

Teacher T.O.M. – A Strategy for Reflective Practice

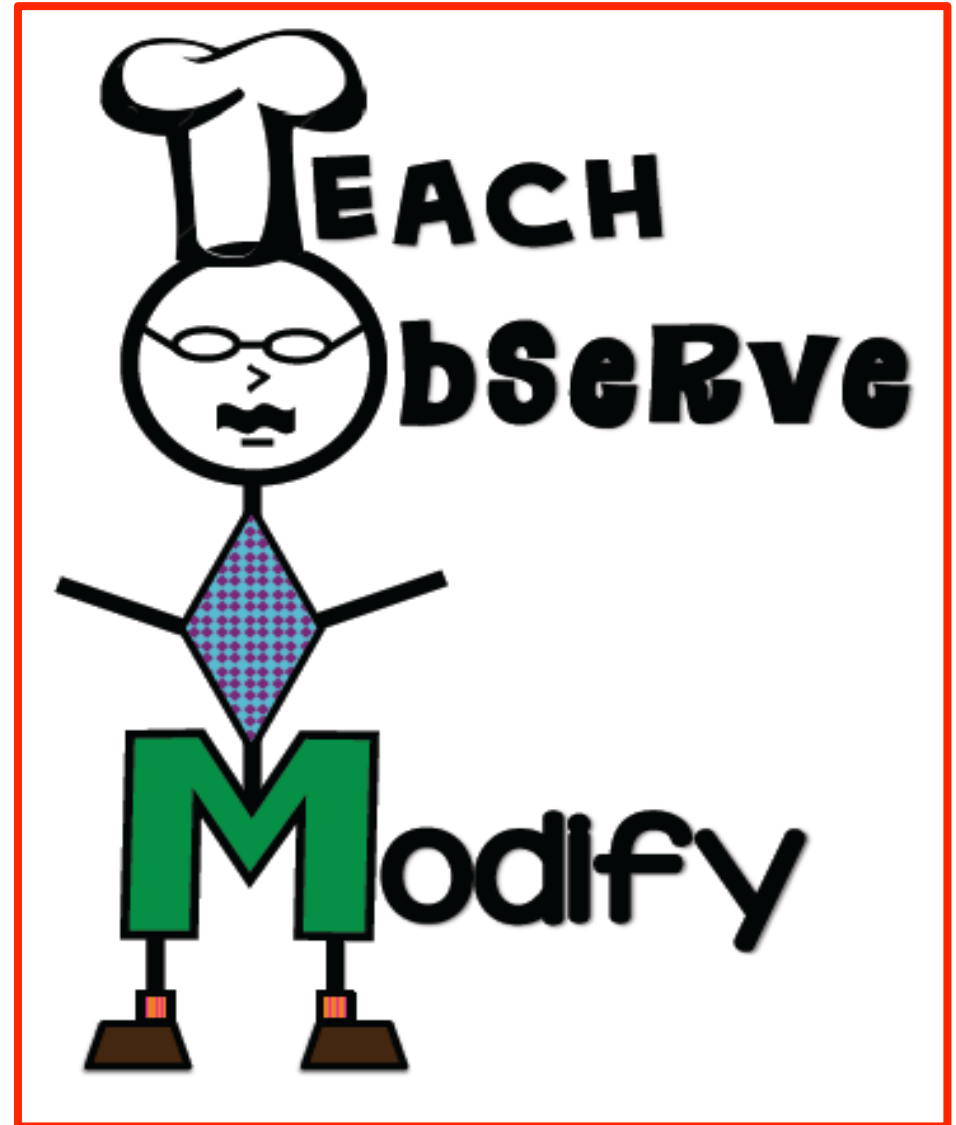
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Research in Mathematics Education

Abstract

- Teacher T.O.M. serves as a template to streamline a process of Teaching, Observing, and Modifying curriculum by encouraging reflective practice.
- Learn how Research in Mathematics Education at Southern Methodist University used Brief Learning Trials to observe teacher interactions, student engagement, and student responses to inform adjustments to mathematics curriculum.

