

VTAAP
Student Performance
Scoring Guide
2011

Science Inquiry



Vermont Alternate Assessment Portfolio

2010-2011 Instructions for Scoring Science Inquiry

Orientation

You will refer to the following documents to evaluate the science inquiry submission.

- *VTAAP Inquiry Target Behaviors*
- *VTAAP Form 5- Science Inquiry Worksheet*
- Stage I Student Product
- Stage II Student Product
- Stage III Student Product
- *VTAAP Form 6- Inquiry Score Report*

Carefully read the hard-copy *VTAAP Form 5- Science Inquiry Worksheet*. Note the strength of the grade-level connection and the specific inquiry skill (e.g., Make a Prediction, Collect and Organize Data, etc.) targeted for assessment in each stage. Examine the student Products submitted as evidence. Note whether they reflect independent performance.

Scoring

There are 2 elements to Inquiry Scoring- Application Score and Performance Score. Rate the Application element first and proceed to the Performance Score.

Application Score

Whenever possible, science inquiry should be taught and assessed in the context of the grade-level classroom. The application section relates to the entire inquiry process. In this section, you will focus on the connection to GLGEC (grade-level general education curriculum) and the documentation of the student's participation in the Inquiry Worksheet.

GLGEC

This component can be fully credited if the Content Focus (Domain + GE) has been identified and connected to the actual topics, activities, and materials used in the grade-level classroom.

Inquiry Worksheet

This component can be fully credited if each step in the worksheet has been well documented. This includes a *brief* description of the student's participation, the outcomes, and the degree of independence. Product Descriptions/Label should be complete and correlate directly with the evidence submitted.

- ▶ Award a '3' if the GLGEC is strong and clear, and the Inquiry Worksheet is fully completed and provides a thorough account of student participation in all 8 steps of the inquiry process.
- ▶ Award a '2' if the GLGEC is noted and the Inquiry Worksheet provides an adequate description of student participation in all 8 steps of the inquiry process.
- ▶ Award a '1' if there is no convincing connection to GLGEC, but there is a submitted worksheet and student participation in the inquiry process is at least minimally documented.
- ▶ Award a '0' if there is no or insufficient documentation of student participation in the inquiry process on the Inquiry Worksheet. **Note:** The absence of this documentation will disqualify the entire inquiry portfolio submission.

Performance Score

Students receive instruction and participate in all elements of the multi-step inquiry process, but they are formally assessed on only one skill element in each stage. In this section you will examine the student Product evidence submitted for each of the 3 Inquiry stages to evaluate how well the student performed on the designated inquiry skill. The Product for each stage is scored separately. Use the product descriptions on the VTAAP Form 5- *Science Inquiry Worksheet* and the *VTAAP Inquiry Target Behaviors* document to assess and rate the degree of student understanding on the VTAAP Form 6- *Inquiry Score Report*. You must consider two components: Independence and Required Behaviors.

Independence

The skills targeted for formal assessment are determined by the Student Evaluation Team. While inquiry steps in each stage that are *not* assessed may be completed cooperatively or even be directly provided by the teacher, *all* of the student evidence submitted for the target inquiry skills must represent independent student behavior. This includes the individual step entry, the Directed/Cooperative/Independent boxes, and the Product Description on the Inquiry Worksheet AND the Products themselves. Products that are not evaluated as independent performance will be scored as a '0'.

Required Behaviors

The inquiry skills (behaviors) that correspond to the 8 designated skills of the Inquiry Worksheet are described in the Vermont Science Inquiry GEs. These have been simplified for the purposes of the VTAAP to the behaviors specified as required and extended in the *VTAAP Inquiry Target Behaviors* document. Teams should always include *all* of the required behaviors in the Product evidence, and use the extended behaviors to raise the level of challenge when appropriate. While the required skills are uniform across grade clusters, the complexity of the actual inquiries undertaken by science classrooms will increase as student progress through the curriculum. The extended skills are listed to provide an opportunity to demonstrate these higher levels of challenge.

- ▶ Award a '3' (Thorough understanding) if the student demonstrates independent competency on all of the required behaviors.
- ▶ Award a '2' (Partial understanding) if the student demonstrates independent competency on at least half of the required behaviors.
- ▶ Award a '1' (Limited understanding) if the student demonstrates independent competency on any part of the required behaviors.
- ▶ Award a '0' (No) if the student Product is not evaluated as independent OR the student does not demonstrate competency on any part of the required behaviors.

