**3-D Print of a Name Keychain**

**1) A one page description of the project, preferably with links or of examples of what you expect of students (i.e. What mastery of your project will look like)**

The item that we are creating is a 3d printed keychain that has a name on it (examples below). The first step in creating the keychain is to design the keychain on tinkercad software. There are a few different techniques to do this, but the design must have letters and a ring that is able to attach something to it (wire, keyring, etc.). The letters can be done in a few different ways. One way to do it is to have the letters overlapping so that they are all connected (left). Another way is to have a base and have the letters higher so that they are still noticeable (right). For the ring it simply needs to be attached and have the ability to put something through it. The next step is exporting it to Makerbot Print and making sure the design is ready to print. This includes adding support bridges, doing a print preview, and changing the size of the item if necessary. Then the learner will need to save the file and transfer it to a flash drive so that we can print it for them. The end project needs to be letters (not necessarily in English) attached to a ring that is able to attach to something.

This project may seem like simply making a key chain, however it teaches technical skills like navigating websites and using keyboard shortcuts. These skills lead to people having more knowledge about digital skills that can transfer into things like applying for jobs because they will have more familiarity with navigating websites. At the Ramsey County Library in Roseville we use this rubric after we have worked with someone who had little to no experience with tinkercad and 3-d printing when we first worked with them, who then is able to do create projects by themselves in order to show the skills that are involved with these projects.



**2) Look at the northstar standards to see what digital skills your portfolio requires/teaches/demands of learners. Pick the most salient ones to your project and limit these to probably no more than 15 (maximum).**

Basic Computer:

3. Demonstrate knowledge of keys on keyboard (Enter, Shift, Control, Backspace, Delete, Arrow

Keys, Tab, Caps Lock, Number Lock)

8. Drag and drop

Internet Basics (WWW)

3. Demonstrate familiarity with website structure

13. Ability to scroll up and down and left and right

15. Identify and work with tabs and windows.

Windows

5. Identify icons, functions, and file extensions related to basic office software and default windows programs

6. Start and exit programs

7. Minimize and maximize windows

9. Demonstrate knowledge of Windows File Explorer and identify drives on the

computer, as well as cloud storage services (e.g., OneDrive).

**3) List additional digital skills that a complete digital portfolio requires. You may want to start broadly and then take a couple of rounds to narrow these down once you see learners completing these. (8-10)**

* Import and export files
* Transfer files to a flash drive
* Identify Icons
* Replace Icons
* Delete unwanted objects
* Hovering over objects/icons
* Click and drag

**Rubric:**

Name: Date:

|  |  |  |  |
| --- | --- | --- | --- |
| Keychain on Tinkercad | Strong | Medium | Weak |
| Completed Project | Keychain was created successfully. All parts were connected and everything was true to the design. | N/A | The keychain broke, didn’t print correctly, or had some errors. |
| Technical skills | -Able to drag and drop (BC 8)  -Demonstrate familiarity with website structure (WWW 3)  -Start and exit programs (Windows 6) | Was unable to do one of the following without assistance:  -Able to drag and drop (BC 8)  -Demonstrate familiarity with website structure (WWW 3)  -Start and exit programs (Windows 6) | Was unable to do any of the following without assistance: -Able to drag and drop (BC 8)  -Demonstrate familiarity with website structure (WWW 3)  -Start and exit programs (Windows 6) |
| Problem Solving skills | If an issue occurred with the project they were able to problem solve by themselves to solve the answer (ex. Google solution, play around with the software to figure it out) | If an issue occurred with the project the person was able to do an initial search or attempt to solve the problem themselves before asking for assistance | The person did not attempt to problem solve, they immediately asked for assistance |

Comment on students work and evidence of project completion: