**Lesson 3: Introduce the Problem (and rubric)**

**and Brainstorming Solutions**

**Problem Statement:** The problem is the PUD needs to invest money into alternative energy sources and needs suggestions for the future. This lesson ties into the problem because students must understand what options are going to be available in future years.

**Learning Objectives:**

Be able to Generate and document multiple ideas or solution paths to a problem through brainstorming

Be able to generate a large number of innovative, creative ideas in a short time.

**Materials:**

1.      Large poster paper

2.      Post-its

3.      SCAMMPERR poster

4.      PUD Request for Proposal letter

**Lesson Prep:**

Review the SCAMMPERR method of brainstorming, make a poster of SCAMMPERR or display on screen during brainstorming

Prepare posters to hang around the room that are titled with the 11 different types of alternative energy sources plus one titled ‘Other’

Have 5 post-its ready for each student

**Time Required**:

1   50 minute class period

**Grouping of students for instruction**:

Whole class for PUD Letter, Rubric and Brainstorming

Groups of 3-4 students placing their 5 ideas on post-its under the alternative energy source category posters hung around the room.

**Procedure:**

Introduce the Problem: Begin the lesson by putting the PUD letter up on the overhead and also reading it to the students. Inform them that they are now responsible for recommending a new energy source for the PUD.

Rubric: Share the rubric with students, answer questions.

Brainstorming:

Teacher cover what brainstorming is and the rules. Remind students that criticism is not allowed during brainstorming. The focus should be on brain drain and quantity at this point. The goal is to generate as many ideas as possible. Students will be shown various brainstorming techniques and SCAMMPERR should be visible somewhere in the room to help guide student thinking.

Brainstorming Using SCAMMPERR and Post-Its

The SCAMMPERR technique should be visible. Now have students work in small groups to generate multiple ideas in 5 of the 11 categories. For instance, students might suggest adding solar panels to the tops of cars as one idea. Have them place that idea on their post-it and place it on the Solar category poster. Once they have generated 5 ideas have them walk around and read other people’s ideas. Their exit ticket will be to write their favorite two ideas in their notebooks.

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| S | Substitute something . . . |
| C | Combine it with something else . . . |
| A | Adapt something to it . . . |
| M | Magnify or add to it . . . |
| M | Modify it . . . |
| P | Put it to some other use . . . |
| E | Eliminate something . . . |
| R | Rearrange it . . . |
| R | Reverse it . . . |

**Assessment**: As students leave, have them fill out an “exit ticket” on scratch paper that lists 2 of their favorite ideas from the posters.

**Accommodations**: A copy of the notes “Brainstorming” and pair up students who may have a hard time processing as quickly or writing while listening.

**Extensions**: Research can be conducted instead of stations and students can teach about each energy source in groups.  This takes a couple more days typically unless information is gathered and filtered for them ahead of time. However, this allows students practice presenting information to their peers and communicating clearly.

**References**/**Resources**:

Depending on time, a YouTube playlist could be generated that contained these 11 sources of renewable energy for help with visually explaining these topics.

