Coeur d'Alene Reservation Clean Energy Project

Understanding Energy

Grade Level	6-8	Time Required	45 minutes
Subject	Clean Energy	Instructor(s)	Justin Marsh & Laura Laumatia

Objective

Students will learn about the different types of energy, the effects of overconsumption, and how it is generated.

Goals

1. Students will be able to identify the 5 different types of energy.
2. Students will be able to identify at least 3 nonrenewable sources of energy.
3. Students will be able to identify at least 3 renewable sources of energy.
4. Students will learn how energy is created through a hands-on activity.
5. Students will understand the effects of continued consumption of nonrenewable energy sources by participating in a hands-on activity.

Rationale

The United States has joined the rest of the world in committing to reducing greenhouse gas emissions by half to achieve "net zero" carbon emissions in order to try to keep global warming to 1.5 ℃. Achieving this will require substantial changes to our energy grid, as well as a STEM workforce that will lead innovation in the development of renewable technologies. For our students to understand and engage in this energy revolution, they must have the opportunity to understand how energy and power impact their own community and what it means to the Coeur d'Alene Reservation to take part in 21st-century power development.

Procedures

1. Instructors will introduce themselves and Coeur d'Alene Reservation Clean Energy Projects.
2. Instructors will provide a rationale for the day's lesson.
3. Instructors will provide the *What is Energy?* Pre-test questionnaire.
4. Instructors will provide copies of *Coyote Snares the Wind* and discuss the meaning behind the story with the students
5. Instructors will ask the students what they consider "energy" and then follow up with the five different types of energy.
6. Instructors will ask students what they know about renewable and nonrenewable sources of energy, then proceed to fill any gaps and provide a list of renewable and nonrenewable sources of energy.

***RENEW-A-BEAN* Activity**

7. One instructor will introduce the *RENEW-A-BEAN* activity while the other instructor will provide the draw charts and beans.
8. Instructors will then proceed with the activity and follow-up questions.

***How is Energy Created* Activity**

9. Instructors will then begin the *How is Energy Generated* (HEC) activity.
10. One instructor will have the students partner up and begin the instructions. The other instructor will hand out the "Energy Kits" (toilet paper rolls, copper wire, alligator clamps, and two strong magnets)
11. When the class has completed their preparation for the HEC activity, instructors will hand each pair a digital electric meter to complete the task.
12. Upon completion of HEC, have one instructor collect all the items.

13. Conclude with a recap of what was introduced and a brief introduction of what will happen in the next lesson.
14. Students complete *What is Energy Post-Assessment questionnaire*

Resources & Materials

- Instructor Background: R.E.A.C.T. (Renewable Energy Activities – Choices for Tomorrow) curriculum
- 200 feet of bare copper wire (ideally 24 gauge)
- 24 strong bar magnets
- 40 toilet paper rolls
- 40 alligator clamps
- 10-15 digital electric meters
- *What is Energy? Pre-Assessment questionnaire*
- *Coyote Snares the Wind* Reading
- Generating Electricity Instructions
- RENEW-A-BEAN Game Instructions and Draw Charts
- *What is Energy Post-Assessment questionnaire*

Partnerships

- Gizmo Coeur d'Alene Makerspace
- Coeur d'Alene Tribe Environmental Programs Office
- Coeur d'Alene Tribe Department of Education
- Coeur d'Alene Tribal School