Energy Eaters and Energy Feeders

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Overview

Every year our concern regarding the environment seems to grow, and with just cause. With global warming and other climate changes, there is a need for new recycling initiatives and an increased awareness of environmentally friendly, renewable energy sources. Despite all the efforts to reduce our carbon footprint, some still are not. It is my belief that we can change this through education. Therefore, it is the aim of this unit to educate kindergarteners in a student-friendly fashion as they move along through a closer examination of various types of energy, their uses, and their capacity to keep the environment clean or not. This unit is designed for a four-week period done for thirty to forty-five minutes per day.

Rationale

The aim of this unit is to teach kindergarteners from Southwest Philadelphia all about energy, power, and the renewable and nonrenewable sources of energy on a grand scale. Starting small, from where these students are, energy and power will be described using hands-on activities of no more than twenty minutes. These lessons will utilize the students and their everyday lives to explain energy and power. As the lessons build on each other, the students will then be exposed to how energy is used to power our homes and communities. Finally, the students will become familiar with the terms renewable and nonrenewable energy, be able to differentiate between the two, and know which resources are good for the environment as well as which are not.

Since energy is an often-obscure entity, unseen and therefore not tangible or understandable, it is also the aim of the unit to make it understandable for these kindergarteners. We all know that energy is all around us, from plugging in our cell phones to powering our entire city, but my five and six-year old students are from families of lower incomes and often do not have many resources at their fingertips. These resources are ones in which they could learn about varying scientific processes and ideas.

In addition to not having resources to explain scientific processes to them, some of them do not understand the concept that their entire day is affected by energy.

My goal, in this multidisciplinary unit, is to simplify this complex system for my kindergarten students to where they have a solid knowledge base of energy, its many uses, the differences between renewable and nonrenewable forms, as well as the non-renewable forms' toll on the environment.

Some of the scientific terminology used and explained is detailed as follows:

Energy = $\triangle$ Work
Force = Mass x Acceleration
Work = Force x $\triangle$ y (direction)
Power= $\frac{\triangle \text{Work}}{\triangle \text{Time}}$

Energy is equal to a change in work. It is any source of power that can be used to do work. Force is equal to the mass of the object that you wish to apply force to, times the acceleration at which you wish to use. If you wish to push a table to the left, then the table will move to the left because the force you used is greater than the friction due to the mass of the table. The acceleration is the change in speed (at the beginning it was not moving, so the velocity was equal to zero, after you push it with a force it began to move, so the velocity is not zero).

Energy is equal to a change in work and work is equal to the force applied times a change in position, a displacement, the object moves in the direction of the force, the direction you push. One can say that energy is all around us. From getting up in the morning, to putting on your clothes, to going to work at your computer, all of these simple life tasks use up energy.

So how is the word energy used to apply to what we need to power our lives? For example, how is the refrigerator running right now and how is the heater keeping our home hot?

Fossil fuels and nuclear power have been used for centuries for energy production. Oil (Petroleum), coal, natural gas, and nuclear energy are all nonrenewable energy sources. The term nonrenewable refers to their shelf life. In other words, once these sources are used they are not replenished. Since these resources do not self-replenish, they are becoming of a limited supply. In addition to their supply diminishing, when fossil fuels are burned they release harmful gases that pollute our planet's soil, air, and water. The difference in efficiency between nonrenewable and renewable energy sources is apparent in many cases, for example in the comparison of the use of fossil fuels vs. geothermal energy: In the United States, geothermal power provides electricity to 3.5 million homes. Compared with an electrical power plant that uses fossil fuels, 60 million barrels of oil would need to be burned every year in order to make the same amount of

power. (Petersen, 35) Our power usage in 2005 shows our immense dependence on nonrenewable energy sources and our lack of use of renewable energy forms:

Petroleum= 36%
Coal= 24%
Nuclear= 7%
Natural Gas= 21%
Wind= 0.5%
Solar= 1%
Hydroelectric=4%
Biomass=6%

There is a world of resources that are renewable. They are all linked to the sun. These sources are solar, tidal, wind, geothermal (the heat in magma or molten lava) biomass, and hydropower. These resources are natural and always available, producing energy. These sources are currently not accounting for nearly enough of the world's energy for various reasons. One of the sole purposes of this unit is to detail the renewable sources and to educate our students on their ins and outs. If the present-day youth has a solid understanding of the current climate crisis and the means to get us out of it, we will surely be living in a much more energy-efficient, lush world.

