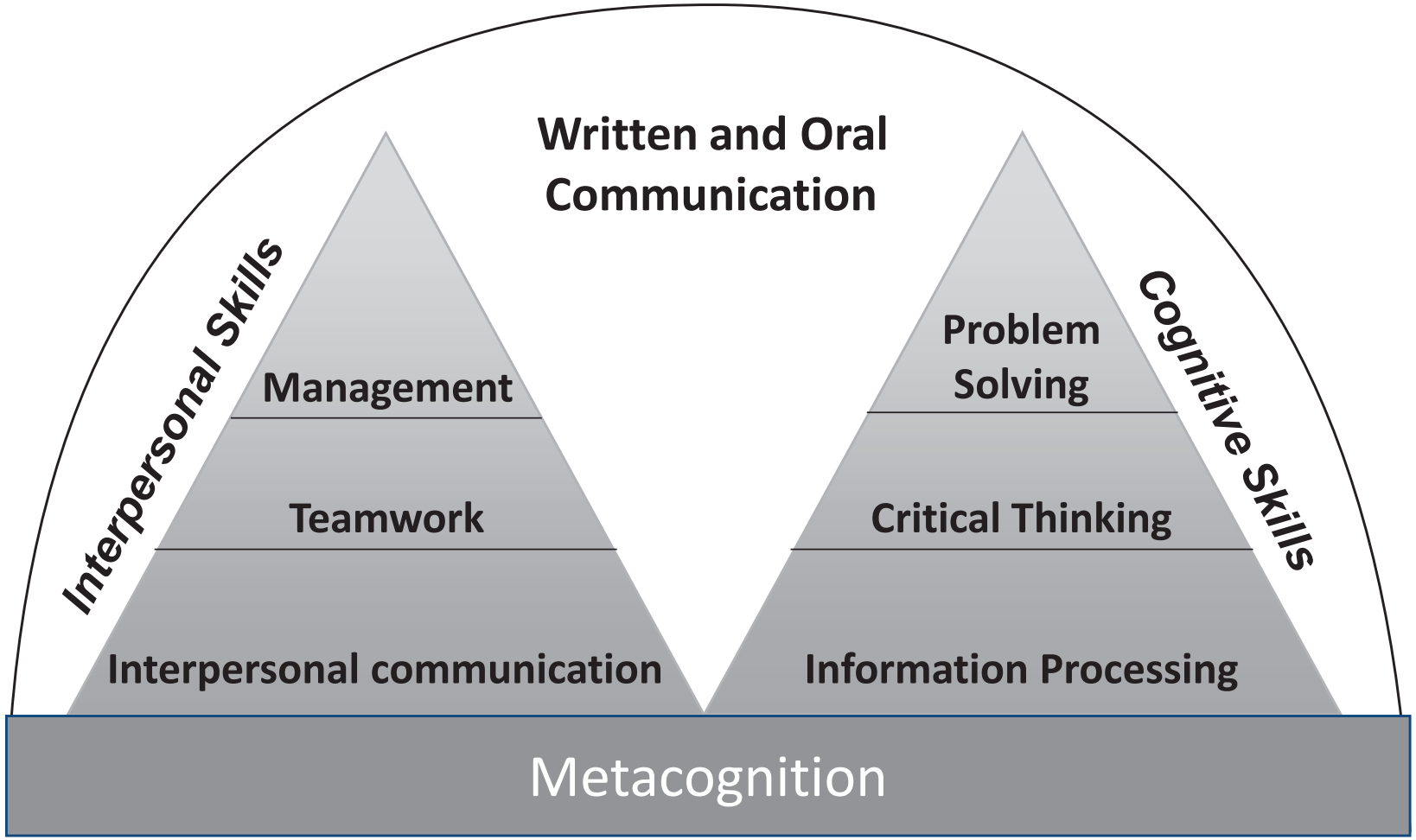
Process Skills



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Process Skills Author Resource

Here are a variety of examples of how questions or prompts in a POGIL activity can focus on, and even help develop, student process skills. Use your best judgement when deciding which examples to use when writing an activity. Some are better suited for classrooms that have teams with more developed skills. Try to focus on just one skill at a time in a single activity.

Teamwork

- Individually, write an answer to Question _____. When everyone has finished, have each team member read their answer out loud. As a team, construct the most complete answer you can using all members' contributions.
- Individually, rank _____. Compare your rankings to those of your teammates. Reach a consensus answer for the ranking. If you cannot reach a consensus, list the conflicting views.
- Complete one calculation as a team to ensure everyone knows the process. Then, assign the rest of the calculations fairly. Ensure at least two team members do each calculation to check for accuracy.
- During the activity today, when did you feel most like a team? What was happening during that moment that made you each feel like a valued member of the team?
- As a team, reflect on how each team member expressed their ideas when arriving at a consensus answer. Ask each person on the team to provide a suggestion for improving communication in the future.
- Reflect on your participation in today's activity. Give yourself one point for each team building behavior below:
    - I acknowledged when a teammate had a good idea.
    - I invited a teammate who was being quiet to contribute an idea.
    - I expanded on something one of my teammates said.
    - I showed my agreement or disagreement with teammates through nonverbal signals (eye contact, head nods, etc.)

