

Introducing the Question Formulation Technique (QFT) Into Your Classroom



Using Student Questions

Students can use their questions for many purposes, including the following:

- ▶ Conduct Research
- ▶ Conduct Experiments
- ▶ Independent Projects
- ▶ Group and Individual Projects

All of these serve the Science Research Symposium well

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



The Question Focus (QFocus)

A simple statement, a visual or aural aid to help students generate questions

- Created from curriculum content

You design a QFocus every time you use the QFT

The Question Focus (QFocus)

The QFocus should:

- ▶ be brief
- ▶ provoke or stimulate new lines of thinking

The QFocus should not:

- ▶ be a question

Tip: Use the criteria above for evaluating your QFocus



The Question Focus (QFocus)

To design your QFocus:

1. Define the QFocus purpose
2. Think about what students will do with the questions they produce
3. Generate several QFocus ideas
4. Check against criteria
5. Choose the idea that best meets your purpose and the criteria



Q(FOCUS)



These leaves came off the same white oak (*quercus alba*) tree. It is obvious that the shape of their leaves is very different.

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Rules For Producing Questions



Rules For Producing Questions

Introduce the Rules for Producing Questions:

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

TIP: Distribute or post the **Rules for Producing Questions**



Rules For Producing Questions

- Ask students to review the rules
- Ask students to reflect about one of these questions:
 - ▶ What do you think would be difficult about following these rules?
 - ▶ Which one of these rules might be difficult to follow? Why?

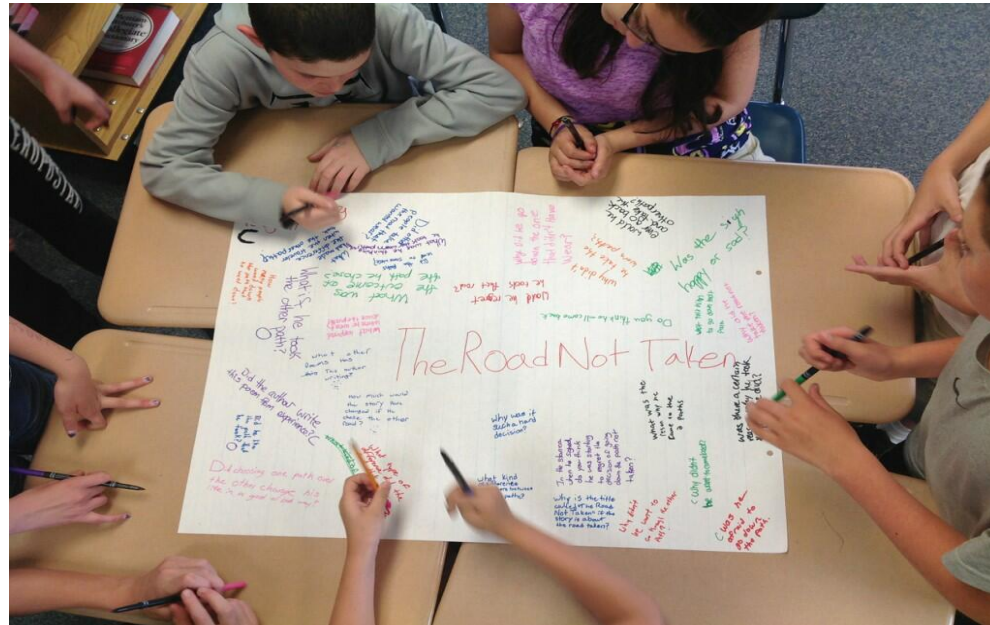
TIP: Do not skip over the discussion of the rules the first time you introduce students to the QFT.

Review the Rules for Producing Questions every time you use the QFT.



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Producing Questions



Joel Pardalis@mrPardalis students using the QFT

Producing Questions

Once students have discussed the Rules for Producing Questions:

- ▶ Divide students into small groups of 3-5
- ▶ Ask groups to identify a note-taker
- ▶ Distribute **newsprint or worksheets** to each small group

Producing Questions

Introduce the **QFocus** and ask students to:

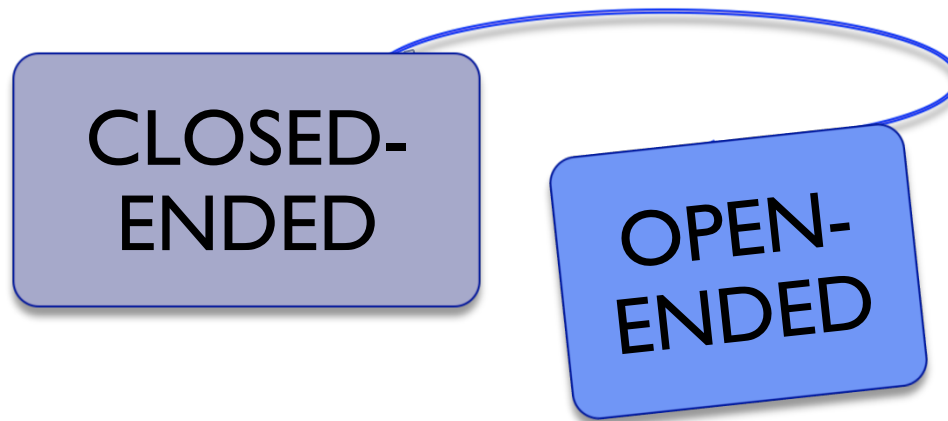
- ▶ Produce as many questions as they can in allotted time
- ▶ Follow the Rules for Producing Questions
- ▶ Number the questions

TIP: The note-taker should also contribute questions



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Categorizing Questions



Categorizing Questions

Define closed and open-ended questions:

- ▶ **Closed-ended Questions** can be answered with a “yes’ or “no” or with a one-word answer
- ▶ **Open-ended Questions** require more explanation



Categorizing Questions

Step 1

Ask students to look over the list and:

- ▶ mark the questions that are **closed-ended** with a “**C**”
- ▶ mark the questions that are **open-ended** with an “**O**”



Categorizing Questions

Step 2

Ask students to name:

- ▶ advantages of **closed-ended questions**

And

- ▶ disadvantages of **closed-ended questions**



Categorizing Questions

Step 2

Ask students to name:

- ▶ advantages of **open-ended questions**

And

- ▶ disadvantages of **open-ended questions**

Please note that both types of questions are useful. There are times in which open-ended questions are more useful and other times the closed-ended are what you need.



Categorizing Questions

Step 3

Ask students to **practice changing** questions from one type to another

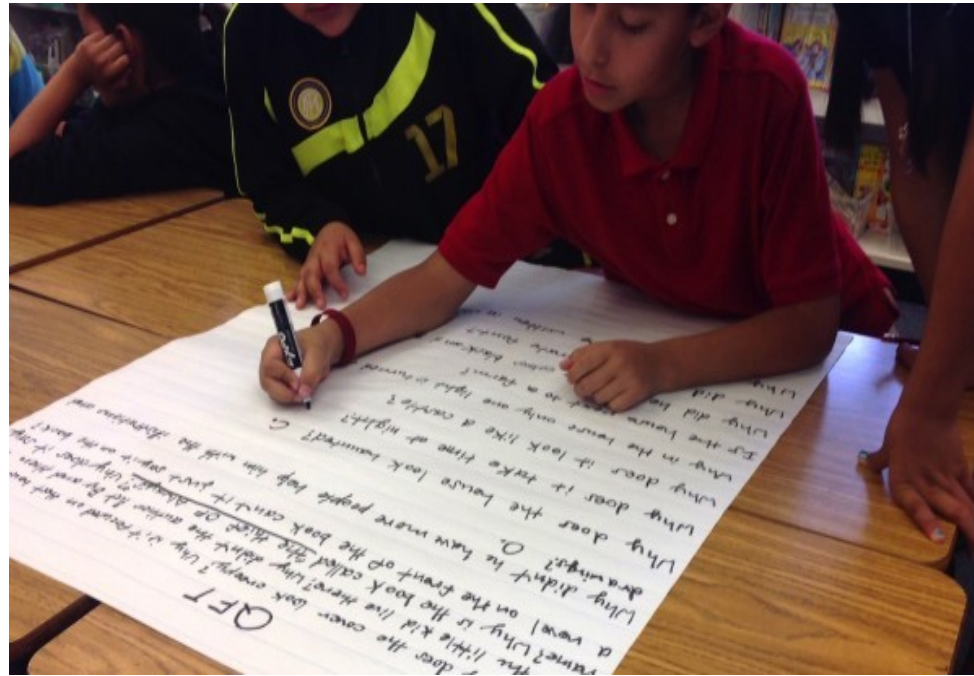
- ▶ “Choose one closed-ended question from your list and change it into an open-ended one.”
- ▶ “Choose one open-ended question from your list and change it into an closed-ended one.”