Solar

Every hour, enough solar energy reaches Earth to meet the energy needs of every human on the planet for a whole year. (Petersen, 23) The sun sends over 35,000 times more energy to earth than humans use in all their energy consumption endeavors. To put it another way, people use less energy in 27 years than the earth receives from the sun in a single day. (DeGunther, 151) Solar energy is the energy produced directly from the suns rays. Many homes and businesses are currently heated by the use of solar panels, which collect the solar energy from the suns rays and trap them inside the structure. Solar energy can be used to produce hot water and electricity. Solar collectors are boxes used to convert solar energy into hot water or electricity. Solar cells give off electricity when they are exposed to sunlight; the electricity is then stored in batteries.

Tidal

Tidal energy is a form of hydropower that converts the energy created by the tides into electricity and other forms of power. The tidal water drives turbines to generate various forms of power. Unlike wind and waves, tidal energy is predictable which makes it an easier source to use. Tidal power comes from the oceans movements, but the natural sway of the tides provides the hydrokinetic energy, underwater turbines rotate with incoming tides and in the opposite direction with outgoing tides. Tidal energy represents a steady and inexpensive energy source, but the costs of building the underwater system can be high. (Maczulak, 101)

Wind

Wind is created through the sun heating the earth's surface. The air on the land is cooler and when it is met with the air from above that is warmed by the sun, wind is created. There are many places on the earth that the wind blows regularly and with enough strength to be used for energy production: seashores, mountain passes, ridge tops, and the Great Plains in the United States. Wind farms are groups of tall towers built with turbines that are turned by the wind and this power runs a generator.

Geothermal

Geothermal energy is produced from heat inside the Earth. Volcanically heated geothermal waters are found near the surface in some places on Earth: Iceland, Northern California, the Philippines, Japan, and New Zealand. Geothermal steam and hot water are pulled from the Earth by use of deep wells. In Iceland many buildings are heated by pumping hot water from deep in the Earth through pipes, which pass heat into the air around them. (Petersen, 33) Geothermal water or steam can be pumped through a turbine, creating electricity in a generator. (Petersen, 34) Some of the potential uses of geothermal energy are: soil warming, aquaculture, snow melting and de-icing, soil sterilization, biogas production, and fruit and vegetable drying, to name a few. (Cujar)

Magma is another form of geothermal energy. Magma is the molten rock known as lava, and is in the experimental stages for its ability to be converted into electrical energy. It has many benefits: it is abundantly available across the world, the process of energy extraction from magma is environmentally friendly, and it may not be an expensive process (www.magma-power.com).

Biomass

The term "bio" means life, therefore biomass refers to the burning of once living matter to produce energy. Sources of biomass are: vegetation, trees, animal oils, manure, and garbage. Methanol, ethanol and biodiesel are all created using this method. Biofuels are any fuels that are made from plant material. The main biofuels in use today are ethanol produced from grain crops; methanol produced from natural gas or from solid organic waste called biomass; biogas, a mixture of methane and carbon dioxide; and vegetable oils. (Maczulak, 57)

Hydropower

Hydropower is the use of water to produce electricity. Concrete dams are built across large rivers to collect the racing water. The fast-moving water then turns turbines, which then convert the power into electricity that can be used to power homes and other structures. Hydropower can be done on a large and small scale- exploited both on a macro (huge dams can be built to create statewide electrical power on America's biggest rivers) and on the micro level (people can put hydropower generators in backyard rivers and streams). (DeGunther 21)

It is the fear of many scientists and environmentalists alike; that if we do not make a full conversion to renewable energy, our planet will be in great peril and some even think this is the case now. Some of the effects of burning fossil fuels have already been seen. It is imperative that the students of today become adept at understanding the future of energy creation and consumption. For it is them that will be the CEO's of these companies, the consumers of the energy sources, and the determining factors in whether or not our world is energy-efficient.

