those two requirements. Maybe I should adopt a more structured procedure, so they know EXACTLY what their notebook should look like. I also want to keep a science notebook myself and write everything that the students are supposed to have in theirs. This way, if students are absent, they can see what they missed, and it will also provide an example of what an organized notebook looks like. Thanks for sharing your method! I love the fact that reading your one comment is going to keep me from doing the same thing you did your first year with printing everything out for labs!”

Sample Goals

- Create an atmosphere where students can demonstrate and justify their reasoning.
- To minimize write-ups and sending students to administration.
- Maintain effective and consistent communication with parents throughout the school year.
- I will use more open-ended questions to assess student understanding.
- Become more knowledgeable in selected areas of physical science that will improve my instruction for the MAP test.

Application

- **Your complete application must include:**
 - 1) this completed form,
 - 2) a copy of your resume, and
 - 3) a letter of support from your principal (if you are teaching), including a commitment for the school to pay for a substitute teacher for 1 day.

Please mail, email, or fax all 3 components of the application to:

Missouri Center for Mathematics and Science Teacher Education

303 Townsend Hall University of Missouri-Columbia
Columbia, MO 65211

Fax: 573-884-2917

Or email the application to whitesb@missouri.edu

Application Deadline: April 3, 2006

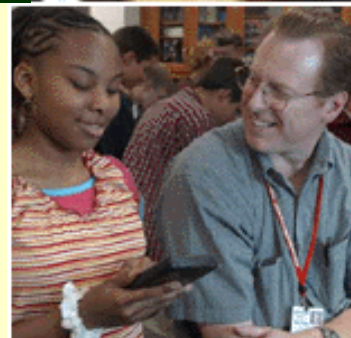
Notifications of acceptance will be sent out by: May 1, 2006

- [2006 BTI Application](#)

BTI 2006

Summer 2006
Opportunity
Mathematics and
Science Teaching
Institute for
Beginning Teachers

July 10-13, 2006
*University of Missouri-
Columbia*



Mission

The Mission of the Missouri Center for Mathematics & Science Teacher Education is to increase the quantity and quality of middle and secondary mathematics and science teachers in the state of Missouri.

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Questions?