

Renewable Energy

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Renewable Energy 5E Lesson

Grades 7-10	Renewable Energy	Ongoing Lesson
Lesson Objective: Students will learn about: - Renewable Energy - Biomass - Solar - Wind - Hydroelectric - Tidal - Geothermal - Efficiency - Clean energy		
Possible Student Misconceptions: - Renewable energy is too expensive - Renewable energy sources are always working - Renewable energy will never be competitive with fossil fuels - All renewable energy is clean - There is such a thing as clean coal - Wind turbines are loud, expensive bird killers - Solar power is too weak - Renewable energy can completely replace fossil fuels - Renewable energy is bad for the environment - Solar power won't be enough in the winter - Renewable energy is infinite		
Materials: 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 st - A means of projecting a PowerPoint presentation - Internet access - General classroom objects		
Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve the icon while in slideshow mode and it will automatically open for you. If it doesn't, right-click on the image and click Edit Hyperlink or something similar. I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I don't believe in long lessons. If you feel your students are losing their focus, stop the PowerPoint and give them a 5-minute break. If you'd like to show recommend my video collection here - http://www.teachwithferg.com/sci are tons of brain-break videos to choose from all grouped by category.		

Renewable Energy – 5E Lesson

Engagement Phase Your students will watch the video 'Which Power Source Is Most Efficient?' and complete the questions found in the file – <i>Engagement – Which Power Source Is Most Efficient Video</i> . The video can be found here - https://www.youtube.com/watch?v=0c4xk5dB014 Teacher Notes: - The video is about four and a half minutes long - You may need to show the video more than once or pause when an answer is given to one of the questions.	Durat Teach learni under
Exploration Phase Exploration – Lab Station Activity - In groups of 2-3, have your students complete <i>Exploration – Lab Station Activity</i>. Once they're done, they will submit their passport to you. Teacher Notes: - The complete instructions for my Lab Station activity can be found in the <i>START HERE – Instructions</i> file.	Durat Teach learni under
Explanation Phase PowerPoint Lessons - The lesson is found in the folder – <i>Explanation – Lesson</i> - This lesson is designed to be completed over one day - There are multiple embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson - The lesson covers the following topics: - Energy Resources - Renewable Energy Resources - Biomass	Durat Teach conce mater presen

- Solar - Wind - Hydroelectric - Tidal - Future Technologies	Goals - Students develop understanding of the content - Observations and experiences are discussed and critiqued - Students develop vocabulary - Students are able to connect the content presented to previous experiences
Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I have also enclosed a .PDF version of both the teacher and student versions.	
Elaborate Phase Elaborate – Scavenger Hunt Your students will complete – <i>Elaborate – Scavenger Hunt</i> . This activity will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding.	Duration: 1 hour Teacher Role – Facilitate learning and keep students focused
Teacher Notes: - Students will work individually or in small groups - Students will need one device per group	Goal Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Evaluate Phase Quiz Have your students complete – <i>Evaluate – Renewable Energy Quiz</i>	Duration: 30 min Teacher Role – Distribute and collect evaluation
Teacher Notes: - It's sometimes best to have the students peer evaluate - Placing students in small groups and having them exchange papers to mark will accomplish two things - Provide immediate feedback on the questions they just completed - Significantly reduce your marking time - Peer evaluation is not needed, only suggested when appropriate	Goal Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

Energy Resources

“original source”

Renewable

Renews itself over the course of a normal human life span.



Non-renewable

Is not able to replenish itself within a human life span

← Make sure your students are on track

Student copies with blanks
Videos embedded right into your slideshow

Energy Resources

“original source”

Renewable

Renews itself over the course of a normal human life span.



Non-renewable



Electricity Production –
Geothermal Energy

Interactive and Engaging Activities

Device-Based Scavenger Hunt Renewable Energy Production



Includes

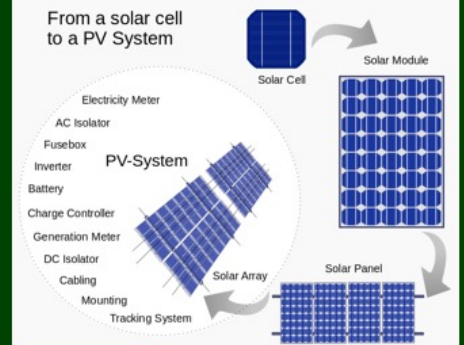
- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks, and laptops

- **100% Digital**
- Simulations
- Quizzes
- Videos
- Games
- and more



Renewable Energy Lab Station Activity



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