It is our work as teachers that equip our students with this knowledge and ability to create. In addition to helping to form knowledgeable citizens of the future, we are helping to pave the way for a better planet for the future to enjoy.

Objectives

- Students will understand the concept of energy
- Students will identify the various types of energy
- Students will differentiate between renewable and nonrenewable forms of energy
- Students will examine where energy comes from and how it is then used
- Students will identify energy resources that are good and ones that are not good for the environment
- Students will understand how energy plays an enormous part in their everyday lives

Strategies

The strategies used for the lessons in this unit will be Intentional Read Alouds, Message Time Plus, graphic organizers, the turn and talk strategy, sharing, author's party, higher-order (effective) questioning, computer research, data collection, documentation, and the creation of a book (see lesson 7).

Intentional Read Aloud

The teacher reads a high-quality, age-appropriate selection of children's literature in which he or she has already read and marked places in the text where higher-order questions should be posed, and certain tier II vocabulary should be introduced or reinforced. In addition, places are marked where the following could be taught: comprehension strategies, story elements and the like, and points in the text where the children should engage with their peers on an issue. One way of engaging with their peers is using the turn and talk strategy. This is where each student talks to another student to answer a question posed about the text.

Message Time Plus

This is a shared reading and writing experience that is a registered educational method designed by Children's Literacy Initiative- cliontheweb.org, in which the teacher creates a message of varying genres and writes it in front of the students to enable them to use

their decoding strategies. The teacher creates the message ahead of time with one central skill or objective in mind and does a lesson using the message to address it. The students read the message as the teacher is writing it in front of them, sentence by sentence. After the teacher completes the message the students read it from the top and then the students are asked to come up and find a letter, a word or a mark of punctuation. As the students find something in the message, the teacher is marking it using a triangle for a mark of punctuation, a circle for a letter, and a square/rectangle for a word.

The teacher is also scaffolding each child regarding what he or she has found, aiming to reach his or her Zone of Proximal Development (Vygotsky). At the very end of this experience, the students read the message for one final time to practice fluency and rereading. At this point if the students have not found an example of the skill or objective the teacher was intending to teach, he or she directly teaches it.

The Turn and Talk Strategy

Turn and talk is an effective strategy used to promote higher-level thinking by students. It is typically used when a teacher is reading a piece of children's literature and he or she asks the class an engaging question. Here the students would be asked to "turn and talk" to a partner or another member of the class about the question. When the students are finished discussing the question at hand, the teacher uses some sort of signal for the students to stop discussing, and finally the teacher chooses students to share out what they were discussing with their partner. This strategy can be used throughout the instructional day and across disciplines.

Sharing

Students sit on the perimeter of a large rug, or at their tables if there is no common meeting area, and speak about what he or she is working on. The other students, either praise, connect, probe, or suggest something for the students that are sharing their work. In probing, the other students are asking questions of the one that is sharing, in order to get clarification and to help the writer to further his or her work.

Author's Party

This is a strategy often used at the close of a unit in Writing Workshop. This is a time when students have finished working on their pieces or one large piece and the teacher invites another class, administrators, and/or the parents to come and listen to the students read their books. This makes it known to students that they have an audience, a real purpose for writing, and gets them familiar with the concept of publishing their own work.

Activities

Lesson One: What is Power?

