

## **Managing the Inquiry Classroom: Problems and Solutions**

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### **Problem: Some students do not participate enough**

Tips:

- ❖ Make sure that groups are as small as possible given the available materials and tasks
- ❖ Decide in advance about how much time students will need to complete specific tasks and tell them these guidelines
- ❖ Monitor student progress by walking about the lab, and watching and listening
- ❖ Use effective questioning techniques and plan questions in advance for discussions

### **Problem: Some students do not know how to get the inquiry started**

Tips:

- ❖ Give a clear and complete introduction, make sure students are clear on the objectives before starting a particular task
- ❖ If multiple groups struggle despite being given clear objectives, stop the class and have groups share their ideas with the class or offer collective assistance

### **Problem: Some students do not care and do not see the inquiry as relevant to their lives**

Tips:

- ❖ Admit that many of the questions raised by the inquiries are not directly relevant to students' lives, but point out indirect connections when appropriate
- ❖ Make sure that students understand the question(s) raised, generate a variety of plausible answers, and have ideas about how to test them
- ❖ Frequently remind students that the thinking patterns used in answering scientific questions are also employed in answering questions in everyday life

### **Problem: Some students do not listen**

Tips:

- ❖ Plan your introductory remarks carefully—don't waste the short time you have
- ❖ Students are generally much better at paying attention after they have engaged in an exploration activity because the discussion can center on their common experiences

### **Problem: Some students lack background knowledge for inquiries**

Tips:

- ❖ Use appropriate course sequencing so that knowledge acquired previously serves as background
- ❖ Use introductory remarks to provide needed background knowledge
- ❖ When eliciting student hypotheses, make clear that you are not looking for a "right" answer—you are looking for creative and varied possible answers
- ❖ Do not be critical and do not let other students be critical of student hypotheses
- ❖ If students are struggling to create hypotheses, have them break into small groups for brainstorming

### **Problem: Some students talk at inappropriate times**

Tips:

- ❖ Do not start talking until everyone is quiet and you have everyone's attention
- ❖ Stand next to students that talk at inappropriate times

**Problem: Some students have bad attitudes and are disruptive**

Tips:

- ❖ If caused by inquiries that are too challenging or not challenging enough, adjust them to match students' skill level
- ❖ Pair more and less skilled students and have the more skilled students become "peer instructors"

**Problem: Some students do not want to think for themselves—they just want to be told the right answers**

Tips:

- ❖ Make sure quizzes and exams require thinking
- ❖ Make sure students know that the instructor's job is to help raise interesting and challenging questions and to provide students with materials and suggestions of how to seek answers
- ❖ Make sure that students know that their job is to become good at generating multiple answers, designing and conducting ways of testing the multiple answers, and using evidence and logic to construct convincing arguments for some of the answers and not others

**Problem: Some students are bored**

Tips:

- ❖ Make sure students know that you will call on students randomly
- ❖ Act and sound enthusiastic, even when you're not
- ❖ Be an enthusiastic fellow investigator!

**Problem: Some students socialize during lab**

Tips:

- ❖ Be aware that some socializing can be worthwhile because it contributes to positive working relationships
- ❖ Walk about the lab and watch and listen to students

**Problem: Some students participate too much**

Tips:

- ❖ Use cards with student names on them to select who will answer each question

**Problem: Some students do not clean up after themselves**

Tips:

- ❖ Make sure to announce your clean-up policy at the start of the semester and enforce it
- ❖ Do not excuse anyone until the lab is cleaned satisfactorily

**Problem: Some students cheat and plagiarize the work of others**

Tips:

- ❖ On quizzes and exams, ask open ended essay questions and/or create and use alternate test forms
- ❖ For group work, try to make your policy clear at the outset and remind students of it frequently