**What is a
brief
learning
trial?**



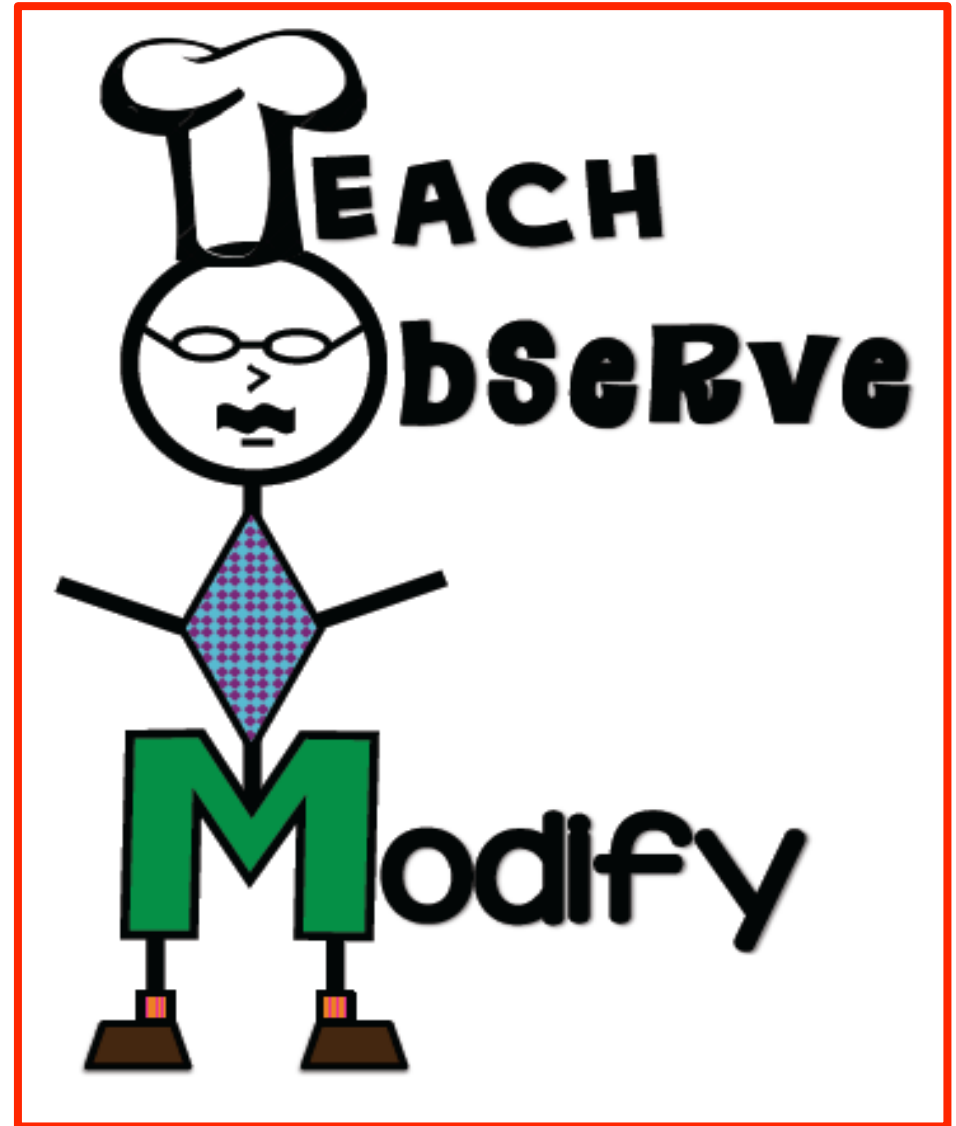
Promoting Algebra Readiness: Developing a Strategic Intervention on Rational Number Concepts (Project PAR)

- Project PAR is a three-year Institute of Educational Sciences (IES) development grant to the University of Oregon – Center on Teaching and Learning.
- The purpose of Project PAR is to promote algebra readiness and increase math achievement for 6th grade students who are, or could be, at risk for mathematics difficulty.
- Project PAR will implement in three phases: building the curriculum, executing a feasibility study, and implementing a pilot study to determine if the intervention is working as intended.

What is a Brief Learning Trial (BLT)?