  As a team, discuss how you could improve your teamwork.
- Consider your teamwork today. Was it necessary for the instructor to refocus your team? If yes, how could you work as a team to prevent that from being needed?
- Consider your work as a team today. Was your team able to complete the assigned questions in the time suggested by the instructor? If not, how might your team improve their efficiency to speed up your work?
- Was there a time today that your team split into two or more working groups? If yes, what question caused that to happen? How might your team prevent that from happening the next time you work together?
- What did your teammates do today that made you feel like they were listening and valuing your input? Share your response with your teammates. If they did not make you feel valued, kindly suggest a change to their behavior.
- Working as a team often means bringing different backgrounds and experiences to the table. Was there a time in today's activity that one person's experience was valuable to the team? Describe that contribution, and explain why it was valuable.

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Communication

- Being a good listener includes not interrupting, using body language (head nods, eye contact) to show you are paying attention, and acknowledging someone's contribution. Individually, rank your listening skills during today's team activity.

1	2	3	4	5
I am not a good listener.		I could improve my listening.		I am an excellent listener.

- In the next section of the activity, all team members should make an effort to elaborate or extend on someone else's comment at least once. At the end of the section, discuss how those contributions enriched your team discussion.
- In the next section of the activity, each team member should ask someone to contribute at least once. Use the person's name when you pass the conversation to them.
- Paraphrasing is a great communication tool. This is when you restate, in your own words, another person's idea. In the three questions below, make sure at least one other person on the team paraphrases each idea that is suggested. When you finish the three questions, discuss how paraphrasing helped your team communicate.
- As a team, help your Presenter write a short summary of what your team learned today. The summary should be no more than three complete sentences.
- Use a complete sentence to summarize the relationship between _____ and _____.
- Have each team member write a complete sentence to define the word _____. Share your sentences, and construct a consensus definition to present to the class.
- Consider this student response to the question _____. What improvements can your team suggest to make the response more appropriate for the audience?
- What is the author's purpose in telling us _____?
- Consider the conversation your team has had during this activity. Who on your team has been quiet? Who on your team has talked the most? What can your team do to make the conversation more balanced?
- After individually answering question _____, pass your papers clockwise one person. Read your teammate's answer to question _____ and provide one suggestion to make the answer more clear.

Management

- The questions that follow Model 1 should take about _____ minutes to complete. Develop a plan for your team to complete this section on time.
- Manager – There are several calculations required to fill this table. Divide the work evenly among team members. Develop a plan for the answers to be checked by a second person on the team.
- Manager – Appoint one team member to cut the cards apart so they can be sorted.
- As a team, develop a plan for the next section of the activity, to ensure that each team member has an opportunity to be the first person to offer an answer.

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- Since this question requires research from each team member, assign each person on the team a different aspect of the question.
- Provide some feedback for your Manager. Share one strength related to their management of the team today and one area of improvement.
- During this activity, was your team able to finish the assigned sections in the time required? If yes, what helped your team finish on time? If no, what improvements could your team make to finish on time?

Problem Solving

- Look at your team's previous answer. Is it reasonable? Justify your answer.
- After reading the question below, sort the information in the question into "necessary" information and "distractors".
- A classmate suggests the following solution to _____. As a team, discuss their strategy and determine if it is reasonable. What are the strengths of their proposal, and what may not work as intended?
- Consider the problem that faces _____ in Chapter 7 of the novel. Describe all the facets of their problem and list/propose how other characters might help them.
- Consider the schematic drawing of the robot electronics. Identify the problem in the wiring, and propose a solution.
- The set of code shown at the right produces an error message. Find the problem in the code and correct it. This may take some trial and error. Keep track of the solutions you try.
- As a team, reflect on the most challenging problem in this activity so far. Describe what you did to solve the problem.
- The last _____ questions showed you how to solve a _____ problem. As a team, summarize the steps you would take to solve a similar problem.
- Often there is more than one way to solve a problem. Consider the two students below, and their work for question _____. Is one solution better than the other? If yes, justify your choice for the better method.

Critical Thinking

- A classmate states _____. Do you agree? Support your answer with two pieces of evidence from the Model.
- Support or refute: _____ Provide justification for your choice.
- True or false: _____ If false, change the statement so it is true.
- Choose which of these [processes/directions/procedures] is most efficient. Support your choice.
- What evidence can you use to back-up your team's claim? How does it support your claim?
- Suggest an improvement to the ending of this story. Explain why your addition or edit would be an improvement.
- Describe the relationship between _____ and _____ in the story. What evidence is provided in the written work to support your conclusion?