Objectives:

- Students will understand the concept of power

Materials:

- a small table
- a student volunteer
- various objects around the classroom

Strategies:

- direct instruction
- modeling
- interactive teaching
- effective/higher-order questioning

The teacher will introduce the concept of power by explaining that power involves work and time. In order to show power, one needs to do work over a certain length of time and this is how it is measured. The teacher will write the words power, work, and time on the board. The teacher will then explain that in order to show power the work you are doing needs to increase in intensity or decrease in intensity over a set time. The teacher will have a small table in front of the students. The teacher will explain that the table is idle or at rest when it is sitting there- that no work is being done and no force is put upon it except of course for the force of gravity that is always naturally upon everything on Earth. The teacher will then begin to push the table a slight bit. Upon pushing it, the question will be posed: what is happening? If the students do not say that work is being done to move the table, the teacher will lead them to this. The teacher will ask the students if the work was done rapidly or not. The teacher will then illustrate a different example of work.

The next demonstration will involve the pushing of the table at a rapid rate. The students will again be asked: what is happening? They will be lead to compare the time taken to do the task in the two different examples. Lastly, the teacher will ask for a student volunteer to come up and hold the other side of the table as the teacher tries to push it. Again the students will be asked: what is happening? The illustration of an added force will show the students that power is dependent upon force. To culminate the lesson, the students will each be given an object in the room to exert their power on, one at a time, and the teacher will ask each student how much work was involved. The students will complete a sheet that asks them to illustrate the object they had to exert their power on and then circle a smiley face that means it was easily moved, a straight face that means it took a bit of power to move it, or a frown face which means it was very difficult or impossible to move.

Lesson Two: What is Energy?

Objectives:

- Students will understand the concept of energy

Materials:

- marker board markers

- markers
- big bag of pretzels
- Alternative Energy: A True Book, by Christine Petersen
- chart paper

Strategies:

- turn and talk
- graphic organizers

The teacher will introduce the concept of energy by writing the word on the board inside a brainstorming bubble and then jumping up and down.
"Don't I have a lot of energy?" the teacher will ask. The students will be encouraged to discuss their prior knowledge related to the concept of energy. Students will then volunteer their understandings of energy and the teacher will briefly comment on each as she writes their responses on the board in the outer bubbles. Then the teacher will bring out a big bag of pretzels and begin eating them and passing them out to the students. The students will be asked, "What do these pretzels have to do with energy?" The students will be asked to use the strategy turn and talk, and talk to a partner to answer the question posed. The students will share out what they discussed with their partner. The teacher will post the answers to the question on chart paper for further review. After writing the word fuel on the board, the teacher will explain that food is an example of a fuel and that eating the pretzels (the fuel) causes their bodies to get energy by burning the food eaten. In this same turn, energy is produced when your mom or dad puts gasoline (fuel) in the car and the car engine burns it to make the car go.

Lesson Three: Energy for Life: Use of Nonrenewable Sources of Energy

Objectives:

- Students will identify the various types of energy
- Students will identify nonrenewable forms of energy

Materials:

- Alternative Energy: A True Book, by Christine Petersen
- Chart paper with a t-chart already created and titled
- Markers
- Index card with vocabulary words: fuel, energy, nonrenewable

Strategies:

- Intentional Read Aloud
- Message Time Plus (a shared reading and writing experience)
- Shared writing
- Computer research

The teacher will write the following paragraph on the board as students do a shared read:

Yesterday we discussed that when you have fuel and you burn it, you produce energy. We ate pretzels and we decided that our bodies were digesting them like fuel so we could have enough energy to learn, run, play, read, and write.

Energy is actually much bigger than that, though. In our world, people use energy so they can do their everyday jobs and chores. We can do things like turn on our lights in the house, power our television, and get cold air from the air conditioner because we are burning things that produce energy.

Following the shared read, the teacher will read page seven from the book, Alternative Energy: A True Book. This page discusses fossil fuels: oil, coal, and natural gas. The teacher will then have students summarize what was expressed on this page. The teacher will write what they say on a piece of chart paper made into a t-chart, under the words: Nonrenewable Energy Sources.

The teacher and students will discuss the use of coal, oil, and natural gas and how it is converted into the electricity and heat that we need to power our homes.
The students will study the picture of coal seen in the book and then the teacher will gather the students around the computer to see more images on http://www.edupic.net/sci_pics.htm. The pictures are of nuclear, coal, oil, and natural gas plants.

