

Teacher Efficacy and Attitudes Toward STEM (T-STEM) Survey

Mathematics Teacher

Last Updated October 2012

Appropriate Use

The Teacher Efficacy and Attitudes Toward STEM (T-STEM) Survey is intended to measure changes in teachers' confidence and self-efficacy in STEM subject content and teaching, use of technology in the classroom, 21st century learning skills, leadership attitudes, and STEM career awareness. The survey is available to help program coordinators make decisions about possible improvements to their program.

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The framework for part of this survey was developed from the following sources: Riggs, I. M., & Enochs, L. G. (1990). Toward the development of an elementary teachers science teaching efficacy belief instrument. *Science Education*, 74(6), 625-637. doi: 10.1002/sce.3730740605

DIRECTIONS:

For each of the following statements, please indicate the degree to which you agree or disagree.

Even though some statements are very similar, please answer each statement. There are no "right" or "wrong" answers. The only correct responses are those that are true for you. Whenever possible, let the things that have happened to you help make your choice.

Mathematics Teaching Efficacy and Beliefs

Directions: Please respond to these questions regarding your feelings about **your own** teaching.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I am continually improving my mathematics teaching practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I know the steps necessary to teach mathematics effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I am confident that I can explain to students why mathematics experiments work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am confident that I can teach mathematics effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I wonder if I have the necessary skills to teach mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I understand mathematics concepts well enough to be effective in teaching mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Given a choice, I would invite a colleague to evaluate my mathematics teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I am confident that I can answer students' mathematics questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. When a student has difficulty understanding a mathematics concept, I am confident that I know how to help the student understand it better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When teaching mathematics, I am confident enough to welcome student questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I know what to do to increase student interest in mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Mathematics Teaching Outcome Expectancy

Directions: The following questions ask about your feelings about teaching *in general*. Please respond accordingly.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. When a student does better than usual in mathematics, it is often because the teacher exerted a little extra effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The inadequacy of a student's mathematics background can be overcome by good teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. When a student's learning in mathematics is greater than expected, it is most often due to their teacher having found a more effective teaching approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The teacher is generally responsible for students' learning in mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. If students' learning in mathematics is less than expected, it is most likely due to ineffective mathematics teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Students' learning in mathematics is directly related to their teacher's effectiveness in mathematics teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. When a low achieving child progresses more than expected in mathematics, it is usually due to extra attention given by the teacher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. If parents comment that their child is showing more interest in mathematics at school, it is probably due to the performance of the child's teacher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Minimal student learning in mathematics can generally be attributed to their teachers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Mathematics Instruction

Directions: Please answer the following questions about how often students engage in the following tasks during your instructional time.

During mathematics instructional meetings (e.g. class periods, after school activities, days of summer camp, etc.), how often do your students...

	Never	Occasionally	About half the time	Usually	Every time
1. Develop problem-solving skills through investigations (e.g. scientific, design or theoretical investigations).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Work in small groups.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Make predictions that can be tested.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Make careful observations or measurements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Use tools to gather data (e.g. calculators, computers, computer programs, scales, rulers, compasses, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Recognize patterns in data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Create reasonable explanations of results of an experiment or investigation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Choose the most appropriate methods to express results (e.g. drawings, models, charts, graphs, technical language, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Complete activities with a real-world context.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Engage in content-driven dialogue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Reason abstractly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Reason quantitatively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Critique the reasoning of others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Learn about careers related to the instructional content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21st Century Learning Attitudes

Directions: Please respond to the following questions regarding your feelings about learning ***in general.***

“I think it is important that students have learning opportunities to...”

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Lead others to accomplish a goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Encourage others to do their best.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Produce high quality work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Respect the differences of their peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Help their peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Include others' perspectives when making decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Make changes when things do not go as planned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Set their own learning goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Manage their time wisely when working on their own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Choose which assignment out of many needs to be done first.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Work well with students from different backgrounds.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Teacher Leadership Attitudes

Directions: Please respond to the following questions regarding your feelings about teacher leadership *in general*.

“I think it is important that teachers ...”

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Take responsibility for all students' learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Communicate vision to students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Use a variety of assessment data throughout the year to evaluate progress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Use a variety of data to organize, plan and set goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Establish a safe and orderly environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Empower students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

STEM Career Awareness

Directions: Please respond to the following questions based upon how much you disagree or agree with the statements.

“I know ...”

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. About current STEM careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Where to go to learn more about STEM careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Where to find resources for teaching students about STEM careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Where to direct students or parents to find information about STEM careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>