

PROMOTING SCIENTIFIC ARGUMENTATION

Provide opportunities for students to participate in group discussions with the focus on developing a scientific argument based on evidence.

Claim-Evidence-Reasoning with Group Discussion - Before the group discussion, students will complete the “Before Discussion” section of the CER handout based on their inquiry experience. Use the Teacher Facilitation Questions to assist students in the process. Next, place students into groups to share and discuss the CER. Distribute the Sentence Stem cards to each group. The cards should be used to guide the conversation. Since this discussion will feel very different than a regular conversation, it is a good idea to either assign each group member a specific role in the discussion or a minimum number of questions/statements for each group member. During the discussion, students should record new insights and learning on the CER handout. After the discussion, students will use their original CER, the new insights and learning, and complete a revised CER in the “After Discussion” section of the CER handout.

THE QUESTION/PROB-

BEFORE GROUP
DISCUSSION

Claim

Evidence

Reasoning

GROUP DISCUSSION

New Insights and Learning

AFTER GROUP
DISCUSSION

Claim

Evidence

Reasoning

DEVELOPING SCIENTIFIC ARGUMENTATION

Sentence Stem Cards for Group Discussion

TEACHER FACILITATION QUESTIONS

- What are some other possible claims?
What evidence do you have?
- Why are you using that data/observation as evidence?
Why are you not using that data/observation as evidence?
- What is your reason for agreeing?
- What is your reason for disagreeing?
- Does your evidence remind you of anything we have learned in class?

WHEN YOU HAVE QUESTIONS, ASK:

- Why do you think that is important?
- How do you know that _____?
- What is your evidence?
- Why do you think that happened?
- If that is true, wouldn't _____ be true?
- Could there be a different explanation?
- How did you find that evidence?
- How is that related to the claim?

WHEN YOU NEED CLARIFICATION, ASK:

- What do you mean by . . . ?
- Can you please repeat that?
- Why do you think . . . ?
- I am confused about . . .
- I am not sure about what happened . . .
- Can you please explain what _____ means?
- Can you show me the evidence?
- Can you explain that in a different way?

WHEN YOU DISAGREE, SAY:

I disagree with _____ because . . .
I agree with _____ but . . .
I disagree with that claim because . . .
I disagree with that reasoning because . . .
I agree with you, but I also think . . .
I disagree with the part about . . .
I think you are headed in the right direction but . . .
The evidence I have seen shows something different.
I hear what everyone is saying but . . .
We need more evidence . . .

WHEN YOU AGREE, SAY:

I agree with _____ because . . .
Your point about _____ was important because . . .
I agree with you and I also found . . .
You make a good point when you say . . .
I know that too because . . .
I also think that . . .
I agree with _____ and also want to add . . .