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- Select the proper conjugation for the verb _____ in each sentence.
- What does _____ imply? Justify your answer by referring to particular [features/passages/data] from class materials.
- Critical thinking includes making a claim, supporting that claim with relevant evidence, and establishing relationships between the evidence and the claim. Which question in this activity asked you to do all three of these tasks?
- What [data/information] would you need, in addition to that provided in Model 1, to strengthen your claim?
- How does the scale of the time-line in Model 1 affect your interpretation of the relationships between events leading up to _____?

Information Processing

- Using data from the table in Model 1, construct a graph that shows the relationship between _____ and _____.
- Which type of display – bar graph, line graph, or scatter plot, would be the best way to show this set of data and the relationship between _____ and _____?
- In the diagram in Model 1, what does the upward arrow represent?
- Add an arrow in the Model 1 diagram to indicate _____. Label the arrow.
- Briefly summarize the trend you see in the Model 1 graph.
- What does the author mean when they write _____?
- Consider the three excerpts in Model 1. Circle the one that is most useful in addressing the main character's dilemma.
- Construct a list of five details from the reading that describe the setting.
- Describe your image of character _____ in the story. What do they look like and sound like? What evidence is provided in the reading to create that character in your imagination?
- According to the timeline in the Model, did _____ happen before or after _____?
- Information processing is a skill that involves accurately interpreting data, making references, or extracting patterns from data. When working through today's activity, what one question best demonstrated the use of this skill? Explain.
- Rate your team's ability to extract information from the diagram in Model 1. Provide an example to support your rating.

1	2	3	4	5
Inaccurately		With some errors		Accurately

- Circle the data in the table in Model 1 that was most useful in answering the question above.
- Think about a question in the activity where there was disagreement among team members about the answer. How did you use the Model to determine the correct answer?

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Assessment/Metacognition

Many of these examples are also found in other parts of this document. Note that most of these are assessment or metacognition questions related to process skills. You can also write assessment and metacognition questions related to the content of the activity.

- As a team, reflect on how each team member expressed their ideas when arriving at a consensus answer. Ask each person on the team to provide a suggestion for improving communication in the future.
- Consider your teamwork today. Was it necessary for the instructor to refocus your team? If yes, how could you work as a team to prevent that from being needed?
- Consider your work as a team today. Was your team able to complete the assigned questions in the time suggested by the instructor? If not, how might your team improve their efficiency to speed up your work?
- Was there a time today that your team split into two or more working groups? If yes, what question caused that to happen? How might your team prevent that from happening the next time you work together?
- What did your teammates do today that made you feel like they were listening and valuing your input? Share your response with your teammates. If they did not make you feel valued, kindly suggest a change to their behavior.
- Working as a team often means bringing different backgrounds and experiences to the table. Was there a time in today's activity that one person's experience was valuable to the team? Describe that contribution, and explain why it was valuable.
- During the activity today, when did you feel most like a team? What was happening during that moment that made you each feel accepted and valued?
- Consider this student response to the question _____. What improvements can your team suggest to make the response more appropriate for the audience?
- Consider the conversation your team has had during this activity. Who on your team has been quiet? Who on your team has talked the most? What can your team do to make the conversation more balanced?
- After individually answering question _____, pass your papers clockwise one person. Read your teammate's answer to question _____ and provide one suggestion to make the answer more clear.
- As a team, reflect on how you communicated to complete this section of the activity. Provide suggestions on how the team can ensure everyone is contributing to the discussion.
- Provide some feedback for your Manager. Share one strength related to their management of the team today and one area of improvement.
- During this activity, was your team able to finish the assigned sections in the time required? If yes, what helped your team finish on time? If no, what improvements could your team make to finish on time?
- Information processing is a skill that involves accurately interpreting data, making references, or extracting patterns from data. When working through today's activity, what one question best demonstrated the use of this skill? Explain.

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- Rate your team's ability to extract information from the diagram in Model 1. Provide an example to support your rating.

1	2	3	4	5
Inaccurately		with some errors		Accurately

- Circle the data in the table in Model 1 that was most useful in answering the question above.
- Think about a question in the activity where there was disagreement among team members about the answer. How did you use the Model to come to a conclusion?
- As a team, reflect on the most challenging problem in this activity so far. Describe what you did to solve the problem.
- The last _____ questions showed you how to solve a _____ problem. As a team, summarize the steps you would take to solve a similar problem.
- Often there is more than one way to solve a problem. Consider the two students below, and their work for question _____. Is one solution better than the other? If yes, justify your choice for the better method.

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