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Managing emotions: The key to success in a high school POGIL course?

1. Please introduce yourself to your new group members – about 30 seconds per person.
2. Each group member will now choose a role:

Manager – keeps track of time; keeps the group moving forward

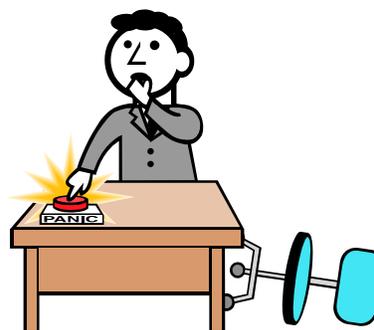
Reader – reads each portion of the activity aloud

Document controller – passes out paperwork; ensures that everyone is working on the same question

Spokesperson – reports out on team's consensus answers

Why?

Chemistry is a course with a reputation that often induces panic. Learning cannot progress when a student is panicking, so it is critical that chemistry teachers carefully analyze the situations that trigger student anxiety. In our process-oriented, guided-inquiry (POGIL) high school chemistry course, students are challenged to learn together in small cooperative groups facilitated by a teacher who sets goals for the day and checks in with the whole class every 10 – 15 minutes. We have worked hard to incorporate strategies to reduce student anxiety, increase parent support, and prevent complaints to the principal. By participating in this activity, you will discover some strategies that may be useful in helping your own students succeed.



Model 1: Student fears identified in BCS chemistry classes

1 How can I earn a good grade in this course?	2 What if I'm called on when I don't know the answer?	3 How can I be sure that I understand a concept or skill?
4 How can I deal with the frequent feelings of panic when I am confused or frustrated or out of control?	5 How can I prepare for the end of course exam? American Chemical Society High School Chemistry Exam	6 How do I know our answers are "right" if I am working in a small group instead of listening to the teacher?

Use the information in Model 1 to answer the following questions.

3. Circle 2-3 of the student fears that pose learning obstacles for your students. Share your choices with your group.
4. Reach a consensus to identify one student fear that every teacher in your group has encountered.
5. Document controller: Please pick up enough slips of paper for everyone in your group. Pass them out.
6. The text on each slip of paper represents a specific teacher behavior. Each of these behaviors has been incorporated into the BCS chemistry course. Read your text aloud. *Reach a group consensus* matching the behavior with one of the student fears that it might alleviate. Write the agreed upon fear number on your slip of paper. Repeat until all group members have shared.
7. Document controller: Please pick up copies of the handout "A list of teacher behaviors incorporated into chemistry classes at BCS" for each member of your group.
8. Skim the list of teacher behaviors. List 1-2 behaviors that would be useful for you, personally, to implement in your class this school year. Share your choices with your group.

Spokesperson: Be prepared to report out on one or two of your group's responses.



We will begin our reporting out at _____ : _____

Questions to ask during Q & A time:

A list of teacher behaviors incorporated into chemistry classes at BCS

Student Fears

1

How can I earn a good grade in this class?

Intentional teacher behaviors

Implement “redemptive grading” to help reward students for mastering the content by the end of the semester, even if they learn a little more slowly than the pace of the course. Our exams count for 50% of the course grade, but the 1st and 3rd quarter final exams can redeem chapter exam scores to that point in time; semester final exams can redeem chapter and quarter exam scores for the entire semester. If the final exam score is higher than the exam average to that point in the year, all of the exam scores are changed to the final exam score. If the final exam score is lower than the exam average to that point in the course, the final exam is weighted the same as any other exam.

Chem study lunches are held twice each week. Students can come in and work on homework together, ask questions about the workbook chapter, complete work for missed days, or review quarter or semester exams they have already taken (these exams are not released to students).

2

What if I’m called on when I don’t know the answer?

Pose questions to the entire class, explicitly offering wait time.
“Take 15 seconds to come up with an answer...”
“Discuss with your team and then choose a spokesperson to share...”
“You may consult with anyone in the room for one minute...”

Listen respectfully to answers. If a student answer is incorrect, back up and ask a simpler question that he/she can answer successfully before you move on to another student. Affirm any portions of the thinking that are solid.

3

How can I be sure that I understand a concept or skill?

On the day immediately after an activity has been completed, give a mini-quiz to test the understanding of the 2-3 most important new ideas learned. Correct the quiz in real time, so students’ knowledge is quickly reinforced and erroneous answers are confronted before they become solidly embedded.

Tie homework problems directly to newly learned content. Use an online homework system (like WebAssign) that provides immediate feedback so students are not practicing incorrect strategies for solving problems.

Student Fears

4

How can I deal with the frequent feelings of panic when I am confused or frustrated or out of control?

