

Changing the Future One Alternative Source at a Time

Content: 6th grade Science

Lesson #1: Intended Benefits and Unintended Consequences S6.LS.4.2 Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.

Learning Objective

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Students CAN identify at least 2 intended benefits and unintended consequences of the bicycle generator by the end of the lesson.

MATERIALS

*Designing the Future worksheet which includes the scenario.

*Extension (optional) Bicycle Generator

REFERENCES

What future is there for global biodiversity? Video

<https://youtu.be/L-kx2MWFCpU>

OUTCOMES/ESSENTIAL QUESTIONS

- *How does human activity impact the environment?
- *What are some possible solutions to human impact?
- *What are the positive and negative side effects of solutions?

Using part of the engineering design process students will brainstorm and design an alternative energy source.

PROCEDURES

- 1) Concept Map about negative human impacts on environment.
 - 2) Watch and discuss video about human impacts on environment
 - 3) Students will pick a topic (water, wind or solar power) to develop a new kind of alternative energy source
 - 4) In teams, students will brainstorm ideas for a new kind of alternative energy source
 - 5) In teams, students will draw ideas for a new kind of alternative energy source
 - 6) Students will identify the intended benefits and unintended consequences of the developed alternative energy source
- As an optional extension:
Students can determine the intended benefits and unintended consequences of a developed alternative energy source, a bicycle generator, and determine whether it is an effective energy source or not.



To the left is an example of a different kind of solar energy source.

Lesson #2 The Big Energy Debate

6.ESS.2.4 Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.

Students CAN collect data and differentiate the impacts with at least proficiency in 3 of 5 areas covered on rubric of hydroelectric and nuclear power on humans and other organisms by the end of the lesson.
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Gather data to identify human impacts on the water cycle (generating power through hydroelectricity which keeps water stored in reservoirs).
Communicate findings from research on the impact of humans and organisms to the hydrologic cycle.

Materials:

Rubric

Cost/Benefit analysis sheet

Scenario with questions

Hydroelectric and Nuclear Energy Presentation

Guidelines

Computer

Digital resources provided by teacher, hard copies provided if needed.

Summary:

Students will gather data about the impact of nuclear energy and hydroelectric energy. They will then analyze and interpret the negative and positive aspects of each kind of energy source. The students will then draw a conclusion as to which might work better for the overall needs of humans and the local ecosystem.

OUTCOMES/ESSENTIAL QUESTIONS

Essential Question: What are impacts on humans and other organisms of hydroelectric and nuclear energy?

Nuclear

VS. Hydroelectric

