

Research Plan

Due on Friday September 21, 2018 TEST GRADE

Rationale

Why is this project important? Include a brief summary of the background that supports your research problem and explain why this research is important scientifically and if applicable, explain any societal impact of your research.

TIPS!

- You could start with something like this: The rationale of this experiment is to test to see if...
- You could finish with a question sentence that explains what you are trying to discover with this project.
- Make sure you answer in complete sentences! Your Teacher, Judges and Fair Admins will appreciate it. 😊

Question/Problem

Using complete sentences, describe the question or problem you will be addressing below, remember this is your research proposal, you should write in future tense. Example: *What type of apple will be the most resistant to cold weather?* OR: *Will it be possible to design a cost effective mechanism for storing energy using hydrogen fuel cells.*

Hypothesis (testable assumption or conjecture that the research data are expected to support)

The hypothesis is a statement of what you predict the outcome of your research will be. Written as: If [I do this], then [this will happen]. (You need to fill in the blanks with appropriate information dealing with your own experiment.)

- Your hypothesis should be something that you can actually test, what's called a **testable** hypothesis. In other words, you need to be able to measure both "what you do" and "what will happen."

We hypothesize that adding large amounts of chlorine to the water used for plants will affect their growth.

- RESEARCH QUESTION(S) 📄 Inquiries related to lack of knowledge in an important area of research, answers to which are sought through the research design.
For Example:
Will different types of plants have different effects?
- ENGINEERING GOAL(S) 📄 demonstrate a real-world problem that could be solved as a result of his project.
- EXPECTED OUTCOMES 📄 What is that you are expecting that will happen?
For Example:
We expect that adding additional chlorine to the water given to plants will hinder plant growth.

Materials

A detailed list of your materials and supplies, include quantities. The idea is that someone should be able to read and reproduce your experiment exactly as you did. Be as detailed as possible. **This will make your life easier one you start experimenting.**

Example Material List

- 500 ml of de-ionized water
- Chlorine Tester Solution
- Chlorine test block with integrated color chips
- 1 cup of Chlorine Pool Shock

Procedure

This should be a detailed step by step process that you will use during your research. A person should be able to use this like a set of instructions for re-producing your experiment. You can include pictures or diagrams. Remember this is exactly what you are going to do. Do not write in past tense. This is to be written before you start your experiment.

Example Procedure

1. Identify the plants so that you can tell them apart.
2. Identify the cups of water.
3. Measure the amount of chlorine to add to one of the water cups.
4. Add chlorine to ...

TIPS!

- The best way to see if you made a good job in this section is to give this part to a friend or family to see if they can duplicate your experiment exactly. If they are able to do it then you probably have a great procedure section. 😊

Analysis (Describe how you will analyze or compare your data to determine your results)

This should be a detailed description of how you are going to measure and compare your data. Do not include any data, just describe how you are going to measure and compare your data. How are you going to determine your results? What are you going to measure or compare? How are you taking those measurements and how will you record the results?

TIPS!

- One way to find out if you have compiled enough data is to see if the data that you will collect for this project prove and explain why you think certain things happened the way they did.

Bibliography

You must have at least 10 Valid resources. No Wikipedia! A valid source would be a book, magazine article, scientific journal, etc. You can use online sources from Google Scholar as long as they are valid peer reviewed documents. I suggest you look at the web address (URL). Kind of domain you want to use (.edu, .gov, .org). You must use APA format: citationmachine.net will format your bibliography for you (select APA format).

Bibliography (explained)

1. Find 10 Acceptable Articles per person
2. Save the Articles in Edmodo/cloud/USB
3. Print the First page of the article only
4. Write a summary of your article (5-10 sentences) based on the following Questions:
 - a. Who, What, Where, When, How?
 - b. Type out the information using the following
 - i. Font: Times New Roman
 - ii. Font Size: 12
 - iii. 1.5 line Spacing
5. On the bottom of your summary include the correct APA Citation for the article

APA Citations:

Note:

-Citations with more than one line of text should have a hanging indent of 1/2 inch or 5 spaces.

-Citations must be in Alphabetical order

Important Elements:

Author (if known). If no author, use title

Date of publication. If no date, use n.d.

Title of Web page

URL (Web address) of the Web page

Examples on next page

APA Citations EXAMPLES:

1. Book:

Goodpaster, K. E., Nash, L. L., & de Bettignies, H. (2006). *Business ethics: Policies and persons* (3rd ed.). Boston, MA: McGraw-Hill/Irwin.

2. Article in a monthly magazine:

Swedin, E. G. (2006, May/June). Designing babies: A eugenics race with China? *The Futurist*, 40, 18-21.

3. Article in an online magazine:

Romm, J. (2008, February 27). The cold truth about climate change. Salon.com. Retrieved from http://www.salon.com/2008/02/27/global_warming_deniers/

4. Article in a weekly magazine:

Will, G. F. (2004, July 5). Waging war on Wal-Mart. *Newsweek*, 144, 64.

5. Article in a daily newspaper:

Dougherty, R. (2006, January 11). Jury convicts man in drunk driving death. *Centre Daily Times*, p. 1A.

6. Article in a scholarly journal with DOI:

Blattner, J., & Bacigalupo, A. (2007). Using emotional intelligence to develop executive leadership and team and organizational development. *Consulting Psychology Journal: Practice and Research*, 59(3), 209-219. doi:10.1037/1065-9293.59.3.209

7. Web page with author

Kraizer, S. (2011). Safety on the Internet. Retrieved from <http://safechild.org/categoryparents/safety-on-the-internet/>

8. Web page with group author

American Cancer Society (2015). Genetics and cancer. Retrieved from <http://www.cancer.org/cancer/cancercauses/geneticsandcancer/index>

9. Web page with no author

Claustrophobia (2014). Retrieved from <http://www.nhs.uk/conditions/claustrophobia/Pages/Introduction.aspx>

10. YouTube Video:

Clarkson, R.G. (2009, July 20). [RobertGClarkson]. Claustrophobia: 7 Quick Tactics to Stop the Panic [Video file]. Retrieved from <https://www.youtube.com/watch?v=0jOXXzWM-Ns>