

Creative Thinking - Electric Circuits

Lending a Helping Hand

Materials:

- white board, chalk board or post it paper
- pictures of electrical items
- paper, large and regular size
- pencils
- tape/tacks for hanging
- dictionary, thesaurus, rhyming dictionary (optional)

Prep: Post a few pictures of electrical items and patent art prints from past to present day on the board.

Activity:

1. Ask students to walk through their day from when they wake up in the morning until now and which electrical items they interact with. Make a list on the board. Discuss how each item helps you throughout the day. What would the alternative be without electricity? What are the characteristics of each and what do you like best about it?

Next, think of repeated actions that we do every day that do not have assistance from anything electrical. It must be something that is done once per week or once per day without the aid of an electrical device and requires work.

Create categories of the things for the list you created in “Fluency”. For example, inside the school, outside the school (location), or uses (generates heat primarily, generates light primarily), or simple and parallel. Create categories of “likes” and “dislikes”.

Fluency - Students will generate a large number of electrical items and non-electrical repeated actions.

Flexibility - Students will put items into categories in order to see connections of the many ideas they generated.

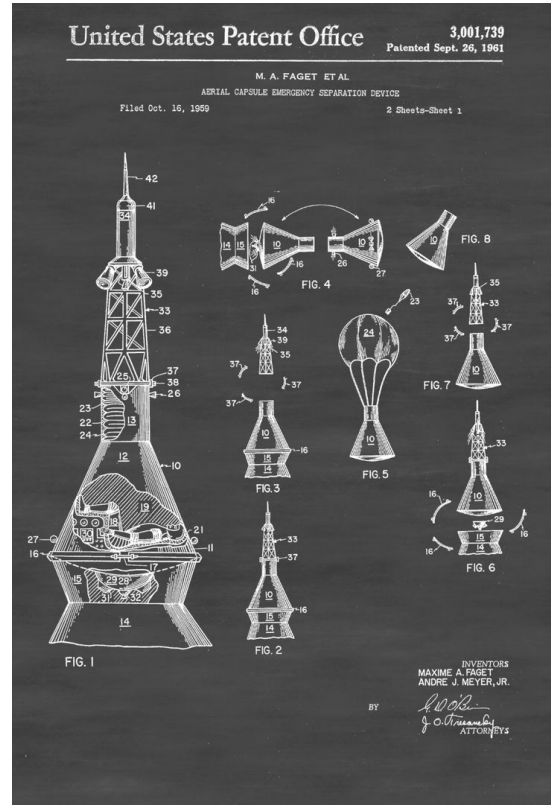
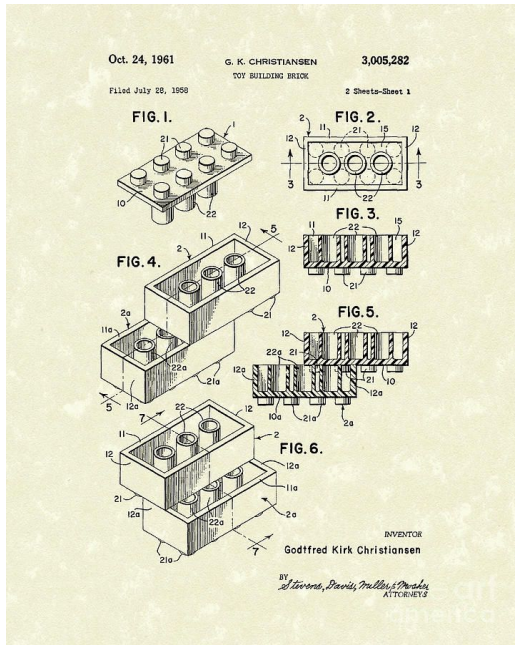
2. Have students work individually (or in small groups) to create a new kind of electrical device that will aid in an action that we do every day or every week. The students should incorporate what they like best from the electrical items section. The students should be able to remove the dislikes and incorporate the likes. Introduce the brainstorming technique of SCAMPER to aid.

SCAMPER is a mnemonic that stands for:

- Substitute.
- Combine.
- Adapt.
- Modify.
- Put to another use.
- Eliminate.
- Reverse.

Originality - Students should be combining existing and new ideas to come up with an original creation.

3. Instruct students to now draw their creation on a large piece of paper and pencil. Add in as many details as possible from color to parts. Suggest ways to name their creation. I normally suggest that titles of items or papers is the LAST thing to do. It is much easier to name a painting, project, paper or creation once it has been created. Additionally, this allows tweaking and the students are not locked into a title. Allow students to use the dictionary, thesaurus or rhyming dictionary for ideas.



Elaboration - Students will draw their ideas to have a visual aid to show what they have created and also to have a visual aid on how much detail has been added to the creation. Students should have a brief description of their electrical item. Where does the power come from - battery, solar, outlet or other? Is it portable? Does it need an internet connection? What is it made of?

4. Invite students to do a “Expo” of their own by standing around the room holding their drawings. Each student has a turn to explain their creation to the class.

Extension:

A. Have students create a prototype of their creation using everyday objects or design software on the computer.

B. Have students create a basic circuit on paper with copper tape and a power source or with Snap Circuits to see how the circuit in the creation will work.