

Lesson Plan



Note: This lesson plan may be used with the *Natural Inquirer* Bioenergy edition (<http://www.naturalinquirer.org/Bioenergy-i-23.html>).

Time Needed:

2 class periods

Materials (for each student or group of students):

- *Natural Inquirer* Bioenergy edition (<http://www.naturalinquirer.org/Bioenergy-i-23.html>)
- Writing utensil
- Blank paper

In this lesson plan, students learn about bioenergy, then stage a debate in a town considering switching from fossil fuels to biomass.

Methods:

Prep

Educators should choose one *Natural Inquirer* monograph or article. Read the text fully.

Day One

Introduce *Natural Inquirer* and the concept of scientific journals. Scientists write scientific articles to share their research with the public and their colleagues in the science field. *Natural Inquirer* articles are written for students, but they are based on content directly from real scientific articles.

Provide students the article *Natural Inquirer* Bioenergy edition, and direct them to read the "Welcome to the Bioenergy edition" section. Then ask students to explain the concept of bioenergy in their own words. Task students with reading the article fully. Once all students are finished, review any questions that students may have.

Introduce to students the debate activity. Use this as an introduction to the activity:

"Thank you all for coming here today. I really appreciate your interest and passion for our community of "Heatville" and the surrounding forest. Today we are all gathered here to determine if we

should switch from heating our school with oil to using wood biomass. There are points that need to be considered on both sides of the issue and I know that within the community we have varying viewpoints on this topic. So, I have asked all interested community members to come here today and take part in helping to decide how we should heat our school. How do you think we should heat our school?"

Day Two

Evenly split the class into five groups. Assign each group one of the stakeholder titles listed below. Give a brief explanation of the stakeholder and share the questions that each stakeholder has for the debate:

- School board member: Which heating system will work better? Which heating system will be more cost effective?
- Timber worker: What jobs are there now for operating the heating system? Will new jobs be lost or created? Will local suppliers gain or lose business?
- School parent: Which heating system is safer? Which heating system will keep my child warmer? What is and/or will be the air quality conditions?
- Natural resources personnel: Will there be any impact to the local forest? Will wildfire risk be altered? Will wildlife be affected?
- Natural resources advocate: Where does/will the oil/biomass come from to heat the school? What impacts will this have on natural resources both locally and afar?

Ask students to use what they learned in *Natural Inquirer*, as well as some outside research for homework, to begin answering the questions related to their assigned stakeholder. Throughout the activity, students should make the following assumptions: costs listed in the *Natural Inquirer*

Bioenergy edition are accurate (unless you can find more updated costs), unemployment is high in the area, and the area is adjacent to a national forest.

Give students time to begin writing a one-page persuasive essay from the perspective of the person they have been assigned to represent in the debate. The essay can be finished during homework.

Day Three

All students assigned to each particular stakeholder (i.e., all students assuming the role of Timber Worker) should join together to discuss the arguments they outlined in their essay. Each group should choose a notetaker who will write down the most persuasive arguments from their classmates. Then, a spokesperson from each group will present those points to the other groups.

After all groups have shared their most persuasive arguments, open the class up to a class discussion or debate. Students should be debating from the perspective of their assigned stakeholder. Students should be reminded that debates need to be civil and respectful, and that all comments need to be supported by facts. If needed, someone can write important arguments on the board for all students to see.

At the end of class, hold a class vote in which each student, as a stakeholder, can decide whether they are in support of or against changing the heating of Heatville school to bioenergy.