**Edison’s Lab: Inventing the Light Bulb: Notebook Entry Assignment / Rubric**

* + **Title: Edison’s Lab: Inventing the Light Bulb**
    - **Learning target: LT:  I can identify evidence of how resistance in wires can be used to transform electric energy into light energy.**
  + **Drawing with captions**
    - **Include information that describes the event (what happened) and the scientific explanation of resistance in wires Use colors to help clarify**
  + **Write a summary paragraph**
    - **This should be an overview of the data you collected while experimenting with different filaments. It should be an attempt to sort out the information so you can make a good recommendation to Mr. Edison of what the next step in your search for the ultimate light bulb should involve.**
    - **This is a very involved topic and you may want to break it into two or more paragraphs.**
    - **Convince Mr. Edison you know what you are talking about.**

**To create a 3 – proficient assignment it is necessary to gather appropriate background information from the text. Refer to the following sections:**

**Changing Forms of Electricity 107**

**Resistance 203 -205**

**Types of Lights 394 – 396**

**Drawing / Captions**

*Include evidence that you completed the following:*

*Each filament tested is clearly identified – type of metal, thickness (gauge), length.*

*Drawing shows all parts of the set up – black wire, red wire, power box, filament, tape*

*Labels identify all parts of the set up*

*The time each filament glow is identified for each power level*

*The intensity of light is recorded for each filament for each power level*

*Additional outcomes for each power level are identified – melting, smoking, sparks, etc.*

*Troubleshooting techniques are included*

*Longer wires burn longer than shorter wires at the same power levels*

*Longer wires burn less brightly than shorter wires at the same power levels*

*Thicker wires burn longer than thinner wires at the same power levels*

*Thicker wires burn less bright than thinner wires at the same power levels.*

*Steel wool glows/sparks sporadically*

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| --- | --- | --- | --- | --- |
|  | 4 | 3 | 2 | 1 |
| Drawing/Captions | 10-12 expectations fulfilled | 8-9 expectations fulfilled | 6-7 expectations fulfilled | 1-5 expectations fulfilled |

**Summary Paragraph(s)**

*Basic expectations:*

1. *What part of your light bulb gave out light?*
2. *Is there evidence of any other form of energy besides light coming from the light bulb?*
3. *What type of metal is in the insulated wire? Why was this metal chosen for to transfer the current from the power box to the filament?*
4. *What type of metal was used for the filament? Why were these metals chosen to be a filament?*
5. *How did the thickness and/or length of the nichrome wire affect the results of the investigation? Base your answer on specific observations.*

*Advanced expectations:*

*Consider discussing topics related to factors (variables) that influence the flow of electricity. Create meaning hypothetical situations that would guide Mr.*

*Edison closer to finding meaningful options for filaments.*

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| --- | --- | --- | --- | --- |
|  | 4 | 3 | 2 | 1 |
| Summary Paragraph(s) | 7 of the 10 basics covered  AND  3 advanced topics are discussed | 7 total expectations are covered.  At least 5 must be from the basic expectation list. | 4-6 basic total expectations covered.  At least 4 must be from the basic list | 1-3 total expectations covered. |