**STAGE 3: INTRODUCTION**

**DUE DATE:**

The introduction is essentially a summary of the background research you have conducted. It will be a part of your final paper and should be written to convey the **important** background information about your topic and to address the scientific relevance of your project. The introduction essentially identifies **WHY** you are doing this project and **EXPLAINS** the science behind it. A strong introduction should contain a minimum of three well-constructed paragraphs. The content of the paper should be organized in an “inverted pyramid” format, meaning that the information is presented in a way that starts off broad/general and becomes more specific.

**PARAGRAPH #1**

The first paragraph is an introduction to the **general topic** that you are investigating. For example, if you are investigating the effect of candle dye on how fast a candle burns, your first paragraph should be about the science of candle making. You would explain how candles are made and what they are made of.

**PARAGRAPH #2**

The second paragraph should address the **specific factor (or independent variable)** that you are investigating. For instance, if you are investigating the effect of wax dyes on how fast a candle burns, your second paragraph should explain how wax dyes are different from other dyes.

**PARAGRAPH #3**

The third paragraph essentially identifies the scientific relevance of your project. You should identify what factor you believe will be most affected in your research (**the dependent variable**) and **EXPLAIN the importance** of this factor. For example, what is the importance of measuring how long it takes for a candle to burn? Typically, this paragraph concludes with the **problem statement** and **hypothesis** of your investigation.

**MAKING A CLEAR PROBLEM STATEMENT**

After identifying a general topic to investigate, you must **NARROW** down your research to focus on a specific problem or question associated with that topic. Once you have identified the specific problem, you must write a statement of the problem that clearly identifies the factor that you believe is **CAUSING** the problem and also identifies the **EFFECT** it is having.

EXAMPLE: The purpose of this investigation is to determine the effect of various concentrations of indoleacetic acid (IAA) on the height of bean plants?

**FORMING A HYPOTHESIS**

Your hypothesis is an educated guess of what you believe your experimental findings will be. It needs to explore the relationship between the factor that you are testing and the effect it has on topic you are investigating. A good hypothesis should make a **measurable** prediction regarding the outcome of your experiment. A strong hypothesis also justifies why you think your hypothesis might be true. Your background research should lend support to your hypothesis.

EXAMPLE: If radish plants are grown in a nutrient solution without soil, then they will grow taller than plants with soil because it is easier for the plant to take in the nutrients when there is no soil.

Remember that a well-written hypothesis uses the **If….., then…..because….** format and should be clearly document in your folder.

In order to complete each paragraph, you will use the background information that you collected in your previous research. You may find that you have to go back and complete some more research if you do not have enough information. In the process of writing the introduction, it is also important to consider what information is essential and what should be left out. Your introduction should include:

1. Definitions and explanations of all important scientific concepts, terms, and formulas related

to the topic.

2. Discussions of previous research on related topics that support why more research is needed.

It is also important to recognize that this is a scientific based paper, not something that is being written for your English or History class. The introduction should only contain facts that can be supported by research. Any statements or claims that are made in your introduction must include support from the research you conducted (see In-Text Citation section). It must be written in a **passive voice**, meaning that you must remove all “I,” “me,” statements from your writing.

**IN-TEXT CITATIONS**

Since you are most likely NOT considered an expert in the topic you are investigating, most of you will rely heavily on the research you gathered to complete the introduction. **When you use information or statements from your research, you MUST give credit where credit is due, even if it is not word-for-word from the source material.** Directly after using research information in the text of your paper, you must indicate the source of your information. This can be easily accomplished using the following technique in addition to a bibliography at the end of your paper.

**(Author last name(s), Year of publication)**

**Be aware, failure to include proper in-text citations could be considered an act of plagiarism!**

**WORKS CITED**

At the end of your Introduction, you **MUST** include a works cited page. This is an APA Reference List of all of the resources that you used in your introduction. The list should include **ONLY** the resources that you utilize in your paper, listed in alphabetical order.