**Names \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_**

**Hands Free Computer Interface**

**A Makey Makey Design Thinking Project v8**

**Empathy: Explore the feelings of hands free operators who need to work with a computer.**

***Answer all questions with at least 3 sentences.***

* Find the Scratch program “Fireworks with a Space (Bar)” (or search on the Scratch ID montaramt and the program will be featured).
* Have one partner put their hands by their side pointing straight down. Now try to operate the space bar to create fireworks. Do not use your fingers, hands, or elbows.
* The other partner writes down the answers. Then switch roles and see if any new answers or observations come up.

1. What does it feel like when you want to use the computer and can’t use your arms and hands?

2. What can you add to a computer to make it easier to use? What programs would be useful if you could not leave your house?

3. Did you ask for help? How did that feel?

**Define: Capture the problem in the form of a question.**

4. What ideas did you try when you were doing the exercise? Which ones , if any, were successful ?

5. Describe the problem we are trying to solve. **Use 3 complete sentences.**

**Ideate: Brainstorm solutions Use at least 3 sentences for each solution and include a drawing !**

6. How would you use a Makey Makey to create a device that solves the problem in the Define step? Describe this in detail with complete sentences and **include a drawing**.

**Prototype -Test: Build the device you described in the Ideate process using the Makey Makey and test it.**

7. What problems did you have building the device?

8. How did working as a team help you solve the problems?

9. What improvements did you make after the first try?

10. Have someone from another group test your device and describe the changes you made to improve it.

11. If you gave this to a friend who could not use a keyboard how would they react?

Extension to Hands Free Project

12. **Empathy/Define** Find a program/website that would significantly improve the daily experience of a hands free operator. Some examples would be Safeway.com, Amazon.com, Netflix.com, or a program that dials a phone (*none of these can be used*). Describe the program you chose. Explain how this program significantly improves the daily experience of a hands free user.

13. **Ideate:** What keys are directional inputs do you need to make the program work? Describe your plan for a device to do this using a picture.

14. **Prototype-Test:** How did the device work the first time you tested it? What changes and improvements did you make to get it to work better?

**Make a Difference Engineering Rubric v8**

***A Design Thinking Project***

**Empathize / Define / Ideate Rubric**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2 points each question | 1 point each question | ½ point each question |
| Empathy: Questions #1-3 | Addresses the question and uses three complete sentences. | Uses two complete sentences or indirectly addresses question | Attempts with at least one complete sentence. |
| Define Questions #4-5 | Addresses the question and uses three complete sentences. | Uses two complete sentences or indirectly addresses question | Attempts with at least one complete sentence. |
| Ideate: Question #6 | Addresses the question and uses three complete sentences. | Uses two complete sentences or indirectly addresses question | Attempts with at least one complete sentence. |

**Prototype / Test / Extension Rubric**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2 points each question | 1 point each question | ½ point each question |
| Prototype / Test Questions #7-9, 11 | Addresses the question and uses three complete sentences. | Uses two complete sentences or indirectly addresses question | Attempts with at least one complete sentence. |
| Extension  Questions #12-14 | Addresses the question and uses three complete sentences. | Uses two complete sentences or indirectly addresses question | Attempts with at least one complete sentence. |
| Makey Makey Interface  4 points | Creative user interface that is reliable and aesthetically designed.  4 points | User interface that is reliable and aesthetically designed.  3 points | Interface works but is reliable or poorly designed.  2 points |

**A 30 – 27 points B 26 – 24 points C 23 – 21 points D 20 - 18 points**