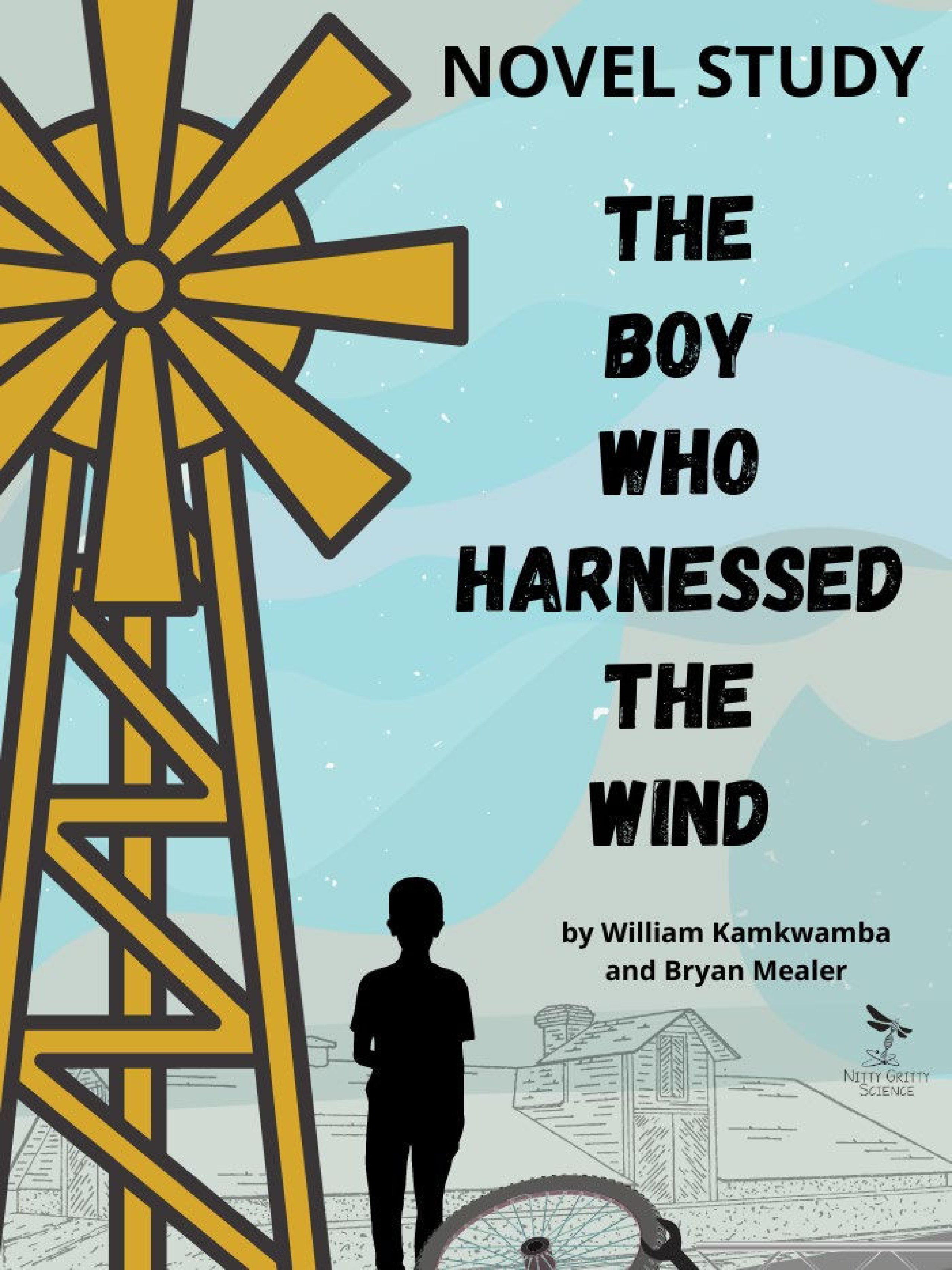
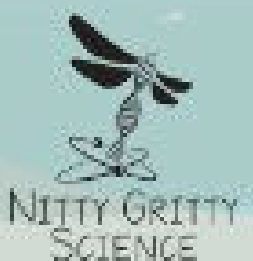


NOVEL STUDY

**THE
BOY
WHO
HARNESSED
THE
WIND**

by William Kamkwamba
and Bryan Mealer



Why Novel Studies in the Science Classroom?

Here at Nitty Gritty Science we want to foster the love of reading and improve science literacy. We believe that using novel studies in the science classroom will not only give students exposure to different perspectives but will also help them develop an understanding of how science vocabulary applies to so many events in their lives.

Research also shares benefits of using novel studies in the science classroom such as:

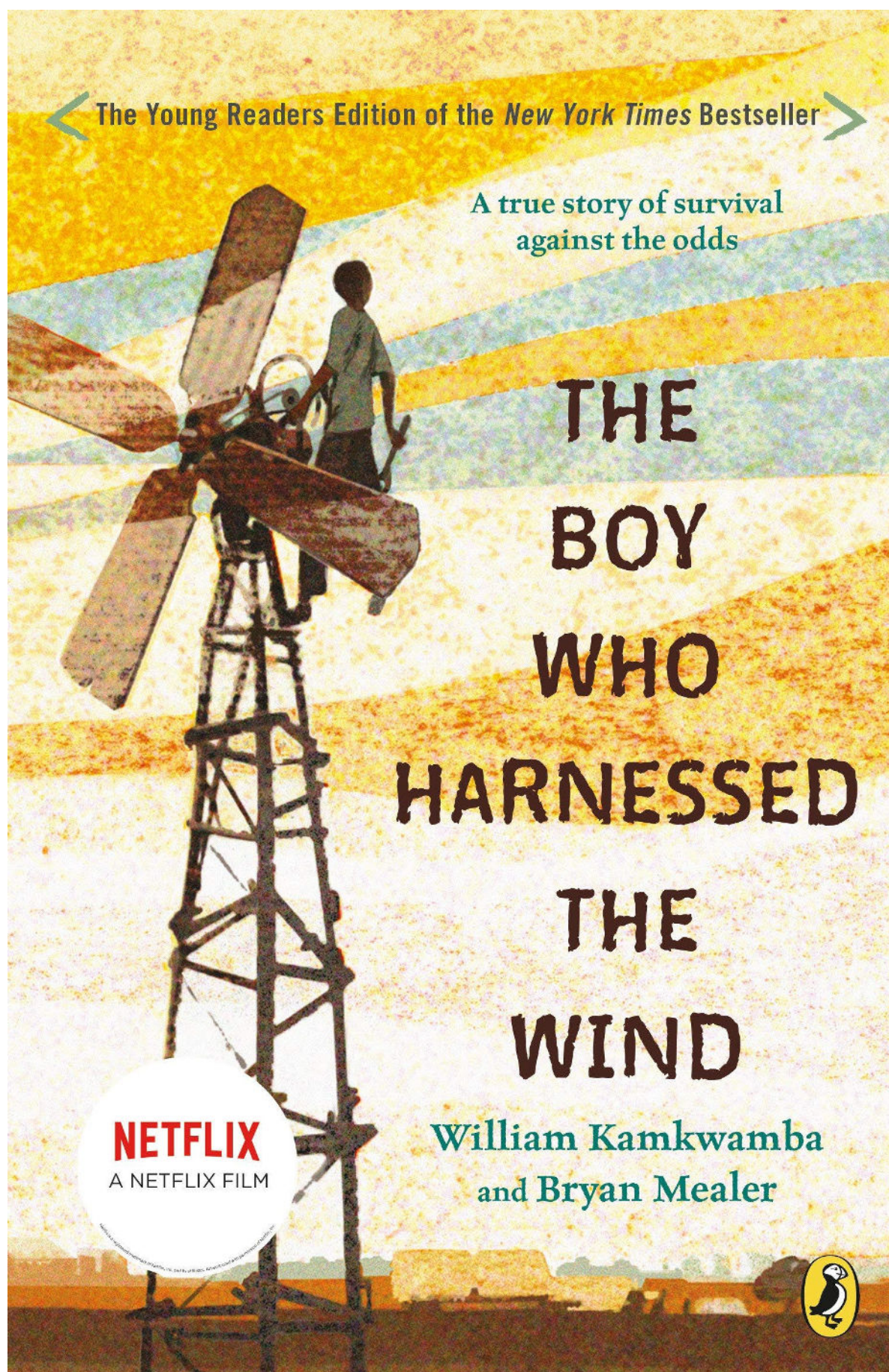
The literacy from reading can easily come from non-fiction and fiction novels that surround a science-related topic and are far more of a high-interest read for the majority of students than reading a textbook (Anderson & Hite, 2010; Batchelor, 2017; Coiro, 2012; Freudenrich, 2000).

Science fiction novels are an excellent way to engage students in science ideas while also helping students improve their literacy skills. (Creech and Hale, 2006)

Teachers can add in other readings from the internet and news articles which brings the reading level down to a more manageable level, however students are more willing to learn and spend the time to learn new vocabulary when highly engaged in what they are reading (Weinbugh et al., 2014).

There is very little research out there about the usefulness of using novels in classrooms other than ELA. Others have used novels and other types of formats to get students excited about science and science concepts (Batchelor, 2017; Coiro, 2012; Freudenrich, 2000; Ivey & Fisher, 2005; Jarman & McClune, 2001), but very few have used novels to teach science concepts and also try to increase literacy skills among students in the secondary classroom, so Nitty Gritty Science is here to help with that!

Happy reading,
Erica



The Boy Who Harnessed the Wind novel study is based on the **young reader's edition.**

When a terrible drought struck William Kamkwamba's tiny village in Malawi, his family lost all of the season's crops, leaving them with nothing to eat and nothing to sell. William began to explore science books in his village library, looking for a solution. There, he came up with the idea that would change his family's life forever: he could build a windmill. Made out of scrap metal and old bicycle parts, William's windmill brought electricity to his home and helped his family pump the water they needed to farm the land.

Retold for a younger audience, this exciting memoir shows how, even in a desperate situation, one boy's brilliant idea can light up the world.

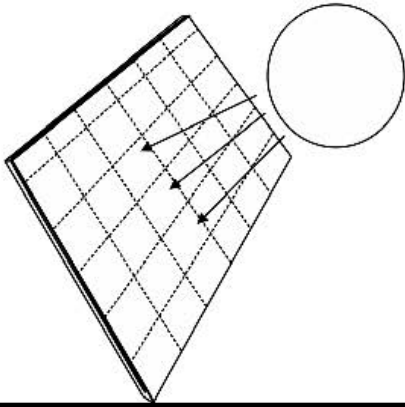
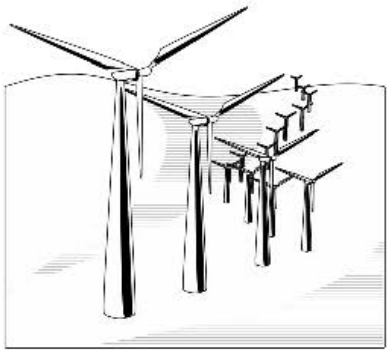
Hyperlinked Table of Contents

Table of Contents: <u>The Boy Who Harnessed the Wind</u> Novel Study	
Description	Page #
Before You Read	3
Word Study Chapters 1-2	4-6
Word Study Chapters 3-4	7-10
Word Study Chapters 5-8	11-12
Word Study Chapters 9-10	13-16
Word Study Chapters 11-13	17-19
Word Study Chapters 14-15	20-21
Project	22

Check out the following sample pages focusing on science vocabulary, reading comprehension, and literacy-based projects!

BEFORE YOU READ

Directions: Before you read the story, think about the uses of renewable energy.



WORD STUDY: Chapters 1-2

I. Invention

Identify three inventions from the story.

1. _____
2. _____
3. _____

2. Electricity

List six everyday uses of electricity.

1. _____
2. _____

WORD STUDY: Chapters 1-2

5. Maize

Maize is another name for white _____.

6. Harvest

Identify two synonyms for the word *harvest*.

WORD STUDY: Chapters 11-13

12. Fuse Box

Explain the purpose of a fuse box.

14. Radio Frequency

Frequency is measured in _____.

16. Amplifier

What would an amplifier allow William to do?

WORD STUDY: Chapters 11-13

11. Liver salts

What are liver salts used for?

13. Fainted

Identify two synonyms for *fainted*.

15. Slingshot

List six different simple machines.

1. _____
2. _____
3. _____
4. _____

WORD STUDY: Chapters 3-4

6. Fuse

What role does a fuse play in a circuit?

8. Voltage

Definition: _____

10. Dynamo

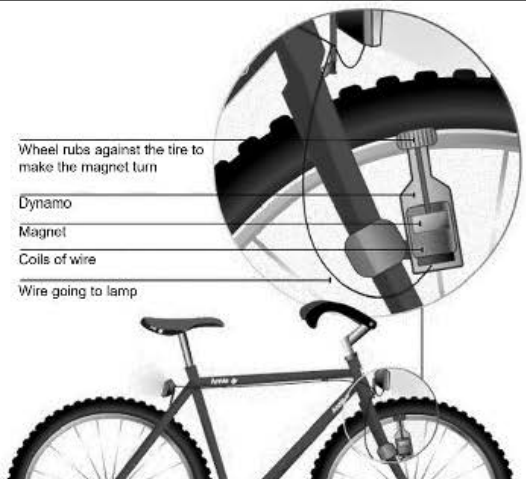
Dynamos and generators convert mechanical rotation into _____ power.

7. Batteries

Draw a picture of a battery.

9. Power

Find the equation for power and write it below.

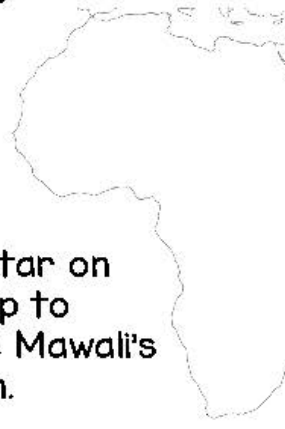


Vocabulary

WORD STUDY: Chapters 5-8

6. Map

Put a star on the map to indicate Mawali's location.



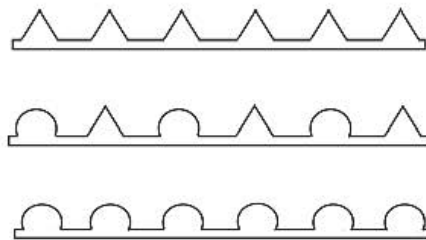
8. Infection

Compare a bacterial

WORD STUDY: Chapters 9-10

I. Weather Patterns

Draw a line to match e



2. Weathering

Definition:

WORD STUDY: Chapters 9-10

II. Energy

Definition:

List four type of Energy:

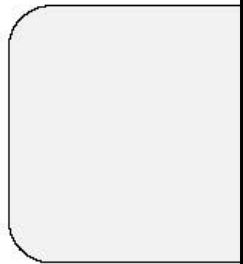
- 1. _____
- 2. _____
- 3. _____
- 4. _____

Is it a good idea to create a model?

WORD STUDY: Chapters 11-13

1. Acacia tree

Draw an acacia



2. Dissipation

WORD STUDY: Chapters 11-13

7. Step up transformer

Explain the purpose of a step up transformer.

9. Converting AC to DC

Why does AC need to be con

10. Why are wires coated i

Persuasive Project

Directions: For this project you will either make and film a commercial OR create your own podcast.

Choose one type of renewable energy listed below and then create and deliver a presentation for a city planner proposing changes in your community for that particular renewable resource. Make sure to explain what it is, how it works, and include both advantages and disadvantages. You want to convince the city planner that your community could benefit from the implementation of your renewable resource.

Note - Use your imagination! Your choice doesn't have to fit your present location.

Types of Renewable Resources:

- Wind Energy
- Solar Energy
- Hydropower
- Biomass/Biofuel
- Geothermal Energy

Novel Project Options





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