- A BLT takes place during the development phase of the curriculum.
- Curriculum writers conduct preliminary feasibility testing of individual or sets of lessons.
- Observer(s) gather data on
 - Lesson components
 - Quality of instructional interactions and student interest/engagement, and
 - Overall impression of lesson functionality.
- Curriculum writer(s), observer(s), and researchers compile data to see what works and what needs to be changed.

What is Reflective Practice?



What is Reflective Practice?

- Reflection places an emphasis on learning through investigation to lead to the development of understanding (Smyth, 1992).
- Reflection is sometimes described as organized thinking by taking a look backwards in order to move forward (Ghaye, 2011).
- Effective reflective practice involves “seeing” through other’s eyes and “action” to enhance learning through experience (Loughran, 2002).
- Therefore, reflective practice helps us understand the links between what we do and how we might improve our effectiveness (Ghaye, 2011).

The Process



What is Action Research?

- “An applied approach in which practitioners conduct studies in their own educational settings and make immediate use of the results” (Springer, 2010, p. 24).
- Action research is
 - Conducted by practitioners
 - Addresses specific problems or situations
 - Implemented in classrooms
 - Carried out by the introduction of a change then reflects on results (Springer, 2010).

T = Teach

- The *Writer/Instructor* implements the lesson while keeping a mental record of:
 - Student engagement,
 - Classroom behaviors, and
 - Pacing of the lesson.

O = Observe

- The Observer takes notes on:
 - *Are all students engaged in the lesson or task?*
 - *Do most students raise their hand (or other response system) to answer teacher-directed questions?*
 - *Are students encouraged to explain, reason, or justify their responses?*
 - *Does Writer/Instructor provide academic feedback?*
 - *Does Writer/Instructor provide correction for student errors?*
 - *Does Writer/Instructor model the skills or concepts for students?*