Lesson Four: Energy for Life: Use of Renewable Forms of Energy
Objectives:

- Students will identify the various types of energy
- Students will identify renewable forms of energy

Materials:

- Alternative Energy: A True Book, by Christine Petersen
- Chart paper with a t-chart already created and titled
- Markers
- Index card with vocabulary words: fuel, energy, renewable

Strategies:

- Intentional Read Aloud
- Shared writing

The teacher will review what was discussed regarding nonrenewable energy sources by reviewing the one side of the T-chart. The teacher will tell the class that the nonrenewable energy sources are in limited supply and they are not good for our planet. The teacher will tell the class that they are going to explore other ways to create energy, and that these ways are called renewable because they are in abundant supply and are good for the earth. The teacher will say that, in addition they are all related to the sun. The teacher will take out the vocabulary card that reads renewable and explain the definition as it is added to the board with the other terms on energy. The teacher will then read from the book, Alternative Energy: A True Book, regarding renewable energy sources. Solar, wind, water, geothermal, and biomass will be read about in quick blurbs (on pages: 11,18,28,and 36).

The teacher will write the names of these resources on the t-chart under the words: Renewable Energy Sources. To finish the lesson, the teacher will refer the students back

to their vocabulary words: fuel, energy, nonrenewable, and renewable. The teacher will briefly reiterate these definitions and everyone will read the t-chart together. To end the lesson, the teacher will explicitly state the difference between renewable and nonrenewable energy and the advantages/disadvantages of both.
The students will now have an introduction to the difference between renewable and nonrenewable energy sources and they will go into greater depth in lesson five.

Lesson Five: Energy: From Dawn to Dusk
Objectives:

- Students will examine where energy comes from and how it is then used
- Students will understand how energy plays an enormous part in their everyday lives
- Students will differentiate between their day with the use of energy sources to the day of a student from the past with no electricity

Materials:

- Parent note describing science unit and asking the means of energy production used at their home

Strategies:

- Graphic organizer
- Modeling
- Sharing

Prior to this lesson the teacher sent out a note to parents introducing their new science unit and asked each parent to write back with what type of energy source they use in their home. Students will use a graphic organizer that is labeled morning, afternoon, and night. The students need to draw or write next to morning, afternoon, and night what they do on a typical day. Next to their picture or words they need to think and write what energy they are using to do the task. For example, if a student washed his or her face in the morning, they may write oil burner next to the task to illustrate that the oil burner at their house heats their water so it is warm for washing. The teacher models how to complete the graphic organizer by completing it in front of the students regarding her energy use. The students then go to their seats, with the aid of their teacher and complete the graphic organizer.

Upon completion, the students all share an aspect of their day and the energy they used to complete it. The teacher then shares a completed graphic organizer that he or she prepared as if it occurred in the times of no electricity. The students compare their day to the fictitious student who lived when there was no electricity.

Lesson Six: Energy Resources for the Future
Objectives:

- Students will differentiate between renewable and nonrenewable forms of energy
- Students will examine where energy comes from and how it is then used

- Students will identify energy resources that are good and ones that are not good for the environment
- Students will understand how energy plays an enormous part in their everyday lives

Materials:
- Labeled pictures of renewable and nonrenewable energy sources cut into small squares
- T-chart for each student labeled renewable energy sources and nonrenewable energy sources

Strategies:

Students will review the vocabulary they learned from the unit: fuel, energy, renewable, and nonrenewable. The students will also look back at the books they have been exposed to during the unit. The teacher will show them some of the sources of energy that had been discussed. After the students look at the pictures in their read aloud books, they will engage in an activity involving picture cards that show pictures of various renewable and nonrenewable energy sources.

The students' job is to paste the pictures of all renewable energy sources on their t-chart paper under the label: renewable energy sources and paste the nonrenewable energy sources under the label: nonrenewable energy sources. The students will then discuss why they labeled each picture as such.

