**Lesson Topic: Grade Level: Time:**

Alternative Energy K-2 30-45 min.

 Can be divided into 2 days

**Objective:**

Students will be able to identify alternative forms of energy by explaining that sun, wind, and heat from the earth can be used for energy.

**Materials:**

-pictures of sun, wind, earth, coal, natural gas, and oil (in color for teacher)

- alternative energy worksheet (one per student)

-house worksheet (one per student)

**Engagement:**

Take a plastic bag and put something in it such as paper clips. Pass the bag around telling students to take any number of paper clips. Once the bag is empty explain that there are no more paper clips. We have just used them all and there is nothing left. Think about what we can do at this point, we will have to find something to replace paper clips. Collect the paper clips and have students think about what they can do to save/conserve the small amount of paper clips we have now that we know this is all that is left. Guide students to discuss that we should only use one if we really need it, we can reuse them when we are finished with one, we can combine papers and clip them with one paper clip, etc.

**Exploration:**

--Display pictures of the sun, wind (or its effects), and the earth. Have students brainstorm what they already know about each of these topics.

-Still referring to the pictures of the sun, winds, and earth, ask students what all three have in common. Accept all reasonable responses.

-Add pictures of coal, oil, and natural gas and ask what all six of these have in common. Explain that oil is used to give us the electricity we use. Ask questions about how these things can give us energy. Talk about how the sun helps plants grow and how oil is used to fuel our cars and create electricity. Guide students towards understanding that all of these are energy sources.

**Explanation:**

-After identifying all six as energy sources, ask students which energy sources they think they use most often. Tell students to look around the classroom and think about things in the class that need energy to work. Ask students where these things get their energy from? They use electricity which uses oil to power them.

-The teacher may also need to discuss coal and oil further to fill in gaps in students’ background knowledge.

-Explain to students (referring to the picture of coal and oil) that these sources cause pollution when we use them and that is harmful for our environment. Also, when we use these things they are very similar to our “last bag of paperclips” activity. Once this fuels are used there will be no more, this is what we call “nonrenewable” resources. Spark a discussion about how we can conserve/save the items that we use on a daily basis so that we are not causing more pollution and not wasting non renewable resources: turning the lights off when we leave a room, shutting off the television or computer, not letting the water run.

- Now, refer back to the picture of the sun, winds, and earth. Ask students how we can use their energy. Discussing what the sun helps to grow may help students see that it gives things energy. The plants grow because of the sun, animals eat those plants.

-During this discussion, the teacher should explain the following background information to students. Prompt student discussions about how we know the sun and wind is present. Geothermal may be the least familiar with the students. This is when we dig into the earth to

* Solar energy is when heat from the sun is collected and used for energy.
* Wind energy is collected when wind turns a windmill.
* Geothermal energy, or energy from the heat inside the earth, can be collected and used by heaters and power plants.

- Solar, wind, and geothermal energy are good for our earth and do not cause pollution. Also, they will not run out like our paper clips because they are renewable (can be used over and over).

-The following sites may be useful to display for the students at this time (if technology is applicable):

<http://www.kids.esdb.bg/newenergy.html>

Show pictures of renewable energy and gives a brief synopsis. Students will be able to form a visual of how we use renewable energy.

<http://www.ecokids.ca/pub/eco_info/topics/renewable_energy/index.cfm>

This also shows a visual for the students. It displays a windmill and solar panels. When you click on each it gives a brief description.

<http://www.energystar.gov/index.cfm?c=kids.kids_index>

This is a more real-life visual for the students. Go to “your planet needs you” and then “types of energy.” Again it gives a brief description.

**Extension:**

-Explain to students that we are going to create a home for wallEE the dog! We want to make his home environmentally friendly and we are going to take what we learned today to do this.

**-**Distribute a copy of the worksheet that has pictures of energy efficient home features to each student.

-Introduce each home feature and review its purpose. The children can cut out and color the features after you introduce each one. Explain what color the solar panels would be because it attracts heat.

-The sites listed above shows solar panels as well if you wish to reference this.

**Evaluation:**-Have the students glue the energy efficient home features onto Walle’s house.

-Depending on the performance expectations of your students have them write a sentence to tell which energy efficient home feature they would add to their house and why and then add that one feature to the house.

-They could also add all three features and explain why each feature is good for our planet!

-Students can color and label their diagram.