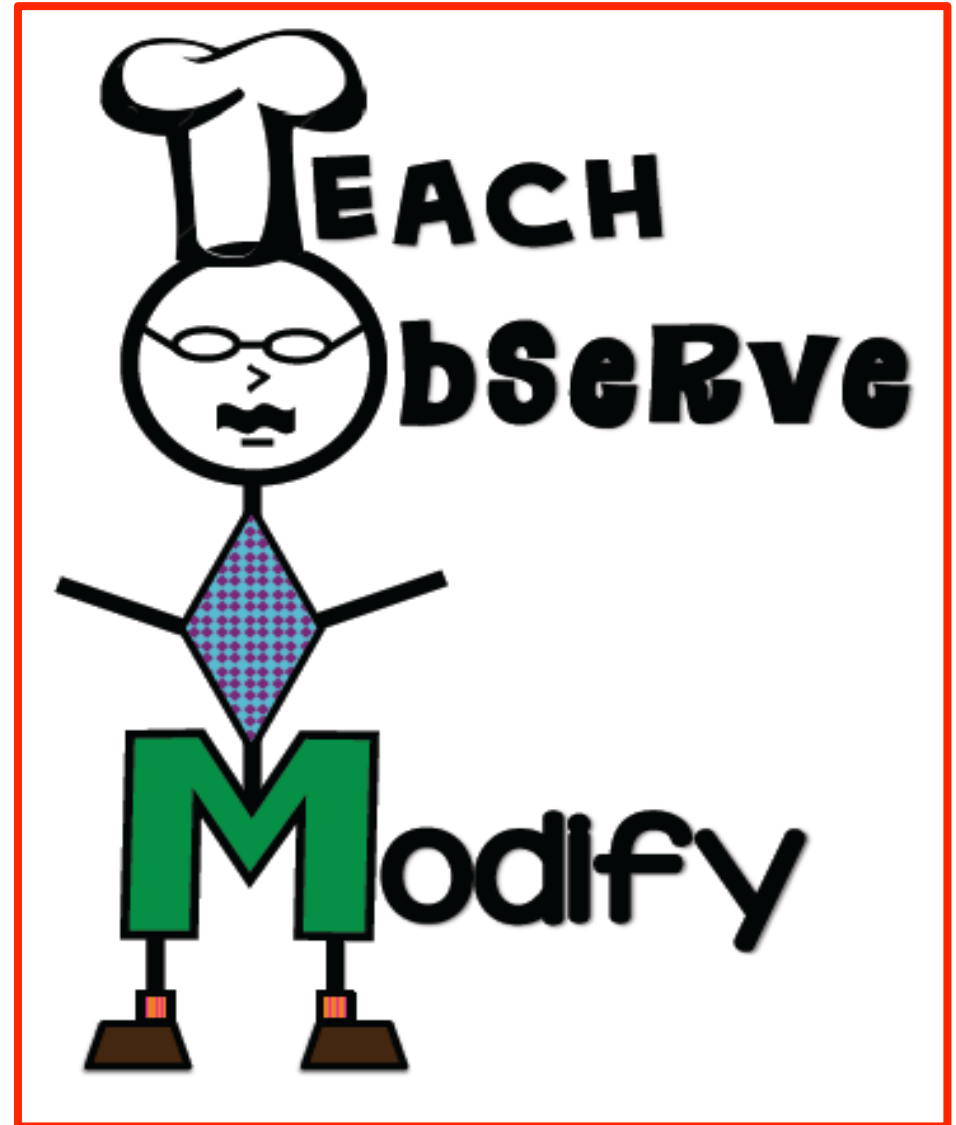
O = Observe, continued

- The *Writer/Instructor* reflects on:
 - Thoughts as teaching the lesson.
 - Comments from the Observer.
- Questions to consider:
 - *Which parts of the lesson went well for students?*
 - *Were any parts of the lesson too easy or too difficult for students?*
 - *Was the time allocated for each task sufficient?*
 - *Are all tasks linked to the student objectives?*

M = Modify

- The *Writer/Instructor* improves the lesson by focusing on one key variable.
- A modification could be:
 - ✧ The combining of lesson components
 - ✧ Changing an activity to encourage student engagement
 - ✧ Using different instructional tools
 - ✧ Adjusting the pace

Examples



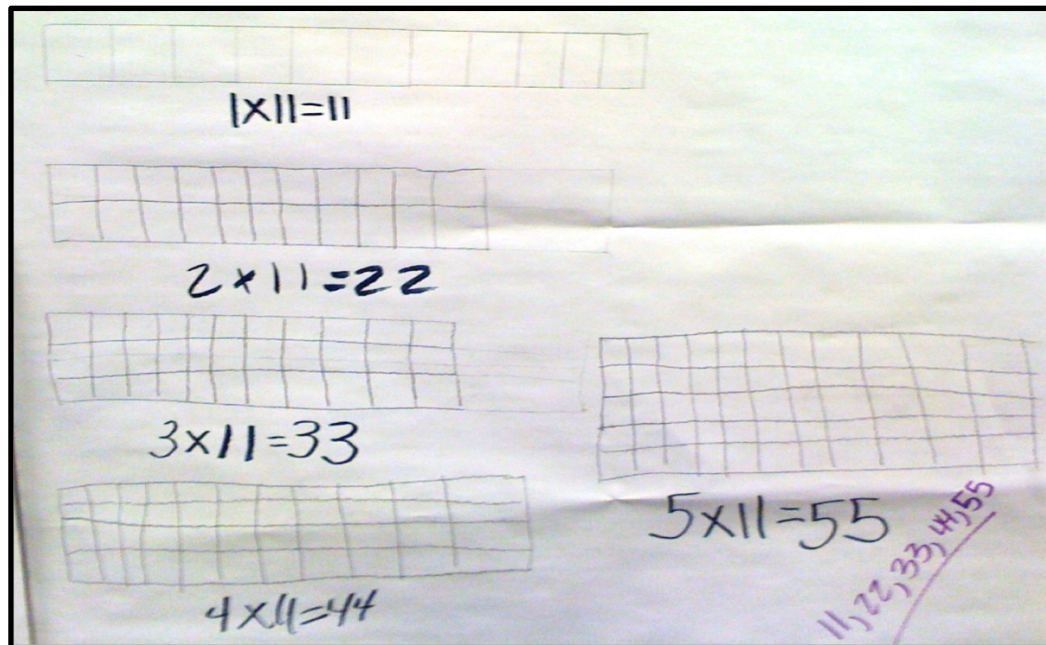
A Lesson on Multiples – Original

OBJECTIVE: Use models and symbols to demonstrate that a whole number is a multiple of each of its factors.