Intentional teacher behaviors

Start the course with an activity that directs students to read and analyze letters from the previous year's chem students. Students work together to predict what they will be experiencing in class this year, identify last year's students' feelings, and advice for success.

(Letters were written on the last day of the course. Prompts: What advice would you give to a student just starting chemistry, knowing what you do now? What behaviors would help them to succeed? How are you feeling about chemistry at the end of the year?)

On daily mini-quizzes, occasionally include this question:

List three adjectives that describe how you are feeling about chemistry at this point in the course.

Create a Wordle® or similar graphic to share with students the next day.

This way they can see that they are not alone in how they feel.

Or send a quick email to each student, responding to their feelings with affirmation and encouragement.

Occasionally throughout first quarter, less frequently during 2nd quarter: Partway through class, ask for a show of hands "How many of you are feeling confused/frustrated right now?"

Respond with "That's how you should be feeling, because you are learning something brand new! Frustration is a valid response to new learning. If you are still feeling confused at the end of class, then I have not done my job."

After 6-8 weeks of class, use these questions as the daily mini-quiz:

1. Identify one area of **strength** in the way we are learning chemistry.

Explain **why** this helps you to learn.

2. Identify one area for **improvement** in the way we are learning chemistry.

Describe **how** we could change the course to better help you to learn.

3. Identify one **insight (Aha! moment)** you have had about how you best learn.

Explain **how** you can use this insight to succeed in chemistry class.

The following day, share some of the responses anonymously and announce specific changes you will be making in the course, based on student input.

Student Fears

4

How can I deal with the frequent feelings of panic when I am confused or frustrated or out of control?

(continued)

Intentional teacher behaviors

Two or three weeks before the academic year begins, send a Mole Day post card to welcome each student. No student wants to be blindsided. Sample text:

Welcome to Chemistry!

This may well be the most difficult course you take in high school. We will be working together in teams of scholars to master the most important concepts and skills of chemistry. My goal is your success.

Regards,

Mrs. Sullivan

P.S. Chem Study lunch meets every Monday and Wednesday in Room E201

Since it is the parent who usually opens snail mail, you will have an ally before the year begins!

At Parent Open House:

Share a composite graphic of how students are feeling at the start of the course. Ask parents to predict what behaviors they might observe when their students are at home. No one wants to be blindsided.

Share the overall course grades that student earned in the course the previous year, so parents see that success is possible. Note that last year's students felt the same way at the start of the course.

Enlist parents to focus on encouraging their students to persevere even when they are frustrated. "This is a difficult subject; just keep at it."

5

How can I prepare for the American Chemical Society High School Chemistry Exam?

Encourage students to increase their problem solving focus by printing out their online homework (we use WebAssign) and solving problems on paper with just a calculator and periodic table in the room - no phone, laptop, or tablet to distract them. Submit and check answers after solving the problem on paper.

Encourage students to increase their problem solving pace and accuracy by solving homework problems on paper with just a calculator and periodic table in the room. Suggest that they set a timer for 10 minutes and then work as hard and fast as they can. When the timer rings, stop. Then submit the answers online and check how many they solved correctly. They can chart their progress in average number of correct answers per 10 minutes.

Pre-test the students the first week of school, using a 40 question exam that is very similar to the end of course exam. Share the class average (in my classes it is usually about 1.5 correct/40 questions). Explain that if students already know the answers, they are in the wrong class! Use similar format exams for the 1st and 3rd quarter and the 1st semester exams. Choose questions so that 75% correct answers = 100% score. On the end of course exam, keep the same curve.

Student Fears

6

How do I know our answers are “right” if I am working in a small group instead of listening to the teacher?

Intentional teacher behaviors

Assign specific questions to each team by writing the team number next to the activity question. Ask each manager to send a spokesperson to record their team’s answer to that question as they work through the activity. When all answers are posted, stop the entire class to have teams compare their answers to the posted ones. Correct any errors *after* eliciting input from the team that wrote the answer.

Before students begin work on a section of an activity, point out an important concept question where you will STOP the entire class and solicit input on the answer from each team’s spokesperson. Set a time limit for teams to complete through that question.

Create an agreed upon graphic/visual cue for a team to post when they are stuck on an activity. Before moving to observe a new team, check around the room to see if any team has posted the “We’re stuck ☹” graphic. Go help that team before continuing on your circuit of the room.

Stand near each team for one full minute, reading over the shoulder of the document controller (DC) to ensure that the answers on the DC packet are correct. If you observe an error, stop the team and back them up to the last question they answered correctly. Ask guiding questions to get them back on the right track.

Stand near each team for 30-60 seconds, listening in on conversations. If you hear an error in reasoning or factual knowledge, stop the team. Ask guiding questions to get them back on the right track.

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