**STAGE 2: Background research**

**DUE DATE:**

# CONDUCTING BACKGROUND RESEARCH

Research notes are an important part of an investigation, and will help you stay focused. Research should be done continuously throughout the project, even at the end when drawing conclusions. Background research is important because it should:

1. Explain relevant concepts related to the project and previous studies on the topic.

2. Help students to create an appropriate and technically correct experimental technique.

3. Allow students to generate enough background knowledge to generate a hypothesis.

4. Provide information that students will use to write an introduction section for the research

paper.

5. Allow students to explain results obtained from experimentation.

When conducting background research, you must be thorough and should consider finding information on the following aspects of the topic:

**ASPECTS TO RESEARCH**

1. Scientific concepts related to the project

a. Define and explain any relevant terms

b. Identify and detail relevant formulas or equations

c. Make a connection between these concepts and the goal of the project

2. Previous research conducted on this topic

a. Identify the findings from research conducted on **related** topics.

b. Explain the connection between the previous research and the purpose of your research

3. How to create an experimental design

a. Identify any specialized equipment or materials needed to conduct proper experimentation

b. Explain any techniques used to carry out the experiment and for gathering data.

**FINDING AND EVALUATING PROPER SOURCES FOR RESEARCH**

You must use reliable, relevant sources to collect background research. Scientific journals (peer reviewed) and journal databases are considered the **BEST** resource for background research.

You may also use websites whose authorship is clearly evident and whose authors are considered experts in the field. Websites with domains .org, .gov, and .edu are usually reliable sources. Wiki’s (such as Wikipedia) and Blogs are **NEVER** considered reliable, nor are sites such as yahoo answers, eHow, liveSTRONG, or sparknotes. Resources should also come from recent publications (within the past year or two).

**For this project, students must use at least FOUR DIFFERENT RESOURCES. At least one MUST be from an ACADEMIC (peer-reviewed) JOURNAL, and at least one MUST be from a SCIENTIFIC JOURNAL (articles will present an experiment following the same scientific method format – abstract, introduction , experimental design, data, conclusion, etc. ).**

**TAKING RESEARCH NOTES**

All research notes must be properly documented in your folder as you are gathering information. While you are conducting background research you should take free hand notes as you read and include the following information with it:

1. Identify the DATE the research was conducted.

2. Identify the question or aspect that you are researching.

3. Jot down new questions or ideas as they occur to you. This often happens to scientists while reading

about a related topic.

4. Write down all of the information that is needed for a proper bibliography.

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| **9/5/13** | Title: Rings Around the Planets; Author: John Smith; Date: October 2010; Journal: Scientific American; Pages: 28-30; Volume: 20; Issues: 10 | |
| **Questions:**  What are rings around planets and what are they made of? | | **Notes:**  - Moons of Saturn cause some rings to be braided  - Rings are made of ice and dust – size of golf balls to suitcases  - Seen by Galileo in 1610, Cassini 🡪 separation between rings |
| **New Questions:**  Why doesn’t Jupiter have braided rings?  If we put up artificial satellites in Earth orbit, could we support braided rings to be used by space stations? | | |
| **APA Reference:**  Smith, J. (October 2010). Rings around the planets. *In Scientific American*, *20(10),* 28-30. | | |

**WRITING APA REFERENCES**

References provide more detailed information about the sources you use and will cite in the assignments of this project. Basically, they allow anyone that reads your work to verify your claims and statements by going directly to the source material. References should identify the author(s), title, and date of the source material along with other information such as the editor and/or publisher.

Scientific papers utilize the **APA format** (American Psychological Association) for references. The information provided in the reference can be different depending on what type of resource you are referencing (i.e. book, journal, journal obtained from online database). There are some examples included below but it is strongly recommended that every student uses one of the following resources to properly write his/her bibliography. **SUGGESTED RESOURCES: www.noodletools.com, owl.english.purdue.edu**

**EXAMPLES:**

Book: Author(s) last name, initial of first name. (Year of publication). *Title of Book.* City,

State where published: Publisher.

Magazine or Journal: Author last name, initial of first name. (Year of publication). Title of

Article. *Magazine or Journal Name, Volume(Number)*, Pages.

Website: Author/editor surname, author/editor initial(s). (Year, month and date of last

update or copyright). Title of the page/document. Month, date and year of

retrieval, and the URL.

Journal from Database: Author(s) last name, initial of first name. (Date of Publication). Title of Article.

*In Name of Journal, Volume, Issue,* pages. Retrieved on (date of online

retrieval) from (website).