Build an array to find the multiples of the whole number 6. Write the equation to represent the array.										
Equation	$1 \times 6 = 6$									
Multiples										

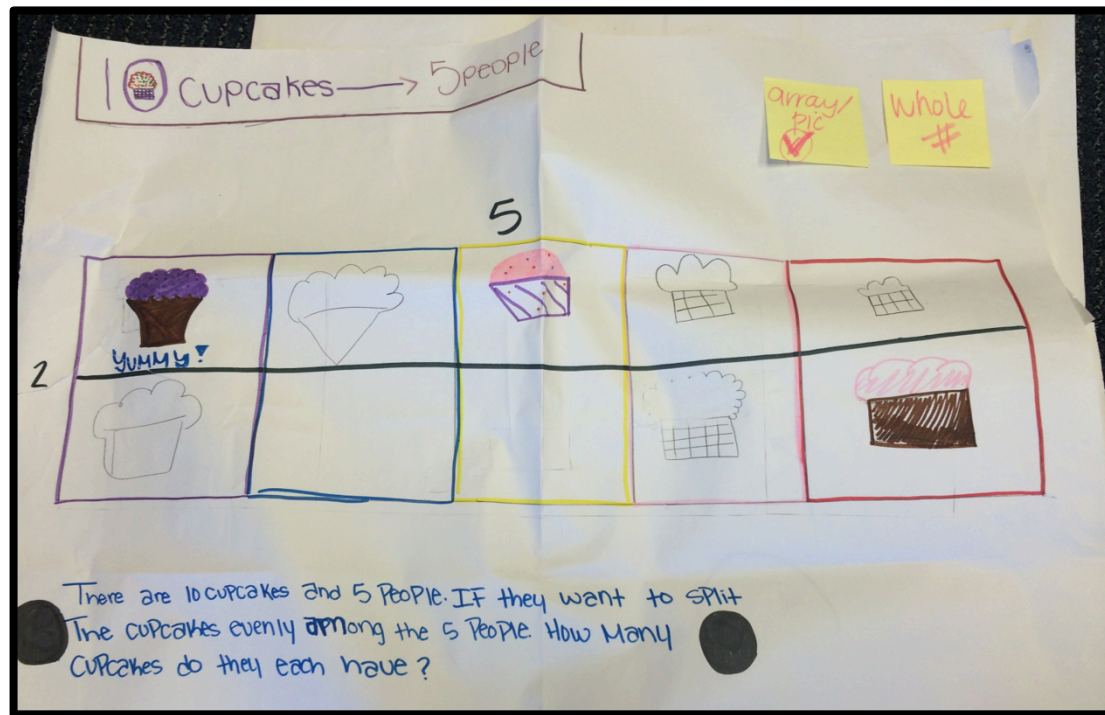
A Lesson on Multiples – Modified

OBJECTIVE: Use models and symbols to demonstrate that a whole number is a multiple of each of its factors.

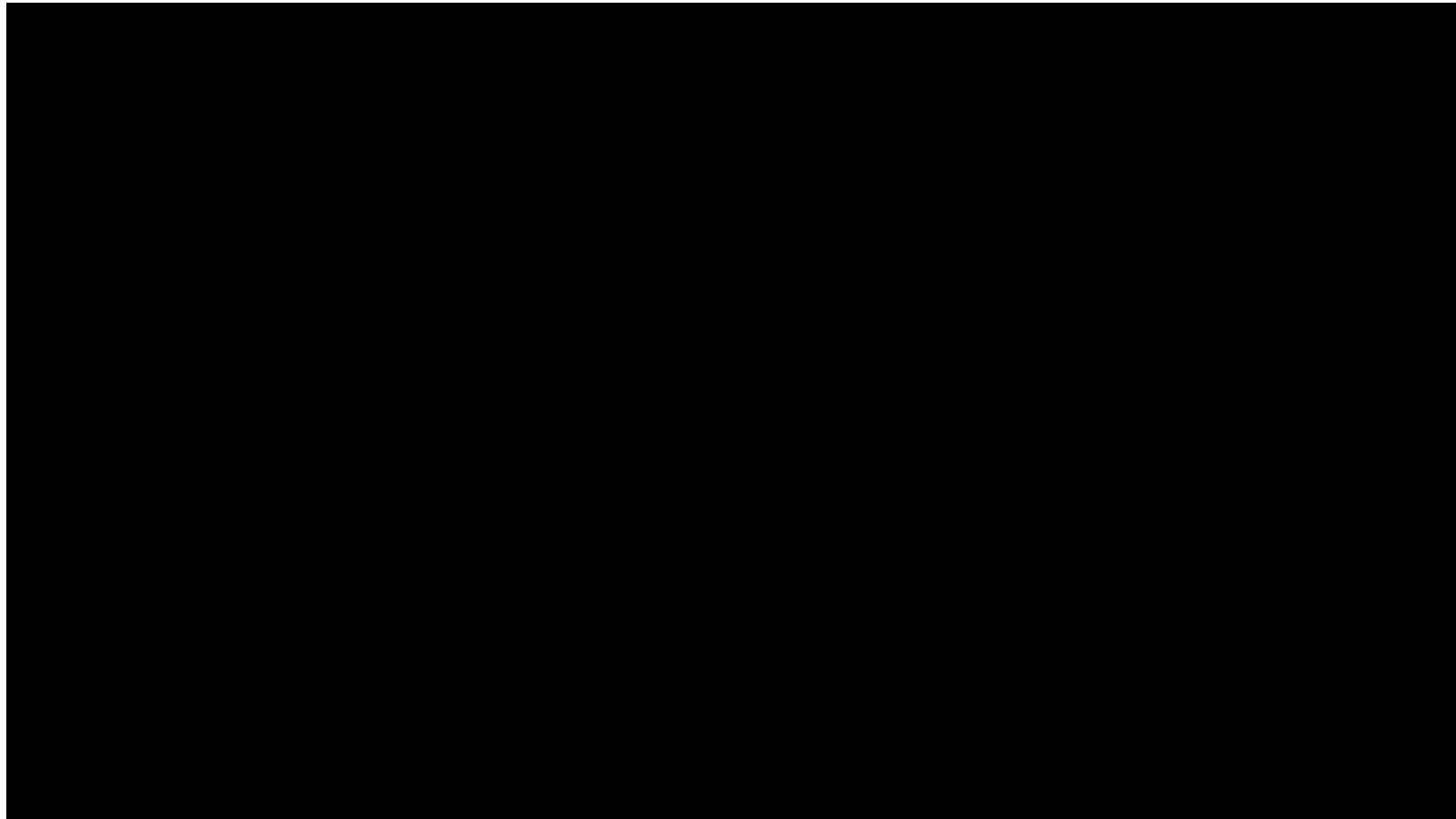


Modeling Fractions in Relationship to Division – Original

OBJECTIVE: Model a situation that shows the relationship between division and fractions.

