**Module 3 Assessment: An Examination of Nanotechnology Applications**

**Teacher’s Guide**

INTRODUCTION: In this assessment, students will apply their understanding of the function of surface area in nanoparticles to a new application of their choosing.

OBJECTIVES:

Students will-

* Apply acquired knowledge to a novel situation.
* Explain the role of surface area and size in a nanotech application

TIME: 60 minutes or homework

MATERIALS:

* “Module 3 Assessment” Student Sheet
* Access to internet or printed articles about nanotechnology applications

PROCEDURES:

1. Explain to students that they will be demonstrating their knowledge about nanotechnology while exploring an application of their choice. It is an opportunity to explore something they are interested in that we haven’t talked about in the class yet. ADD IN A VIDEO?
2. Clarify expectations about resources- what can students use when completing this assignment? The project is designed with open resource use in mind, but with an emphasis on student language. Students should explain concepts in common, everyday language, not rely on science jargon that likely came from someone else.
3. Students will be graded on Depth of Explanation and Accuracy for each of the 3 questions, as well as Clarity, and Grammar/Mechanics in the overall paper (see Scoring Rubric below.) You may choose to distribute the rubric ahead of time for student review. Each category is scored from 0-4, 4 being outstanding. You may choose to weight specific categories more heavily than others.

**Module 3 Assessment SCORING RUBRIC:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **0** | **1** | **2** | **3** | **4** |
| **1.** What is the goal of the technology/  what is it used for? |  |  |  |  |  |
| **Depth** | Student does not address the question | Student mentions the question, but only briefly | Student answers the question, but only superficially and with few details | Student answers the question sufficiently, and with some detail | Student fully answers question, explains thoughts completely and provides supporting details. |
| **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. |
| **2.** How does the technology work and how are nanoparticles involved? |  |  |  |  |  |
| **Depth** | Student does not address the question | Student mentions the question, but only briefly | Student answers the question, but only superficially and with few details | Student answers the question sufficiently, and with some detail | Student fully answers question, explains thoughts completely and provides supporting details. |
| **Accuracy** | Student provides no accurate information | Student provides some information, but with several major inaccuracies | 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. |
| **3.** What effect do surface area and particle size have on the function of the nanoparticles? |  |  |  |  |  |
| **Depth** | Student does not address the question | Student mentions the question, but only briefly | Student answers the question, but only superficially and with few details | Student answers the question sufficiently, and with some detail | Student fully answers question, explains thoughts completely and provides supporting details. |
| **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. |
| Overall |  |  |  |  |  |
| **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. |