

IB Biology HL2 Summer Work

~2021~

Now that you have selected a topic and received approval from Mrs. Krouse, it is highly recommended that you spend some time over the summer working on the “EXPLORATION” section of the IA. As we return to school in the Fall, we will quickly get into content and will plan on running your labs so that you have adequate time to collect data. While this will not be graded as a summer assignment, you will eventually have to complete this part of the IA and will need to have your methods approved by Mrs. Achatz before you may begin collecting data. **It is also my understanding that you will be able to receive enrichment credit for completing this work over the summer :)**

We have a [template](#) that you may choose to use for your IA, or you may create your own. Below is the class rubric (checklist) that will be used to determine your score for each criteria within the EXPLORATION section.

EXPLORATION

Topic [___ / 1]

- Includes a Biology-focused research question involving specific variables
- Proposes a testable hypothesis based on research question which clearly predicts the relationship between the IV and the DV
- Hypothesis includes a scientifically based explanation (with citation) [if statistical test of significance will be used, both null and alternative hypotheses are provided]
- Clearly identifies IV to include units and levels
- Different levels of the variable are tested - minimum of 5 (suitable range selected)
- Clearly identifies quantifiable DV to include units
- If preliminary trials were conducted, explanation of purpose and intent are clear

Background Information [___ / 2]

- Overall the information sets the research question into context -- provides the need and importance of the question to be answered -- and relates to the proposed hypothesis
- Research is included with respect to the IV, explaining the selection of the IV and the manipulation strategy being used (selection of the IV levels)
- Research is included with respect to the DV, explaining the selection of the DV based on the IV
- Researched relationships between the IV and DV are described
- Research is included with respect to the methodology; justification of the methods being used is clear
- Entirely appropriate - relevant, includes published research with citations
- Scientific names of any organisms used (except humans) with proper format (binomial nomenclature)

Methodology [___ / 2]

- Proper control is identified - its importance is explained (if applicable)
- All important constants are identified – minimum of 5 (might vary for secondary data investigations)

___ For each constant, the reason for keeping it controlled is explained

___ For each constant, description of how it is specifically controlled provided (tools, units, and uncertainty)

___ Drawing or picture of set-up is included (if complicated design--this may be added after data collection begins)

___ Procedure includes all steps needed to reproduce results: Methods to change and measure IV (and corresponding levels) is clear (includes tools, units, and uncertainty)

___ Procedure includes all steps needed to reproduce results: Methods to measure DV values are clear (includes tools, units, and uncertainty)

___ Procedure includes all steps needed to reproduce results: Methods to keep constants controlled are obvious (includes tools, units, and uncertainty)

___ Steps are numbered and in proper sequential order (basic lab instructions unnecessary, but should include steps needed for particular lab environment - should not exceed 20 steps)

___ # of trials is evident – stated in procedure – 10 is good, 5 is the minimum to calculate SD

___ Sample size is appropriate (if applicable) [20+] and the assurance of a random sample is provided (methods explained)

Safety, Ethical, Environmental Issues* [___ / 1]

___ Provides awareness of significant safety issues as relevant to the experiment (safe handling of chemicals/equipment) -- identifies safety issue and proper methods to avoid

___ Provides awareness of significant ethical issues as relevant to the experiment (human consent forms, if applicable; animal experimentation policy reference)

___ Provides awareness of significant environmental issues as relevant to the experiment (chemical disposal is considered, possible impact to the environment is limited, etc.)

**If there are no significant safety, ethical, and/or environmental issues, please indicate this (don't assume!)*