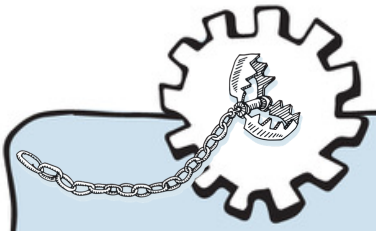

WHAT ENERGY SOURCE IS BEST FOR MY SCHOOL?

Energy Sources
Grades 5-7

TOPICS

Tradeoffs; Science; Energy

STUDENTS WILL

Identify and explain various types of energy and decide which source is most suitable for their school building

WHY THIS MATTERS

Making collaborative decisions is a unique set of skills students can learn as they access the curricular content learning.

DECISION MAKER MOVES

Thinking beyond the pros & cons list

Written by Joanne Calder,
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MAIN LESSON FLOW

Days 1&2

- Intro scenario: You are on a committee representing your school. The school has a grant to explore the possibility of alternative energy sources. You must choose the best possible energy source.
- Post three pieces of chart paper in a place where everyone can see. At the top of paper one write “What We KNOW about Energy Sources”. At the top of paper two write “What we WONDER about Energy Sources. At the top of paper three write “What we have LEARNED about energy sources. You will continue to add to these lists as you progress through the unit.
- Play a kahoot on energy sources or watch a video about fossil fuels or renewable energy to build background knowledge and excitement. (optional) Kahoots relating to topic: here and here.

Days 3 & 4

- Assign students to fill in the Renewable & Non Renewable Energy Sources: Research and Information Sheet Handout. At the end of each class, add to your “What do you Wonder?” and “What did you Learn?” chart paper lists.

Days 5 & 6 & 7

- Invite small groups to focus on researching one specific energy source to present to the whole class. Their group will become the “class experts” on their assigned energy source. The class will be using the information collected by each group to narrow their options about which energy source to choose for the grant.

CONTINUED

- Give students the handouts: Research Notes For Slide Show and Slide Show Criteria and Marking Checklist to guide their research. Have students create a slideshow about their source to present to the class.

Days 8 & 9

- Groups present slide shows to the class.

Day 10

- Give each student the Consequence Table Tool Handout. Have students choose 3 sources of energy that they think would be possibilities for their school and complete the handout thinking critically about why each of the alternative appeals to them. The questions they will consider for each alternative are “Why does this alternative appeal to me? What are the downsides to this alternative? What values about this choice are important to me? Students may choose to work in small groups to fill out their sheets but each student should complete their own handout as values may differ from person to person. Students with questions about specific sources may refer to expert groups for clarification. (20 min)
- Once complete, on chart paper, use the keys values brainstormed by students to create a group list of key values that students listed in their handouts. Some possibilities include cost, space, suitability of conditions for area, aesthetics, and environmental concerns, availability, safety, how much energy is produced, and odour. (10 min)
- One a second piece of chart paper, create a list of energy alternatives. Discuss which alternatives students chose when narrowing their alternatives to 3 choices. Ask students to share what they find appealing about those options and what they think are the downsides. Are there any alternatives that no-one chose for their top 3? If so eliminate these from your list. Discuss whether or not there are some alternatives that most people chose for their top 3? (30 min)

Day 11

- As a class, brainstorm and list vocabulary associated with probability and likelihood (eg. certain, likely, unlikely, possible, probable, impossible). (10 min)

CONTINUED

- Give each student a Prediction Tuner Tool and have them write their top 3 alternatives in the chart. For each non-eliminated alternative (from alternative energy list from Day 10), discuss possible positive and negative outcomes if that type of energy were to be chosen for the school. Discuss the likelihood of those possible outcomes occurring. Have students complete their charts individually based on their top three alternatives. (20 min.)
- Give each student 3 sticky notes and have them write their name on each stickie. Have them put the sticky notes on the 3 values from the group list of key values that are most important to them. This will give the entire class a visual of the group's collective values related to this decision. (15 min.)
- Create a consequence chart on the board that includes the remaining alternatives along the top and 3 to 5 values that most students chose along the side. It may look something like this: (15 min.)

Day 12

- Refer back to the consequence chart created on Day 11. Have students evaluate each alternative in relation to each value. As a group, facilitated by the teacher, they will assign each box a double thumbs up or down, a single thumbs up or down, a sideways (or neutral) thumb, or a question mark indicating that they need to gather more information. For example, installing solar panels for the school may have a relatively low cost so may get 2 thumbs up OR students may not yet know the cost so may need to put a question mark in that box and then go gather that information. Expert groups may need to weigh in with more information and/or students may need to do further research to answer unanswered questions. If there is disagreement among students about how to rate these uncertainties, you can put an average of what the class thinks.

Day 13

- Return to the consequence chart. Is there an alternative (or several) that can clearly be eliminated? Is there a clear winner? Are there several alternatives that would be viable options? Discuss the above questions.
- Based on the consequence chart, choose the most desirable alternative. Explain to students that they will need to Endorse, Accept, or Oppose this decision. If they endorse this choice of alternative energy, they are wholeheartedly agreeing it is the best choice. If they accept this choice, they can live with this decision even if it is not their first choice. If they oppose this decision they cannot live with it. Have them write Endorse, Accept, or Oppose on a whiteboard or piece of paper.

CONTINUED

- Have students move to the part of the room (assign one side of room as endorse, the other side as oppose, and in the middle is the “accept” range) based on where they stand on the alternative energy choice. For example, the first framed decision may be: “Solar energy is the best choice of alternative energy for our school”. Students need to decide if they endorse, accept or oppose this statement. They must also be able to give reasons for why they are standing where they are on the continuum.
- As students stand in their chosen place on the continuum, ask individual students to explain why they have chosen to stand where they have and what key values led to that choice. The goal is to have the entire class endorse or accept the class decision. If some students are opposed to the decision, other students may try to give convincing arguments as to why those opposed should reconsider or the class may want to consider other alternatives. Students may also get creative with alternatives and consider a combination of energy sources.
- As an exit ticket, have students record whether they endorse, accept or oppose the final decision and why.

Day 14

- Students can choose to write either a pretend newspaper article for a local paper outlining their class decision and the reasons behind it OR they can write a letter to the grant committee explaining how the class came to their final choice. Students should indicate which core values played a role in their decision, the process their class used to come to a consensus, and whether or not they are satisfied with the final outcome.

MATERIALS

- Chart paper & markers
- Renewable Energy Research Handouts
- Prediction Tuner Tool
- Consequence Table Tool
- *Optional* - Videos related to topic: History 101, Season 1: Oil in the Middle East (21 minutes) (Netflix). History 101, Season 1: Nuclear Power (22 minutes) (Netflix). Bill Nye the Science Guy Energy

SUCCESS CRITERIA

- Slide Show Criteria and Marking Checklist