Quick Overview: Using items found in your recycling bin and around the house, the maker will use their imagination and hands on skills to design a low-tech computer model.

Objectives (students will be able to):

- Learn how computers and electronics are made and the minerals they are made of
- Use imagination to create and design one's own low-tech programmable computer
- Exercise dexterity through cutting and experimenting with materials

Age Range: 4+

Activity Time: 20 minutes

Materials + Tools:

- Tape
- Scissors
- Cardboard or chipboard like a cereal box or soda box or shipping box
- Pens, crayons + markers
- Paper (recycled magazines, newspapers, or old construction paper work well!)
- 2 paper clips or binder clips

Preparation:

- Gather tools and materials
- Create a building station for your student, with all of the approved building materials they can use and a flat surface.
- For younger students: cut cardboard to size of the "screen"

Topics for Discussion/Lesson:

- What is inside my computer?
    - Article: The birth of the microchip.
- Where do the minerals come from that are mined for the computer?
    - Nice Element map and article about where materials are mined.
- Where is it made? Where is it designed?
- What is the history of the computer?
    - The Modern History of the Computer

Instructions:

1. Choose your high tech design: laptop, desktop, pad or phone. OR invent a new one!
2. What components does it have?
3. Make a sketch: If you have one of these items in your house, use it as a model or design whatever computer your imagination can come up with, but remember you have to take into account that you will be building this computer out of cardboard or paper.
    - NOTE: sketching before building is a great process for children to record their ideas and plan what direction they would like to go in. However, when using found and recycled materials, some students can become frustrated when they cannot find the exact piece that they had sketched and had in mind.
4. Assemble the computer
    - Will it be simply two rectangles - 1 for the screen and one for the keyboard? How will you attach the two halves, or will you fold it?
    - Make an attachment board featured in this Instructables article: 11 ways to cut and connect cardboard or cut out the rectangle for the tablet or whatever device you decide to make.
5. Draw the keys on the keyboard and ask yourself what kind of keys would I like to see on a keyboard. What if your space bar actually took you to space? How would you design the key to describe what it was?
6. What will be on your screen? You can make multiple screens and switch them out. Will it be a picture? A map?
7. Clip your screen onto the cardboard screen portion of the computer.

Extensions (ways to keep going…):

- What other items could you make with cardboard? Are there other electronic devices? What about food or animals? This Artist makes very large animals out of cardboard.
- Learn more about this http://cainesarcade.com/

Take a photograph of your student working on this project or with their completed project and post it with the hashtag #craftinplace or email it to tuesdaytumbleweedllc@gmail.com.