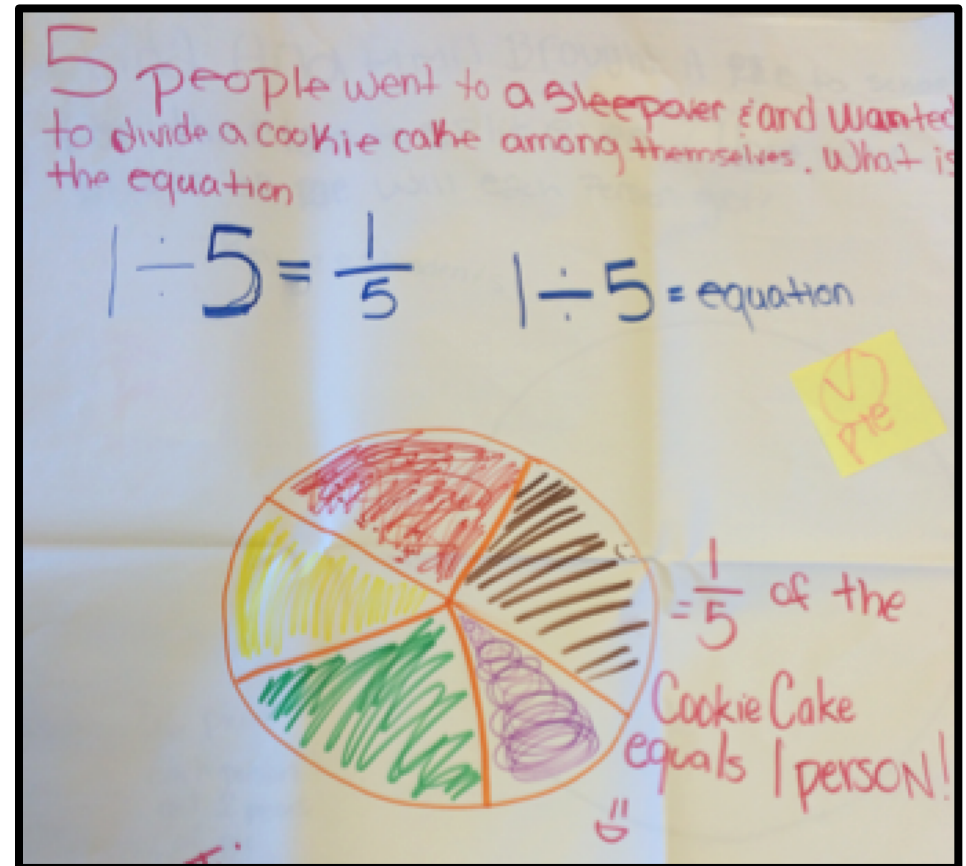


Modeling Fractions in Relationship to Division – Classroom Example

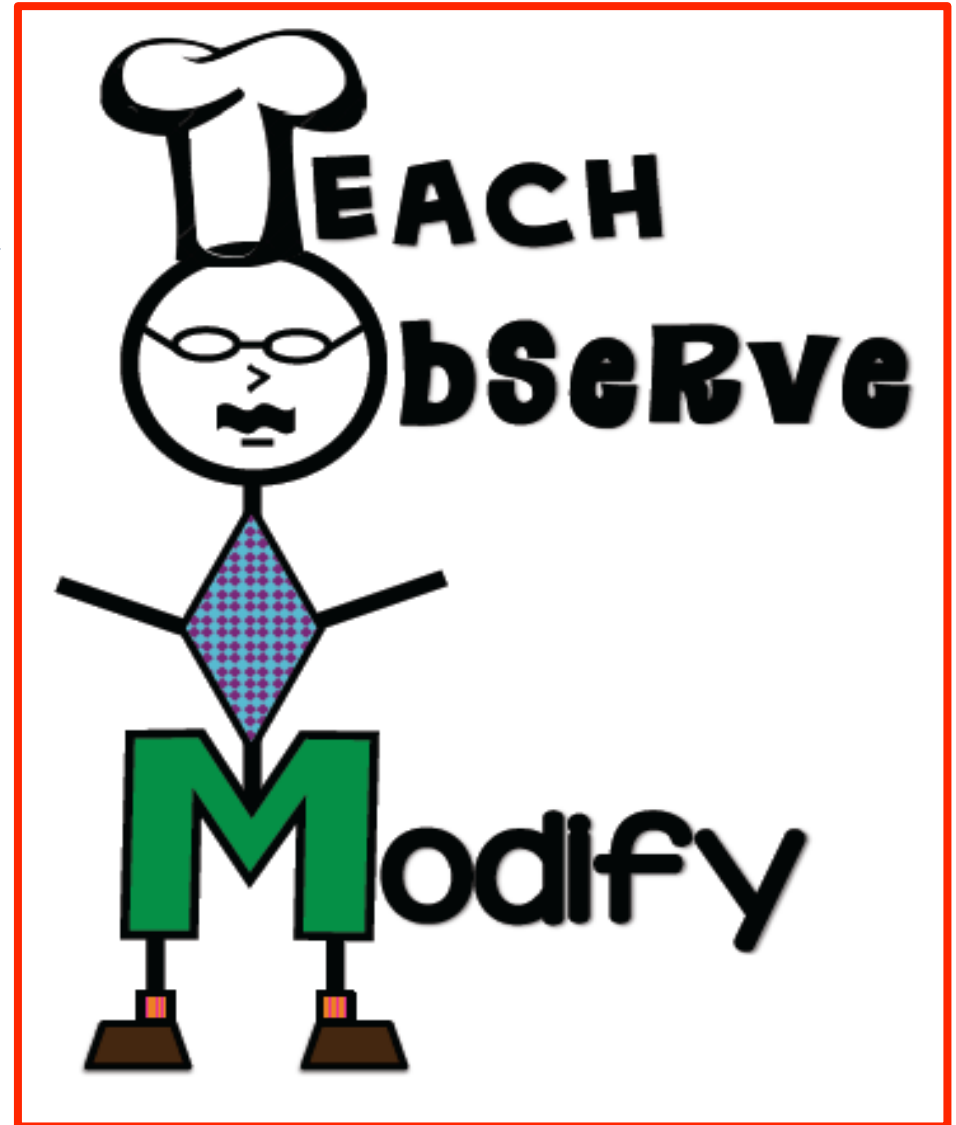


Modeling Fractions in Relationship to Division – Modified

OBJECTIVE: Model a situation that shows the relationship between division and fractions.

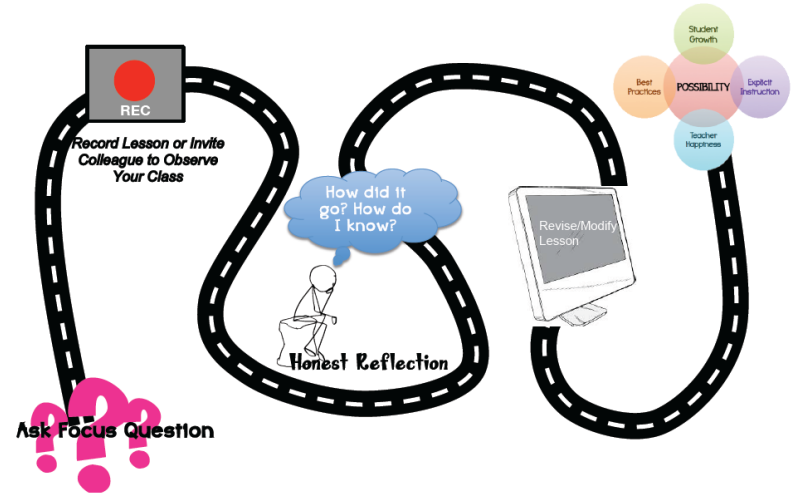


How do I apply
Teacher T.O.M.
to my
classroom
practice?



Classroom Practice: On the Road to Becoming a Reflective Teacher

- Record video of your lessons
- Invite a colleague to observe your class
- Ask students for feedback
- Ask parents for feedback
- Keep a journal
- Ask yourself, “How did it go?”
- Ask yourself, “How do I know?”
- Look for what’s working and what’s broken
- Realize the potential you see!



(Carter, Cividanes, Curtis, & Leb, 2010; Heick, 2014)

Professional Learning Community: Ways to Be a Reflective Community

- A Professional Learning Community is a purposely-organized formal structure of professionals designed to increase collaboration.
- Research shows that when teachers work together in analyzing and improving classroom practice, student achievement increases (Dufour, 2004).
- By implementing the Teacher T.O.M. process within a community of learners, conversations about goals, strategies, materials, pacing, questions, etc., can be used to improve the classroom practice of teachers, both individually and collectively.

Research In Mathematics Education (RME) CAMT Presentations

- **ESTAR: Understanding the Value of an Assessment Plan** - Tuesday, July 22, 1:00 - 2:00, Omni FW 5
- **Implementing the NEW TEKS with Best Practices** - Tuesday July 22, 1:00 - 2:00, CC 114
- **Money Management: Developing Appreciation Through Mathematics** - Tuesday, July 22, 1:00 - 2:00, CC 204AB
- **Spaghetti & Meatballs and Algebraic Reasoning** - Wednesday, July 23, 10:00 - 11:00, Omni Sundance 2
- **ESTAR: Understanding the Value of an Assessment Plan** - Wednesday, July 23, 2:30 - 3:30, Omni FW 5

RME Information

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SMU Research in
Mathematics
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Save the Date

2015 Research-
to-Practice
Conference

February 27, 2015

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