Sample Co-Teaching Lesson Plan

Subject: Science, Gr. 8 Topic/Lesson: Sources of Energy

Competencies/Objectives

Students will learn about types of energy, their uses, and advantages and disadvantages through online research. Students also categorize types of energy as renewable or nonrenewable. Their understandings will be displayed in a multimedia format.

Standards:

(Science) Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.

(Writing) Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

(ELA) Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

Materials

Energy fact cards—1 set per pair of students

Access to Intermediate Energy Infobook, produced by National Energy Education Development Project (NEED), available at www.need.org. (It is available online or in print form.)

Research questions—one set per pair of students or written on chart paper, board, or smart board.

Rubrics for evaluating students (one for each pair of students)

Types of Energy chart –on transparency, written on board, or used electronically

Computer and data projector access

Scanner—optional

Paper and Pencil

Science notebooks (if your class uses this tool. If not, students can record answers in other appropriate manner.)

Chart or poster paper, markers, crayons (optional)

Access to internet

Student Grouping Plan

Students work in pairs. Students can be ability grouped or heterogeneously grouped, based on student needs.

Anticipatory Set/Needed Background Knowledge (Whole class, teaming approach)

Students should have an understanding of the concept of energy. They need not be able to repeat the scientific definition (energy is the ability to do work) but should be able to articulate that energy causes change or makes things happen. Students should also understand that energy has many different forms and can be transformed into other forms. To check for these understandings and scaffold if necessary, have a brief discussion with students about the following questions.

1. What is energy?
2. How and when do we use it?
3. Where do we get it?
4. What are some types you know about?

If students are unable to answer question 4, guide them to thinking about energy in their own bodies. This concrete example can help students to connect to the topic.

Procedures/Co-Teaching Approaches **Teaming** Teachers circulate during this activity, reading aloud as needed material on cards, providing support as needed.	• Give each pair of students a set of Energy fact cards. (Make sure you have cut them apart and shuffled them.) Ask students to match the type of energy to the matching energy fact without using any reference material. When students are satisfied with their matches, have them write this information in their science notebooks. (Alternately, you can give each student a set of cards which can be taped into the science notebook). • As a class, briefly discuss students' choices. Do not give the correct answers to students at this point. The goal is for students to become familiar with some energy types and spark interest in the topic. At the conclusion of the discussion, collect the fact cards. An easy way to store these is in snack size plastic bags
Procedures/Co-Teaching Approaches **Stations** within parallel A-Teacher led, with modified reading materials. Use Primary Energy info book Station B—Independent station. Students use Intermediate Info book Station C—Teacher led with grade level reading materials. Use Intermediate info book Station D—Independent station. Students use Intermediate Info book One teacher works with stations A and B, the other with C and D	• Assign a type of energy to each pair of students. (Types of energy to assign are biomass, coal, geothermal, hydropower, natural gas, petroleum, propane, solar, uranium, wind) • Explain to students that they will now become an expert on the type of energy they have been assigned. Let students know that they will present their expert knowledge to the class. • Direct students to www.need.org website. Utilize the Intermediate Energy Infobook link to find information about their assigned type of information. Using this website students should take note on the topics below, using their own words. (Write these on the board type up for students, or put into multimedia format as a model for students to use.) Description/explanation of type of energy Where it is found What it is used for Amount available Impact on the environment Is it renewable or non-renewable? • Allow students time to gather information. About 20 minutes should be enough time. This is a good place to stop if your classes are 45 to 60 minutes long. • Explain to students that they will present their information to the class in multimedia form (Prezi, powerpoint, Glogster, etc.) • Tell students the requirements for the multimedia presentation.

	- Information gathered about their type of energy. (See details above in bullet 3.) - Two pictures that relate to their type of energy. Students may use the web to find images or they can scan in their own art if you have access to a scanner. - A personal connection to the type of energy. Students should find a way that their type of energy relates to them. It can be a personal use of the type such as a propane grill or solar calculator, or even a trip to visit a hydropower dam such as at Niagara Falls. If students feel they don't have any direct connection, allow them to use movie or TV experiences. - Allow students time to construct their presentation. This usually takes about 30-45 minutes. Remind students to proofread and edit. Also remind students to practice their presentations with their partners, remembering to speak to the class and not the board or screen. - Present presentations. During this time, have members of the class take notes, focusing on advantages and disadvantages of each type of energy. Students can make a chart or graphic organizer to collect notes. If your students need more structure, you can create a graphic organizer for them. - During presentations, use the attached rubric to evaluate students.
Practice/Application Teamiing	From above, creating and presenting presentations.
Closure Teaming	1. Pass out Energy Fact cards again. Have students sort them again to see if their matches have changed. Write any changes in the science notebook with an explanation of why their matches changed. You may now share answers with students if you choose. 2. Have students sort the sources of energy into renewable and non-renewable categories. Renewable sources are biomass, hydropower, geothermal, solar, and wind. Non-renewable are coal, petroleum, natural gas, propane, and uranium.). Use this activity as a formative assessment piece if

	you choose.
Assessment	Use the rubric from the multimedia presentation and work samples as formative assessment of students' understanding. For summative assessment, provide students with a blank Types of Energy chart (see attached). Have them fill in information about each type of energy including uses, advantages and disadvantages, and whether it is renewable or non-renewable. You can use the Types of Energy Chart answer key as a reference when checking students' charts. Decide whether students can use the notes they collected during presentations as a reference.
Specially designed instruction/accommodations for students with disabilities or other special needs Students can be paired with partners for whole lesson (acc) Text complexity can be modified (acc) Students can be placed in first station with appropriate amount of support (teacher led or independent) (SDI) Assistive technology can be incorporated as needed (acc)	
Notes Energy fact cards, rubric are in separate files.	