

November 1, 2016

Questions, Questions, Questions: Engage, Enrich, Extend Student Questioning in Mathematics

Today's Agenda

- Explore the Question Formulation Technique (QFT) protocol
- Understand the potential of the QFT
- Look at resources

WHAT IS THE QUESTION FORMULATION TECHNIQUE™ ?

The Question Formulation Technique (QFT) is a simple, but rigorous, step-by-step process designed to help students produce, improve and strategize on how to use their questions.

The QFT allows students to practice three thinking abilities in one process: divergent, convergent and metacognitive thinking.

Producing Questions



Q Focus:

“Differentiation in Math Class”

Follow the Rules for Producing Questions:

- Ask as many questions as you can.
- Do not stop to discuss, judge or answer the questions.
- Write down every question exactly as it is stated.
- Change any statement into a question.
- Number your questions.

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Thinking About Our Questions

You might have these two kinds of questions in your list:

Closed-ended questions – they can be answered with “yes” or “no” or with one word.

Open-ended questions – they require an explanation and cannot be answered with “yes” or “no” or with one word.
Identify closed- and open-ended questions.

- Please mark the closed-ended questions with a **C** and the open-ended questions with an **O**.

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Classifying Questions

closed-ended questions

Advantages

Disadvantages



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Classifying Questions

open-ended questions

Advantages

Disadvantages



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Thinking About Our Questions

Review your list of questions and change one closed-ended question into an open-ended one.

Then, change one open-ended question into a closed-ended one.

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Prioritize Your Questions



Choose the three most important questions from your list.

Keep in mind the Qfocus:

Differentiation in Math Class

Mark each priority question with an "X"

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Considerations for Prioritizing

When there is a large list of questions, it is helpful to prioritize. The Criteria for prioritizing is usually set by the teacher. Criteria will depend on what you have planned as next steps with the questions. Instructions for prioritization will vary. Here are some examples:

Choose three questions that...

- you consider to be the most important*
- most interest you*
- will best help you design your research project*
- will best help you solve a problem*
- you want/need to answer first*

Share Your Questions

Please share:

- **The questions you changed from closed to open-ended and from open-ended to closed. Read each question as originally written and how it was changed**
- **your three priority questions**
- **your rationale for selecting those three**
- **the numbers of your priority questions**

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COMPONENTS OF THE QUESTION FORMULATION TECHNIQUE™

1. The Question Focus (QFocus)
2. The Rules for Producing Questions
3. Producing Questions
4. Categorizing Questions
5. Prioritizing Questions
6. Next Steps
7. Reflection

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Possible Outcomes

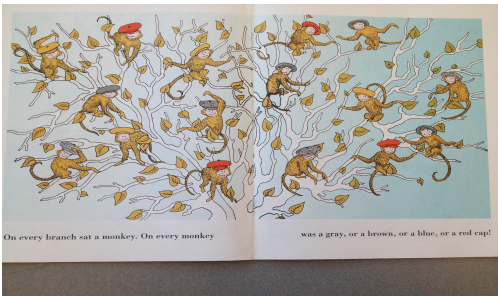
- How might the QFT be used in your math classroom?

Kindergarten Qfocus

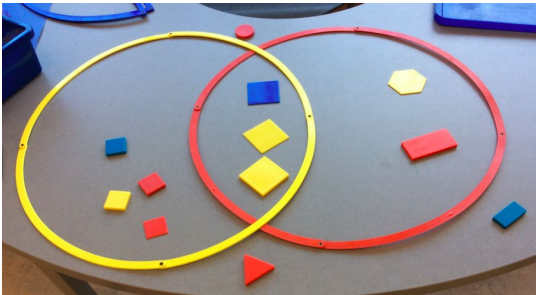


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K or First Grade



First Grade Qfocus



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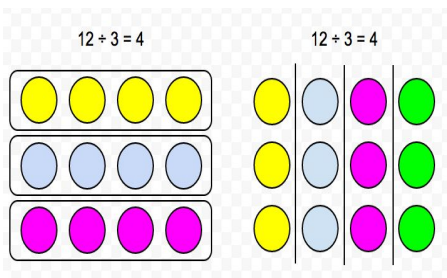
Second Grade Qfocus



9 rolls

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Third Grade Qfocus



Fourth Grade Qfocus

Someone ate my cake!

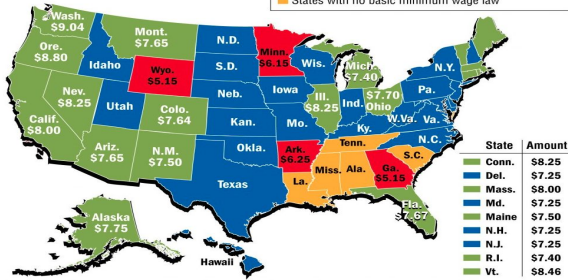


Fifth Grade Qfocus

Minimum wage rates

(Jan. 1, 2012)

The federal minimum wage law for states = \$7.25
 ■ States with basic minimum wage more than federal
 ■ States with basic minimum wage the same as federal
 ■ States with basic minimum wage less than federal
 ■ States with no basic minimum wage law



Website Sources for QFT

Dan Meyer

<http://www.watsonmath.com/2012/04/24/spreadsheet-of-dan-meyers-tasks-in-three-acts/>

Questioning My Metacognition

<https://eflecthy.com>

Robert Kaplinsky

<http://robertkaplinsky.com>

101questions

<http://www.101qs.com>

Yummy Math

<http://www.yummymath.com>

Thank you for participating!

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