

Defined STEM: Student Outline for Working through a Performance Task The Process

Note: The steps in this model may have to be visited several times. Steps two through five may be conducted concurrently as new information becomes available. As more information is gathered, the problem statement may be refined or altered.

1. Read and analyze the problem scenario. Check your understanding of the scenario by discussing it within your group. A group effort will probably be more effective in deciding what the key factors are in this situation. Because this is a real problem-solving situation, your group will need to actively search for the information necessary to solve the problem.

Teacher Checkpoint

Potential Reflective Questions (Oral or Written):

What main goal did the group cover today?

What content did members find interesting?

Why is _____ project important/ relevant?

What specific subject matter does this problem address thus far?

How would I describe my work and cooperation within the group?

Did I contribute regularly as we worked together?

Formative Assessment Notes:

2. List what is known. Start a list in which you write down everything you know about this situation. Begin with the information contained in the scenario. Add knowledge that group members bring. (You may want a column of things people think they know, but are not sure!

3. Develop a problem statement. A problem statement should come from your analysis of what you know. In one or two sentences you should be able to describe what it is that your group is trying to solve, produce, respond to, or find out. Think about it as: "what is" and "what should be." The problem statement may have to be revised as new information is discovered and brought to bear on the situation. This information may also be available in the performance task.

4. List what is needed. Prepare a list of questions you think need to be answered to solve the problem. Record them under a second list titled: "What do we need to know?" Several types of questions may be appropriate. Some may address concepts or principles that need to be learned in order to address the situation. Other questions may be in the form of requests for more information. These questions will guide searches that may take place on-line, in the library, or in other out-of-class locations.

Teacher Checkpoint

Potential Reflective Questions (Oral or Written):

Have you done a similar kind of work in the past (earlier in the year or in a previous grade; in or out of school)?

Do you feel this project is worthwhile? Why?

Did I contribute regularly as we worked together?

Did members possess enough background knowledge?

What are the strengths, preferences, and talents of each group member?

How does _____ project include multiple perspectives? How did it help you better understand a different perspective?

What resources do you have that can help you learn new material?

Formative Assessment Notes:

5. List possible actions. List recommendations, solutions, or hypotheses under the heading: "What should we do?" List actions to be taken, e.g., question an expert, get on-line data, visit library.

6. Analyze information. Analyze information you have gathered. You may need to revise the problem statement. You may identify more problem statements. At this point, your group will likely formulate and test hypotheses to explain the problem. Some problems may not require hypotheses, instead a recommended solution or opinion (based on your research) may be appropriate.

Teacher Checkpoint:

Potential Reflective Questions (Oral or Written):

What is the most valuable thing you have learned thus far? Why?

What is the most interesting thing you have learned thus far? Why?

Do we come prepared and present to each meeting and help each other stretch our talents?

How can we work together to find the answers to difficult questions we have still not been able to answer?

What resources did you use while working on this problem/product? Which ones were especially helpful? Which ones would you use again?

Have you changed any ideas you previously had on this subject?

Did you do your work the way other people did theirs?

How much did you know about this subject before you studied it?

How do members motivate each one to participate?

What specific subject matter does this problem address thus far?

What evidence do you have to support the conclusions you came to thus far in _____ project?

Formative Assessment Notes:

7. Present findings. Prepare a product(s) in which you provide solutions, make recommendations, predictions, inferences, or other appropriate needs based upon the products you are creating. Be prepared to support your decisions and the products you have developed.

Teacher Checkpoint

Potential Reflection Questions (Oral or Written):

Do you feel this project was worthwhile? Why?

What did you learn about yourself as you worked on this product?

One thing I would like to improve upon is...

What would you change if you had a chance to do this product over again?

Did I contribute regularly as we worked together?

What are the strengths, preferences, and talents of each group member?

How can we work together to find the answers to difficult questions we have still not been able to answer?

How does _____ project include multiple perspectives? How did it help you better understand a different perspective?

What process did you go through to produce this product?

What problems did you encounter while you were working on this product? How did you solve them?

What set of skills did you use to accomplish this project?

What were your goals in creating this piece of work?

Have your goals changed as you worked on it? Did you meet your goals (Are you currently meeting your goals?)

What was especially satisfying to you about either the process or the finished project?

What is the one thing you particularly want people to notice when they look at your work?

What will you need to learn to solve problems like this in the future?

How much did you know about this subject before you studied it?

How does this product demonstrate your understanding of that subject matter?

Formative Assessment Notes: