

The Sharon Academy
General Overview of Middle School Research Project
April and May 2014

Between now and our trip to High Five in late May, you will be working on an independent research project about an energy production resource. This project will include:

➤ **Level One Expectations**

- ❖ Create a detailed outline based around research questions while keeping track of appropriate citations.
- ❖ Prepare and deliver presentation (during this presentation you should use a PowerPoint, but you may also use other techniques to teach us about your topic such as poster, skits, games, etc.)

➤ **Level Two Expectations**

- ❖ Create detailed outline based around research questions while keeping track of appropriate citations. (this will not be a test grade for level two)
- ❖ Write a research paper (approximately 4-6 pages in length)
- ❖ Prepare and deliver presentation (during this presentation you should use a PowerPoint, but you may also use other techniques to teach us about your topic such as poster, skits, games, etc.)

Note: I will meet with you to determine which level of the project you will be doing.

Grading:

Each of these parts of your research project will be given a grade equivalent to a test grade. You will get homework points for certain parts of the project. For example, during the research phase of this project, I will require that you have a certain number of questions answered for class the next day. I will check that you have that many questions completely answered and will mark that as a completed homework assignment.

Level One Schedule:

Listed below is a schedule of due dates. You should put these into your assignment notebook, and take this schedule home to hang in a prominent place in your house so that you can remember when things are due. These dates are flexible to change based around snow days, and absences, but I would like to see us stay as close to them as possible so that you can complete the project in a timely fashion.

- Tuesday April 1st: General Overview of Project and picking of topics
- April 8th: **Homework Check #1**--- At least three research questions should be finished
- Weeks of April 1st –April 11th: Research weeks (each day a certain number of questions must be answered)
- April 11th: **Homework Check #2**--- At least six research questions should be finished
- **April Vacation** – During this time you should finishing up all your research. **Unless you use your time very effectively in class, you may have homework over vacation on this project.**
- April 21st and 22nd we will spend learning how to outline, and begin the process of outlining your research papers and presentations
- April 25th: **Homework Check #3**---All research should be completed by the start of class today
- Week of April 25th to May 1st: Work on writing detailed outlines. If you finish early, you may begin work on your presentation. **Please note**, Outlines will be graded in the order they are turned into Mr. Lane.
- May 1st: **Outlines are due** by the end of school today. After the 1st they will be considered late and marked down 5 points per day.
- May 2nd-May 9th: Work on Presentations
- Monday May 12th: Presentations should be completed to allow for practice sessions in front of peers.
- Tuesday May 13th, Wednesday May 14th, Thursday May 15th, Friday May 16th: **Presentations**

- Monday May 19th Reflections on the projects and the process: “Learning from our mistakes and successes and how to do better next time.” Then we will move on to other things.

Level Two Schedule:

Listed below is a schedule of due dates. You should put these into your assignment notebook, and take this schedule home to hang in a prominent place in your house so that you can remember when things are due. These dates are flexible to change based around snow days, and absences, but I would like to see us stay as close to them as possible so that you can complete the project in a timely fashion.

- Tuesday April 1st: General Overview of Project and picking of topics
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- Monday April 21st: **Homework Check #3**---All research should be completed by the end of school today
- April 21st and 22nd we will spend learning how to outline, and begin the process of outlining your research papers and presentations
- Week of April 22nd to May 1st: Work on writing rough drafts of research papers. If you finish early, you may begin work on your presentation. **Please note**, rough drafts will be graded in the order they are turned into Mr. Lane.
- Thursday May 1st: **Rough Draft of Paper is due** to Mr. Lane by end of school. After the 1st they will be considered late and marked down 5 points per day.
- Week of May 5th: Revising Papers and preparing presentations
- May 9th: **Final Draft of Papers are due** by the end of school today
- Monday May 12th: Presentations should be completed to allow for practice sessions in front of peers.
- Tuesday May 13th, Wednesday May 14th, Thursday May 15th, Friday May 16th: **Presentations**
- Monday May 19th Reflections on the projects and the process: “Learning from our mistakes and successes and how to do better next time.” Then we will move on to other things.

The Calendar:

For those of you who prefer visuals, here is a calendar of due dates.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31 No School After Circus	1 Introduction to project and research begins in class	2 Citations Review and note taking thoughts	3 Research Day/ <i>Stock Market Class</i>	4 Parent-Teacher-Student Conferences	5 Research Over weekend
6 Do some research	7 Research Day	8 Homework Check: At least three research questions should be finished	9 Research Day	10 Research Day/ <i>Stock Market Class</i>	11 Research Day Homework Check: At least six research questions should be finished	12 Research Over weekend
13	14	15	16	17	18	19
April Vacation----You will have some homework!!! During this time you should wrap up the research on all your questions. If you are finished with this, you may start working on an outline or a rough draft to get ahead, but this is not required.						
20 Research Over weekend	21 Homework Check: All research should be done by the end of class so we can start on outlines. Start on rough draft if done early.	22 Outlining class. If you finish early, you may start your essay.	23 Work on rough drafts of essays	24 Work on rough drafts of essays/ <i>Stock Market Class</i>	25 Work on rough drafts of essays	26 Work on Rough Drafts of essays
27 Work on Rough Drafts of essays	28 Work on Rough Drafts <i>Note: Rough drafts will be graded in the order they are collected, and the sooner you turn it in, the earlier you can start on revisions.</i>	29 Work on Rough Drafts <i>Note: If you finish early, you may begin work on your presentation</i>	30 Work on writing rough draft	May 1 Work on writing rough draft <i>Stock Market Class maybe</i> All Rough Drafts must be handed in by end of school today.	2 Work on Final Drafts and Presentations All rough drafts handed in today are late and will lose 5 points from the final grade.	3 Keep Working! You can do it!!

4	5 Work on Final Drafts and Presentations	6 Work on Final Drafts and Presentations	7 Work on Final Drafts and Presentations	8 Work on Final Drafts and Presentations	9 Final Draft of Paper Due at the end of school	10 Keep Working
11 Get stuff ready to present	12 Practice Presentations with peers (your presentation should be done by now)	13 Presentations	14 Presentations	15 Presentations	16 Presentations	17 Relax
18 Relax	19 Reflections on the projects and the process: “Learning from our mistakes and successes and how to do better next time.”	20	21 Trip To High Five Adventure Center Brattleboro, Vermont	22	23 No School (recovery day from trip)	24 Relax

Remember, we may have to change some of these due dates because of absences, sickness, or snow days. However, this should be a general guide to help you keep track of what you need to do.

The Sharon Academy
Middle School Research Project Topics
April and May 2014

There are sixteen topics that you may choose from for an independent research project. Each member of your class will have a different topic, and unfortunately not everyone will get their first choice. Eleven of the topics are about methods for generating electricity, and five topics are related to more general issues around energy production.

❖ **The eleven kinds of electrical generation to be researched are:**

1. Photovoltaic Solar (can be tricky to understand)
2. Wind
3. Hydro
4. Natural Gas
5. Coal
6. Wood and biomass
7. Wave Action (much less common)
8. Geo-thermal
9. Nuclear (can be tricky to understand)
10. Solar parabolic troughs and/or heliostat solar towers (much less common)
11. Solar Updraft Towers (much less common)

Questions that must be answered for each of the above are:

- What are the benefits of this energy source?
- What are the drawbacks of this energy source?
- Where does this kind of power plant exist?
- Does this type of power plant exist in Vermont? Why or Why not?
- How many of this kind are there in the United States?
- Generally, how much energy does one of these plants produce? How does that compare to other types of energy generation?
- What is the price of a kilowatt of electricity generated by one of these power plants?
- How does this power plant work? (Create a diagram or model as a visual aid in your presentation, and either use a diagram or you can write a step by step approach in your research paper)
- What are the energy transfers that occur in your power plant to make electricity?

In your conclusion, you should address the question of whether you think that using this type of electricity generation is one that should be used in the future? Why or Why not?

❖ **Other topics include:**

12. Self Directed Project of your choosing (most challenging topic)

-This project will be a stretch for whoever chooses it. You will have to come up with a topic, get it approved by Mr. Lane, create your own research questions, and adapt the project requirements for your specific needs.

-Some topics done in the past for this category were comparing the electrical generation and use of another country to the United States, the controversies around electric cars, mountain top removal coal mining, capturing methane from capped landfills or dairy farms to generate electricity and prevent the release of methane gas into the atmosphere, efficiency as a form of “electrical generation” and a look at governmental policy around energy in the United States. You might choose one of these topics, or you may do something else.

-This is an option that should only be taken by someone who is looking to push themselves and perform at a level that is more like high school work than middle school.

13. Vermont’s Consumption of Energy (can be done at many levels)

- How much electricity do we consume as a state?
- Where does our electricity come from?
- What percents come from what types of generators?
- What companies broker electricity in Vermont?
- Explain how the energy gets from the power plant to your light switch?

14. Bio-diesel engines (can be done at many levels)

- How does a diesel engine work? (Create a diagram or model as a visual aid in your presentation, and either use a diagram or you can write a step by step approach in your research paper)
- What makes a diesel engine different from or similar to a gasoline engine?
- What are the advantages of diesel over gasoline as a fuel source?
- What are the disadvantages of diesel over gasoline as a fuel source?
- What is the history of diesel fuel, and how does modern bio-diesel fit into that? Note: There are some interesting twists in this seemingly boring history.
- What is the difference between bio-diesel and petroleum based diesel, especially regarding emissions?
- What are the energy transfers in the powering of a diesel engine?

15. Ethanol as a fuel source (challenging topic)

- What is ethanol?
- How is it created?
- How is it used?
- What are the energy transfers that occur in order to move your car forward with an engine that is using ethanol?
- Compare and contrast different sources for ethanol, especially corn vs. sugar cane vs. switch grass.
- What are the advantages of ethanol over petroleum gasoline as a fuel source?
- What are the disadvantages of ethanol over petroleum gasoline as a fuel source?
- How do the emissions generated from ethanol compare to burning other fuel sources?
- What are some of the political issues that surround the use of ethanol?
- How widely spread is the use of ethanol in the gasoline you buy in Vermont?

16. Hydrogen Fuel Cells (challenging topic)

- How does a hydrogen fuel cell work? (Create a diagram or model as a visual aid in your presentation, and either use a diagram or you can write a step by step approach in your research paper)
- How can a hydrogen fuel cell be used? In a car? In a house? As a method to generate electricity for the power grid? Explain each if possible.
- In order to use hydrogen in a fuel cell, it must be isolated from its natural state in the environment? What is the process of isolating hydrogen?
- Why is the isolation process a problem for making this energy source useful?
- How much electricity is generated by a fuel cell that is the size that would fit in your car?
- What are the advantages of hydrogen fuel cell cars over gasoline powered cars?
- What are the disadvantages of hydrogen fuel cell cars over gasoline powered cars?
- Are hydrogen fuel cell vehicles on the road in the United States today? If so, who makes them, and where are they sold? How are these cars refueled?

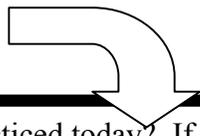
❖ **In going about your research, you will need to find the answers to the above questions. Each of these guiding questions could be turned into the topic sentence of a paragraph in your research paper. This is not the only way to structure your paper, but it can be a helpful way to stay organized in your writing.**

The Sharon Academy
Middle School Research Project Note Taking Guide
April and May 2014

❖ In taking notes on each of your research questions you must do the following:

1. Write out each and every question that you are answering on a separate note card, word document, or piece of paper. This way when you are looking through your sources and you find a critical piece of information, you can write it down under the correct question.
2. While it is fine to print out information from the internet to help you in the process of taking notes under your question headings, please try to avoid excessive printing. If you find a good passage, try cutting and pasting it into a word document (along with the all the bibliographical information) and then printing the word document at the end of your research session. This will avoid printing in the format of the web page and therefore avoid printing things you do not really need.
3. Write out a separate note card, word document, or piece of paper for your source list. Each time you find a new source, you should write it down on the source list and give it an icon. (Examples: \$ or ☺ or ☻ or @) This way, when you find information from that source that is relevant to a certain question, you can write down the information on the question card, and put the icon next to the information to remember where it came from.
4. The information you need to gather from a website for your bibliography are: the title of the website, the web address of the site, the date you downloaded the information, and the date the website was last updated. If you are interested in a handout about creating a good source list, please ask, and I will get one for you.
5. In your paper, you will be required to have at least two direct quotes. When you find a passage in your research that you think is worth quoting, write it down under the corresponding question, and remember to write out exactly (i.e. which page it was on) where it came from. This way, you will not have to go back later and find the quote again.
6. When you are asked during “research week” to show me that you have completed the research on a certain number of questions, I will be looking at your cards to see if they are as completely filled out as they need to be to fully answer the question. I will not accept a pile of papers printed off the internet that have highlights all over them.

Example Note Card



Is this religion still practiced today? If so, by how many people?

☺ Yes, it is still practiced today. There are 15 million people who practice it. They all live in Central Africa. The only exception to this is that there are a few people who are from Central Africa who have moved to other places and practice their religion there. Mostly those people have moved to the United States, but there are not enough of them to say that this religion is practiced in the United States.

“Of the 15 million followers of Mulli Hallua Kannui almost all still live in central Africa. Only a few thousand have left the area and those have moved to the U.S. where they try to hold onto their heritage. However, the only formal temples are in central Africa in the Congo.” Found on page 15 of ☺

The Sharon Academy
Level One Outline Criteria Sheet
 April and May 2014

Criteria	Points	Self Evaluation	Teacher Evaluation
You use appropriate Roman Numerals or other number system to label the major sections and subdivisions of the outline.	10		
There are sections of your outline labeled Introduction , Conclusion , and some number of others labeled Body Paragraphs (about as many as you have research questions, but this could be changed as needed)	10		
Your outline makes sense and has a logical sequence	10		
Thesis Statement—you have a clear thesis statement in the introduction section of your outline	10		
Fully Answer Each Research Question and link them back to the thesis statement in each of the body paragraphs of your outline	30		
Your answers are supported with specific facts from your documented research. This includes two direct quotes from a source. ¹	10		
Grammar, Spelling, and Language Mechanics	8		
All facts are appropriately documented from research sources. (Parenthetical notes) ¹	4		
Bibliography ¹	8		
Total:	100		

¹We will discuss the official ways to document your sources in class. The most important thing to remember when writing a research project is that if the fact, statement, or idea is not your own, then you need to credit its creator.