Lesson Seven: Putting it all Together: My Energy Book

Objectives:
- Students will understand the concept of energy
- Students will identify the various types of energy
- Students will differentiate between renewable and nonrenewable forms of energy
- Students will examine where energy comes from and how it is then used
- Students will identify energy resources that are good and ones that are not good for the environment
- Students will understand how energy plays an enormous part in their everyday lives

Materials:
- Teacher model- a book on energy pre-made by the teacher
- Paper folded in half and stapled for individual books
- Construction paper for covers of books
- Printed icons of various energy forms: renewable and nonrenewable that are labeled by the teacher

Strategies:
- Brainstorming
- Modeling
- Author's Party

This lesson is the culmination of the unit. The students will really have an opportunity to showcase their understanding of energy through the creation of their very own book. The teacher will gather the students in front of the T-chart they have used in lessons 2-6. The teacher will review the key terminology and have the students read the t-chart to remind them of key concepts. Then the teacher will explain that they are going to create their own book on energy. The teacher will tell the students to remember back to when they didn't know about energy, and that they are going to create a book that people can read to learn about this concept. They will also be told that they are showing what they know about energy through this book. The teacher will show the students the rubric for the project and then introduce her book. The teacher will have the students look at the book he or she created.

The students will look through the book together first without any guidance, and then they will be exposed to the rubric for the book project and look at the model again keeping in mind what needs to be present in the book. The students will choose their covers' color, the inside paper, and any photocopies of energy forms they would like to use in their book. The students will create their book over many days and have as long as needed to finish. The finishing time is up to individual teacher discretion. When all books are finished, there will be an "author's party" in which the students share their books with each other, another class, members of the administration, and/or their parents.

Bibliography

Biddulph, Fred and Jeanne, What makes Light?, Wright Book Publishing, Inc., Bothell, Washington, 2007.

DeGunther, Rik, Alternative Energy for Dummies, Wiley Publlishing, Inc., Indianapolis, Indiana , 2009.

Goetzberger, A., Workhsop on "Physics for Renewable Energy", October 17 – 29, 2005, sci_info@ictp.it,www.ictp.it

Gore, Al, Our Choice, Rodale Inc., New York, 2009.

Maczulak, Anne, Ph.D., Renewable Energy: Sources and Methods, Facts on File, Inc, New York, 2010.

Peterson, Christine, Alternative Energy: A True Book, Scholastic, Inc., New York, 2004.

http://www.ncdc.noaa.gov/oa/climate/globalwarming.html , Global Warming, Frequently Asked Questions, National Oceanic and Atmospheric Administration, National Climate Data Center.

Annotated Bibliography/Resources for Teachers

DeGunther, Rik, Alternative Energy for Dummies, Wiley Publlishing, Inc., Indianapolis, Indiana , 2009. DeGunther does it in the "Idiots" fashion and present a text that is very easy for all to access and understand. The book is laid out with the conventions and icons used detailed fully so the reader can better get to the most important part of the reading. Should be used by teachers as a quick and easy, "on-the-spot" reference.

Gore, Al, Our Choice, Rodale Inc., New York, 2009. Al Gore presents the case for us all from government leaders to individuals, to change our ways to prevent more climate change. This book is extremely informative in that it details the renewable and nonrenewable forms of energy available.

There are also proposed ways in which we need to change the way we think as a society to make us all extremely cautious and concerned in regards to the earth. That is if we still want it to be habitable.

Maczulak, Anne, Ph.D., Renewable Energy: Sources and Methods, Facts on File, Inc, New York, 2010. Maczulak presents the energy forms available and their pros and cons. She then tackles recycling, and its role in rescuing our earth. She infuses case studies into her chapters to drive some of her points home.

The author details the renovations in architecture that are enabling us to take care of our planet. There are many charts and graphs that would be of use to explain concepts to students.

Annotated Bibliography for Students

Biddulph, Fred and Jeanne, What makes Light?, Wright Book Publishing, Inc., Bothell, Washington, 2000. A level E text that advanced kindergarteners can read with ease on where light comes from and how we use it. It provides an initial explanation of electricity and energy that would be very understandable for kindergarteners.

