**STUDENT-1 STUDENT ACTIVITY TEMPLATE**

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| ***DEFINITIONS*** |
| **DOMAIN:** *[Biotechnology (BIO), Information and Communication Technology (ICT), Materials and Manufacturing Technology (MMT)]* |
| **ACTIVITY TITLE:** *[general description of the design activity in which students will be engaged]* |
| **DESIGN PROCESS:** *[This is the informed design process that include several steps that are not necessarily linear:* 1. *Clarify design specifications and constraints.* Describe the problem clearly and fully, noting constraints and specifications.
2. *Research and investigate the problem*. Search for and discuss solutions to solve this or similar problems. Identify related problems, issues, and questions.
3. *Generate alternative designs*. Don’t stop when you have one solution. Approach the challenge in new ways and describe alternatives.
4. *Choose and justify optimal design.* Defend your solution, using data and employing analysis techniques. Your chosen alternative will guide your preliminary design.
5. *Develop a prototype.* Make a model of the solution. Identify modifications to refine the design, and make these modifications.
6. *Test and evaluate the design solution*. Develop and carry out a test to assess the performance of the design solution. Then collect and analyze performance data to show how well the design satisfies the problem constraints and specifications.
7. *Redesign the solution with modifications*. Examine your design and look at others’ designs to see where improvements can be made. Identify the variables that affect performance and determine which science concepts underlie these variables. Indicate how to use science concepts and mathematical modeling to enhance performance.
8. *Communicate your achievements*. Present your results to the class. Explain what you did, what you learned, and why you made the choices you made. Discuss what you might do differently should you start all over again.
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| **STANDARDS:**  *[The organizational statements describe what students should know, be able to do and dispositions developed].**Identify the Standards document from which the Standards are derived, i.e., Standards for Technological Literacy; biotechnology skill standards, etc.* |
| **LEARNING OBJECTIVES:**  *[State the high school grade-level objectives to be learned in this activity. Please note: The activity should be driven by the learning objectives.]* |
| **ASSESSMENT EVIDENCE***:*  *[State specifically how you will know that students have met the learning objectives.]* |

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| **INTRODUCTION TO THE DESIGN ACTIVITY** |
| **ACTIVITY TITLE** |  | DOMAIN | BIO ICT MMT (users will select appropriate domain) |
| IMAGE(S) | INTRODUCTORY TEXT (300 words or less). Explain the standards-based ideas that this activity conveys; the problem situation; the design challenge for the students; safety considerations; materials needed; and state the design specifications and constraints.  |
| (Select images from the E&T: cite page and figure number. In the event that you find a much better image, please include a description and the source) |  |
| **TEACHERS NOTES**  | (Not visible to students) |
| **Pre-Requisite Knowledge** |
| **Hints for Teachers** |
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| **RESEARCH AND INVESTIGATION** |
| **ACTIVITY TITLE** |  | SECTION TITLE |  | SECTION # |  |
| IMAGE(S) | Gather information to build a knowledge base to approach the design from an informed perspective. |
| (Select images from the E&T: cite page and figure number. In the event that you find a much better image, please include a description and the source) | (In 300 words or less, describe each Knowledge and Skill builders and include its title) |
| **STANDARDS** |  |
| **LEARNING OBJECTIVES** |  |
| **KEY VOCABULARY AND DEFINITIONS** |  |
| **CONTINUE TO DESCRIBE THE DESIGN PROCESS THAT STUDENTS WOULD FOLLOW**  |
| **TOPIC TITLE** |  | TOPIC # |  | TOTAL # OF PAGES IN TOPIC |  |
| IMAGE(S) | TOPIC TEXT (300 words or less) |
| (Select images from the E&T: cite page and figure number. In the event that you find a much better image, please include a description and the source) | Describe two possible alternative approaches to this design problem.Choose and justify the optimal solutionDisplay your prototype.Test and EvaluateRedesign the solutionCommunicate your achievements.. |
| **ASSESSMENT QUESTION(S) – SPECIFY METHOD**  |  |
| **TEACHER NOTES/INSTRUCTIONS** |  |