Level Two Research Paper Criteria Sheet

April and May 2014

Criteria	Points	Self Evaluation	Teacher Evaluation
Thesis Statement--- is clearly expressed in introduction, and carried through the paper	8		
Introduction--- engages reader with interesting and detailed information and establishes importance of topic and its relevance	5		
Fully Answer Each Research Question and link them back to the thesis statement	28		
Your answers are supported with specific facts from your documented research. This includes two direct quotes from a source. ¹	10		
All your paragraphs have an organized structure and flow well from sentence to sentence	3		
Your ideas and concepts flow well from paragraph to paragraph	3		
Your paper makes sense and has a logical sequence	3		
Your ideas are completely brought out and explained. This includes doing some analysis, interpretation or synthesis of the information and relates this information to your thesis statement.	10		
Conclusion--- connects to or revisits thesis statement, and expresses the relevance of this topic to student. (You might include whether you would like to have your electricity come from this source or not. Why or Why not?)	5		
Grammar, Spelling, and Language Mechanics	10		
All facts are appropriately documented from research sources. (parenthetical notes) ¹	5		
Bibliography ¹	10		
Total:	100		

¹We will discuss the official ways to document your sources in class. The most important thing to remember when writing a research project is that if the fact, statement, or idea is not your own, then you need to credit its creator.

Level One and Two Research Presentation Criteria Sheet

April and May 2014

Criteria	Points	Self Evaluation	Teacher Evaluation
You had a clear voice and tone with well-modulated speech. Your speech was free of slang, “ums”, “likes”, etc.	4		
You were well prepared with appropriate use of notes during presentation. There is evidence that your presentation was practiced before delivery.	4		
You made eye contact and faced the audience during the presentation. You referred to your PowerPoint without reading the screen.	4		
The information you presented was organized so that the ideas flowed well in a logical sequence. Your presentation had a clear beginning, middle, and end. This included a hook to grab attention at the start of your presentation.	4		
During your oral presentation, you answered all of your research questions with pertinent details.	36		
You clearly explained the information you researched in a way that your peers could understand. If you had something for the audience to look at, you gave them enough time to study that material.	8		
You effectively used a visual aid to explain the information in your presentation. (PowerPoint + models or diagrams, etc.) For PowerPoint: - Your PowerPoint slides were clear and uncluttered with an appropriate design, -The slides were presented with enough time spent on each slide, -The information on the PowerPoint was not in paragraph form, and was just an outline of the information.	10		
You were effective at <u>engaging the audience</u> through some other means than a lecturing format. Examples include asking questions, using volunteers to perform a demonstration, giving a quick quiz, or having <u>tangible props that people can examine</u> .	6		
You were the focus of the presentation. The PowerPoint and any other tools you used in the presentation were just that: tools to help you rather than being the central focus of the presentation.	6		
You have a complete list of citations (in MLA form) for facts, statistics, quotes, and images that are used in your presentation and have turned that list in at the start of the presentation.	10		
You dressed appropriately with professional dress for the presentation (we will discuss this further before the presentations).	5		
You were open and engaged during the critique of your presentation to learn about how you might improve your skills.	3		
Total	100		

Project Process Planning Sheet (PPP)

Name _____ Today's Date _____

Class _____ Project Title or Topic _____

Date Due _____ Probable Length _____

Directions:

- Write all the components/steps on post it notes or index cards.
- Arrange the cards in the sequence you will use to complete the steps.
- Write the step/components on the PPP chart below *in the order you will complete them* (column 1).
- Fill in the resources/research you will need to complete the step (column 2, and predict the time it will require and the date it will be completed (columns 3& 4).
- Check in with your teacher. Have your teacher check to make sure you have recorded all the necessary steps/components. Have your teacher check the steps in the process where he/she wants you to check in with him/her again (column 5).
- As you complete each step, record the actual time the step took and actual date it was completed (columns 3 & 4).
- Check in with your teacher after each designated step, and have him/her initial it (column 5).

1. Step Component <small>(Use notes or index cards to sequence)</small>	2. Resources/Research Needed	3. Time Needed		4. Date this Component Needs to be Done		5. Completed (√) Check in with Teacher
		<i>predict</i>	actual	<i>predict</i>	actual	T initials
1. Complete PPP Sheet	Assignment sheet, cards, post-it notes					
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

Reminder: The last step is to hand in your work!