Peterson, Christine, Alternative Energy: A True Book, Scholastic, Inc., New York, 2004. Peterson compares renewable and nonrenewable sources of energy, using pictures and child-friendly language and references. Her choice of illustrations, photographs, and charts give the students a good glimpse into the world of energy and its complex systems.

Resources

http://www.energyquest.ca.gov
http://www.eia.doe.gov/kids/energy.cfm
http://www.cubiodiesel.org
http://www.eco-pros.com/non-renew.html
http://www.encylcopedia.com/topic/sources_of_energy.aspx
http://edupic.net/sci_pics.htm

Appendices

State Standards

3.2.4 Inquiry and Design
- A. Identify and use the nature of scientific and technological knowledge.
- B. Describe objects in the world using the five senses.

3.4.4. Physical Science, Chemistry, and Physics
- A. Explain objects in terms of the materials from which they are made and by their properties.

3.4.4. Physical Science, Chemistry, and Physics
- B. Know the basic energy types, sources, and conversions.

4.2.4. Renewable and Non-Renewable Resources
- A. Identify the needs of people.
- B. Identify products derived from natural resources.

4.8.4. Humans and the environment

Name_____

Choose an object from around the classroom and try to move it. How much power do you need to move it? Circle the answer that best describes this. Smiley face=little power was used, Straight face= some power was needed, Frown=a lot of power was needed/it could not be moved.

Illustrate a picture of your object above.

D. Know the importance of natural resources in daily lives.

Resources needed for individual lessons:

Lesson One: What is Power?

Lesson Five: Energy from Dawn to Dusk

Dear Parents and Guardians,

It is with excitement that we come upon our new Science unit on energy and renewable and nonrenewable energy sources. In class, we have been explaining that energy is used in each person's household to do things such as charge cell phones and warm the house. To get our unit started, we need to know how your home gets its energy. Please write below how your home is powered. Thank you for your help and look forward to updates in how our Science unit is going.

Sincerely,
Mrs. Traore

_____- household energy form

Name_____

Write something different that you do in the morning, afternoon, and night and next to it write the energy source used to do it.

Time:	**Activity:**	**Energy Source:**
Morning	_____	_____
Afternoon	_____	_____
Night	_____	_____

Lesson Six: Energy Sources for the Future

Name_____	
Renewable Energy Sources	Nonrenewable Energy Sources

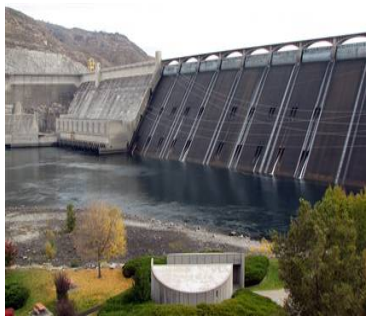
Images needed for lesson six (to be printed and put on card stock):

Renewable Sources-

Geothermal Energy

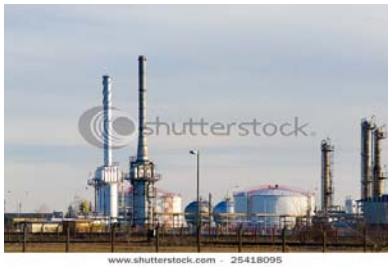
Solar Energy

Wind Power



Hydropower- Water Dam

Nonrenewable Sources-



Natural Gas Refinery

Nuclear Energy


Coal Strip Mine


Oil Refinery

Lesson Seven: My Energy Book

Name_____

Rubric for Energy Book

	Poor	Moderate	Very Detailed
1.Explains energy	1	2	3
2.Lists forms of Renewable sources	1	2	3
3. Lists forms of Nonreneweable sources	1	2	3
4. Labels Pictures/Ideas	1	2	3
5. Adds illustrations	1	2	3
6. Writes using stretching out strategy	1	2	3