**Module Two Assessment: How do Nanoparticles Work?**

**Teacher’s Guide and Rubric**

INTRODUCTION:

In this assessment, students will demonstrate in writing their understanding of how Nanoparticles function. It may be good to warn students in advance of the assessment and/or allow them to use their labs in order to gather relevant evidence. This may also be done as a homework assignment- in this case, clarify with students what resources you are comfortable with them using.

OBJECTIVES:

Students will-

* Connect concepts of surface area and reactivity specifically to nanoparticles
* Construct a claim about a phenomenon, support that claim with appropriate evidence and explain their reasoning.

TIME: 30 minutes or homework

MATERIALS:

* “Module Two Assessment” Student Sheet

PROCEDURE:

1. Tell students that they are going to synthesize everything they have learned about nanoparticles so far in order to explain how they work.
2. Emphasize that students must use specific evidence from our in-class discussions, readings and activities to support their explanation and explain how that evidence is relevant.
3. Remind students that they should use their own language when writing their explanation, not another student’s or language from a book.
4. Students will be graded on Evidence, Reasoning, Accuracy, Clarity, and Grammar/Mechanics. You may wish to show students the grading rubric ahead of time.

SCORING:

Rubric is provided below. Each grading category is scored on a scale from 0-4, 4 being outstanding. You may wish to weight certain categories more heavily than others. For example, Evidence, reasoning and accuracy could be worth twice the weight of clarity and grammar/mechanics.

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| --- | --- | --- | --- | --- | --- |
|  | **0 Points** | **1 point** | **2 points** | **3 points** | **4 points** |
| **Evidence** | Student provides no evidence | Student provides some evidence, but it is not specific or relevant | Student provides 1 piece of specific, relevant evidence. May only address size or surface area | Student provides 2 pieces of specific, relevant evidence. Addresses both size and surface area | Student provides specific, relevant evidence from at least 3 activities. Addresses both size and surface area. |
| **Reasoning** | Student provides no reasoning | Student provides some reasoning, but it does not address the question | Student provides reasoning for 1 piece of evidence. May only address size or surface area | Student provides reasoning for 2 pieces of evidence. Addresses both size and surface area. | Student provides reasoning for 3 pieces of evidence. Addresses both size and surface area. |
| **Accuracy** | Student provides no accurate information | Student provides some information, but with several major inaccuracies or misconceptions | Student provides mostly accurate information, but may have 1 substantial inaccuracy  | Student provide mostly accurate information with only minor inaccuracies | All information is accurate- no mistakes or misconceptions.  |
| **Clarity** | Student writing is incomprehensible.  | Student writing is understandable, but with major weaknesses in organization and clarity.  | Students writing is mostly clear, but may contain 1 large problem in either organization or clarity.  | Student writing is clear and organized, with few minor problems in clarity or organization. | Student writing is clear and organized with no problems.  |
| **Grammar/Mechanics** | Student writing has many major grammar or mechanics problems. (10 or more) | Student writing has both major and minor grammar or mechanics problems. (5 or more) | Student writing has 1-2 major grammar or mechanics problems.  | Student writing has only minor grammar or mechanics errors.  | Student writing has no grammar or mechanics errors.  |

**MODULE TWO SCORING RUBRIC:**