**Summary Description of Assessment #2**

Creating a Plan for a Scientific Investigation

**Competency:**

* Student can create a plan for carrying out a scientific investigation, including what, when, and how to measure variables.

**Focus:**

🞎 Declarative knowledge

🞎 Procedural knowledge

🗹 Problem solving

**Evidence of Competency:** Students are presented with a research question that can be addressed through systematic observation (not experimentation) that involves one independent variable and one dependent variable. Students are instructed to develop a detailed and specific plan that describes the actions or steps they would perform to investigate the research question. Students are instructed to carefully explain how they would obtain observations or measurements of the independent and dependent variables. Because their plans are hypothetical, students may propose fieldwork and the use of materials or personnel not actually available to them. Students will be scored with respect to whether they adequately identify the independent and dependent variables, describe the plan in enough detail to allow replication by an independent scientist, propose measurements or observations that would result in meaningful data, consider at least one potential confounding variable, and include repetitive measurements of the variables.

**All assessments developed using this template should be fully consistent with its corresponding specification. The most up-to-date specification for this template can be found at http://www.cala.fsu.edu/ies/performance\_  
assessment\_specifications.**

**Performance Assessment #2**

Creating a Plan to Investigate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Taskstudents are asked to perform:

Students will create a plan for investigating the following research question:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

Students are advised to be very specific in the description of their research plan, with particular attention given to these points:

* Plan is to describe what the student would do and when it would be done.
* Plan is to describe how observations or measurements would be obtained.
* Plan is to describe at least one external factor that could affect results.
* Plan is to provide enough detail so that another person could carry out the plan.

Students are told that implementing their plan may include involvement by others and may involve going to places away from the school or using materials not available at the school.

Related prior knowledge or skillsstudents must have:

Student can formulate a scientifically testable question(s) that relates to the context or data provided.

Required materials and resources:

* Written instruction provided in Appendix A.
* Paper so students can describe their research plan.

Instruction given student:

See *Written Instructions for Students* (Appendix A).

Guidelinesthat influence administering this performance assessment when used summatively:

During assessment, assistance is not provided students except for clarification related to

* instructions,
* the research question for which the student is to create the plan for carrying out a scientific investigation,
* variables associated with the research question, or
* the meaning of an **external factor** in context other than the present research question.

Clarification related to either the research question or the associated variables must not provide information that influences the student’s research plan or strategies used to create the research plan.

Scoring Planfor this performance assessment:

Regarding all scoring plans, partial credit is never awarded for any items within the scoring plan, even when multiple points are involved. Credit is to be awarded in full or not at all.

Grammar, spelling, or other factors not directly related to the competency being assessed are not reflected in the scoring plan. Using professional judgment, however, you are encouraged to provide students feedback on these additional factors that are not assigned points in this scoring plan.

**Plan Characteristics**

|  |  |
| --- | --- |
| Plan conveys that [*independent variable*] functions as an independent variable. | 1 |
| Plan describes a way to measure [*independent variable*]. | 1 |
| Plan conveys that [*dependent variable*]functions as a dependent variable. | 1 |
| Plan describes a way to measure [*dependent variable*]*.* | 1 |
| The sequencing of plan’s actions or steps makes sense. | 1 |
| If given to another person, plan is sufficiently detailed for that person to independently complete the specified actions or steps (with replication of any errors within the plan). | 1 |

**Data Quality**

|  |  |
| --- | --- |
|  | 1 |
|  | 1 |
|  | 1 |

**Repetition of Measurements**

|  |  |
| --- | --- |
|  | 1 |
|  | 1 |
|  | 1 |

Appendix A

Written Instructions for Students

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[*Insert introductory and background information related to the research question*.]

**The Research Question:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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**Develop Your Plan:**

Develop your plan for investigating this research question. Your plan must be very specific. Be sure to address each of the following points in your plan:

* **Describe** what you would do (and when you would do it) to investigate the research question.
* **Describe** how you would obtain your observations or measurements.
* **Provide enough detail** sothat another person could carry out the investigation according to your plan.
* **Describe** at least **one external factor** that could affect the results of your investigation.

An external factor is anything other than the [*independent variable*] that affects the [*dependent variable*]. It is important to be aware of possible external factors because it could be these factors rather than the [*independent variable*] that are affecting the [*dependent variable*].

Although you must prepare this research plan by yourself, it is okay if carrying out the plan you create requires others to help you. It also is okay if your plan would require going to places away from your school or using materials not available at your school.

On the paper provided, describe the plan you create. Again, be very specific and carefully address each of the points listed above.