Note: If no student Product evidence was submitted or can be found in the Inquiry section, record a '0' in the No Product section

VTAAP Inquiry Target Behaviors

STAGE I: Develop Question and Plan Investigation		
Inquiry GE: 1- Identify a Question		
<i>Students demonstrate their understanding of scientific questioning by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> Identifying a question that can be answered either through close observation or an experiment (cause/effect) 	<ul style="list-style-type: none"> Using personal experience or interest to generate question Developing a question that shows evidence of prior scientific knowledge 	<input checked="" type="checkbox"/> Using a Research question
Inquiry GE: 2- Make a Prediction		
<i>Students demonstrate their understanding of predicting and hypothesizing by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> Identifying what may happen in the future Supporting the prediction with logical reasoning 	<ul style="list-style-type: none"> Using personal experience to support prediction Supporting prediction with scientific reasoning 	<input checked="" type="checkbox"/> Random guessing
Inquiry GE: 3- Develop a Procedure		
<i>Students will demonstrate their understanding of experimental design by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> Developing a procedure that will gather evidence to answer the question posed Identifying a logical sequence of steps 	<ul style="list-style-type: none"> Identifying the independent and dependent variables for experimental questions Using scientific terminology appropriate to the investigation Specifying a list of materials and/or measurement tools 	<input checked="" type="checkbox"/> Providing single photograph of materials and set up

STAGE II: Conduct Investigations		
Inquiry GE: 4- Perform the Procedure		
<i>Students demonstrate their ability to conduct experiments by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> Completing steps identified in the planned procedure 	<ul style="list-style-type: none"> Conducting multiple trials Using appropriate measurement tools Using scientific notebook or other suitable format to record findings/ observations throughout procedure Using technology to collect and store information 	<input checked="" type="checkbox"/> Random investigation <input checked="" type="checkbox"/> Directional prompting
Inquiry GE: 5- Collect and Organize the Data		
<i>Students demonstrate their understanding of predicting and hypothesizing by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> Collecting relevant data Organizing data into related categories Using appropriate representation to display data (e.g., graph, table, chart, scientific drawing) 	<ul style="list-style-type: none"> Representing data quantitatively Using scientific language to label or represent data Using technology effectively to organize and represent data 	<input checked="" type="checkbox"/> Random or unorganized notes and/or observations

STAGE III: Develop and Communicate Conclusions		
Inquiry GE: 6- Analyze the Data and Construct a Conclusion		
<i>Students demonstrate their ability to analyze data by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> ● Relating data to the original question ● Providing a reasonable explanation that accurately reflects the data ● Interpreting the data for patterns and trends 	<ul style="list-style-type: none"> ○ Identifying limitations and sources of error within the design ○ Analyzing significance of data ○ Using knowledge of scientific concepts to evaluate data 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simply restating the data
Inquiry GE: 7- Evaluate the Prediction		
<i>Students demonstrate their ability to explain data by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> ● Comparing the proposed predication and actual data ● Declaring whether original predication was/was not supported 	<ul style="list-style-type: none"> ○ Identifying changes in thinking or beliefs 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simply restating original prediction
Inquiry GE: 8- Communicate the Results		
<i>Students will demonstrate their ability to apply results by:</i>		
Required	Extended	Not allowed
<ul style="list-style-type: none"> ● Presenting results/conclusions to others 	<ul style="list-style-type: none"> ○ Sharing with a variety of audiences ○ Comparing results to findings of others ○ Proposing new questions or investigations ○ Using technology to communicate results effectively 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Sharing results with instructing teacher only

VTAAP Form 6 Inquiry Score Report

Application Score		
Score	Criteria	Description
<input type="checkbox"/> 3	Strong GLGEC + complete inquiry process	The Grade Level General Education Curriculum (GLGEC) is well-established and student participation in the complete inquiry process is thoroughly documented.
<input type="checkbox"/> 2	GLGEC + inquiry process	The GLGEC is recognized and student participation in the inquiry process is sufficiently documented.
<input type="checkbox"/> 1	Inquiry process	Student participation in the inquiry process is minimally documented.
<input type="checkbox"/> 0*	No inquiry process	Student participation in the inquiry process is insufficiently documented.
Total Application Score <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0		
Performance Score		
Score	Criteria	Stage 1 Product
<input type="checkbox"/> 3	Thorough understanding	The student independently demonstrates a complete, or near complete, understanding of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 2	Partial understanding	The student independently demonstrates at least half of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 1	Limited understanding	The student independently demonstrates any part of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 0	No understanding	The student independently demonstrates none of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 0	No Product	No evidence for this stage was found.
Score	Criteria	Stage 2 Product
<input type="checkbox"/> 3	Thorough understanding	The student independently demonstrates a complete, or near complete, understanding of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 2	Partial understanding	The student independently demonstrates at least half of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 1	Limited understanding	The student independently demonstrates any part of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 0	No understanding	The student independently demonstrates none of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 0	No Product	No evidence for this stage was found.
Score	Criteria	Stage 3 Product
<input type="checkbox"/> 3	Thorough understanding	The student independently demonstrates a complete, or near complete, understanding of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 2	Partial understanding	The student independently demonstrates at least half of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 1	Limited understanding	The student independently demonstrates any part of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 0	No understanding	The student independently demonstrates none of the behaviors specified by the grade-level inquiry GE.
<input type="checkbox"/> 0	No Product	No evidence for this stage was found.
Total Performance Score <input type="checkbox"/> 9 <input type="checkbox"/> 8 <input type="checkbox"/> 7 <input type="checkbox"/> 6 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0		

* A score of '0' for this element will disqualify the inquiry from scoring.