TIP: If students have questions from only one type, for example they only have open-ended questions, ask them to change two of those questions to closed-ended.



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Prioritizing Questions



Prioritizing Questions

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...

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



Prioritizing Questions

- ▶ Ask students to review their list of questions and choose **three** questions (most important; to develop a project, etc.). Mark them with an “**X**”
- ▶ Remind students to keep the QFocus in mind while prioritizing.

Prioritizing Questions

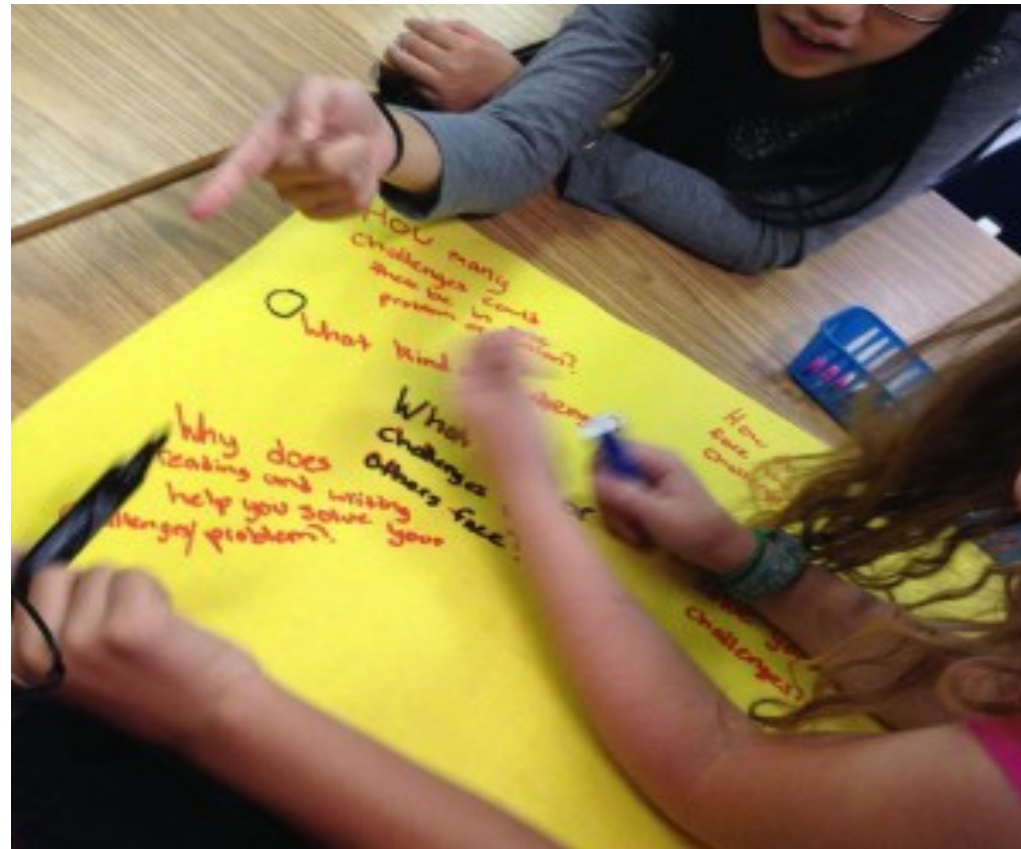
- ▶ Ask students to think about and share their rationale for choosing their priority questions.

For example: “Why did you choose these three as the most important?”

- ▶ Ask students to identify where are their priority questions in the sequence of the whole list of questions.

For example: “What numbers are the priority questions?”

6 SHARE



Reports

- ▶ Ask students to share aloud:

The questions they changed from closed to open-ended and then from open-ended to closed-ended:

- *Read the original question*
- *Read the new question*

2. Their three priority questions.

3. Their reasons for choosing the priority questions.

4. The numbers of the priority questions in the sequence of the entire list.

TIP: One group member can report and others can join in.



Reports

- ▶ When students share the numbers of the priority questions they will notice where in the sequence of questions the priority questions were produced.
- ▶ Often, students notice that the priority questions came from different places (beginning, middle or end) and that helps them see value of generating a lot of questions before choosing priority questions.

TIP: Ask students to pay attention to the numbers of the priority questions.