

Lesson 22: How did our final design perform? Test prototype 2

Teacher notes:

- Review the criteria and constraints as well as the data collection protocol with the students as they prepare to conduct a test of their revised prototypes.
- Be sure to collect data in the same way as the first prototype test day. A data chart sample is linked in a comment in lesson 16.

For comparison fill in the data for Prototype 2

Time	5 min	10 min	15 min	20 min
Temperature Prototype 1				
Temperature Prototype 2				

Criteria	Incubator: Prototype 1	<u>Incubator: Prototype 2</u>
Criteria 1: Highest temperature		
Criteria 2: How long it holds temperature		
Criteria 3: Must hold a baby (exact dimensions may be used)		
Criteria 4: Must provide easy access to provide for baby's needs		

Analyze the data from your group's two different prototype tests. Based on the test results, did the incubator better meet the criteria after revisions? Use data to support your answer.

Reflect: Did your incubator meet the criteria and constraints? **On a separate sheet of paper**, answer this question for all of the criteria and constraints. If there were items that you did not meet, explain why and what you would do differently. Explain why you think the changes would cause your incubator to be more successful.

Reflection Rubric

Teacher note: The reflection questions could be asked first and then students could write a four paragraph response to address the rubric or the rubric could be given to the students and they could use it to craft their response to the reflection question. Assessing students based on their ability to accurately explain their projects, both successes and shortcomings, provides an opportunity for all students to achieve success.

Incubator Essay	Excellent 3	Good 2	Needs Improvement 1-0
Paragraph 1: Introduction Comments:	Student demonstrates detailed knowledge about the construction of their incubator. Student uses at least three specific examples to support their reasoning.	Student demonstrates simple knowledge about the construction of their incubator. Student uses less than three specific examples to support their reasoning.	Student is unable to demonstrate knowledge about the construction of their incubator. Student is unable to support their thoughts or give specific examples.
Paragraph 2: Construction Comments:	Student describes in detail the materials they used AND the scientific purpose of each of the materials. Student describes, using specific examples, how they contributed to the project.	Students describes in detail the materials they used. Student describes, using vague examples, how they contributed to the project.	Student states the materials they used. Student states, using simple sentences, how they contributed to the project.
Paragraph 3: Outcome/ Modifications (Criteria/constraints) Comments:	Student uses at least three specific examples to support how they met the criteria. Student explains the modifications made to the project by supporting with at least three examples.	Student uses at least two specific examples to support how they met the criteria. Student explains the modifications made to the project by supporting with at least two examples.	Student uses one specific example to support how they met the criteria. Student explains the modifications made to the project by supporting with at least one example.
Paragraph 4: Reflection on Constraints and Conclusion Comments:	Student identified two challenging constraints and explained how that impacted their incubator. Student summarizes their paper by using support to express how they felt the project went overall.	Student identified one constraint and explained how that impacted their incubator. Student states, using at least one support, to express how they felt the project went overall.	Student did not identify a constraint and/or did not explain how constraints impacted their design. Student states, not demonstrating any support to express how they felt the project went overall.

Total: _____/12