Internal Assessment 50% Draft

You are going to **update and compile the work you have already completed** for your Internal Assessment into a **50% Draft** (named because the paper is about 50% complete at this point).

Use the following as a guide for the 50% draft. Replace the bulleted prompts with your own writing; do not include the question prompts in your submission.

1. Section header: **Research Question**
   The research question must clearly include:
   - Very specific manipulated and responding variables
   - Units of measurement for the manipulated and responding variables
   - How the responding variable is quantified and measured (instrument name or method)
   - The properly formatted binomial name of the organism being investigated

2. Section header: **Scientific Context**
   Include a description of the system that outlines:
   - The need/importance/relevance of the research question
   - The biological topic/phenomena being studied
   - The appropriate/accurate/relevant background biology of the phenomena being investigated
   - The scientific name of the organism (Genus species), if relevant
   - What are the specific variables (MV/RV) being investigated?

   Include citations relevant to the contextual information are providing

3. Section header: **Theory of Direct Relevance**
   Include a description of the known relationships/effects of the variables being investigated, with citations. Based on what is already known, write a scientifically accurate hypothesis predicting the relationship between the variables.

4. Section header: **Variables**
   Create a clearly formatted table or paragraphs of writing to communicate about the:
   - Manipulated variable
     - What was the manipulated variable?
     - Outline the method that was used to qualitatively or quantitatively measure the manipulated variable.
     - Why did you select to use this method/approach to measuring the manipulated variable? Justify why you chose this specific method over others.
     - What levels of the manipulated variables were chosen? Why these levels? Justify why you chose specific values over others.
     - If you are performing a database or simulation analysis, include an explanation for how the database/simulation was selected, why use of the database/simulation is appropriate to answer the research question and provide the link to the resource you used. Explain how you know the data in the database is reliable.
     - Include a captioned photograph that illustrates the manipulated variable. For database and simulation based investigations, you can include screenshots for the variables.

   - Responding variable:
     - What was the responding variable?
     - Outline the method that was used to quantitatively measure the responding variable.
     - Why did you select to use this method/approach to measuring the responding variable? Justify why you chose this specific method over others.

        - How many trials of data collection did you perform? Why this number of trials? Justify why you chose this number of trials over others.
        - What validity measures did you use to accurately measure what is intended? Validity measures are steps in a methodology/procedure that ensure measurements are consistent across trials, such as:
            - using the same field of view on the microscope for each sample
            - clearing the glassware between trials
            - zeroing the scale between measurements of mass
        - Include a captioned photograph that illustrates the responding variable(s). For database and simulation based investigations, you can include screenshots for the variables.

    - Controlled variables:
        - Consider at least three variables that were controlled, meaning that they might impact the responding variable had they not been held constant. For each, explain:
            - Why was the variable controlled? In other words, what impact would the variable have on the responding variable if it had not been controlled.
            - What did you do to ensure the variable was controlled during the investigation?
            - What data did you collect as evidence that the variable was controlled during the investigation?
        - Include a captioned photograph that illustrates the controlled variables(s). For database and simulation based investigations, you can include screenshots for the variables.

5. Section header: **Materials List**
    - Create a list of all the apparatus and equipment used in the experiment, including quantities and concentrations (if relevant).
    - For each measurement tool used in your data collection, use a table to indicate the measurement uncertainty of the tool with an explanation for how the measurement uncertainty was determined.
    - Be sure you are only using metric units!
    - Include a caption and labeled sketch or image of the materials used in the investigation.

6. Section header: **Procedure**
    - Update the step-by-step procedure to include details of the investigation that you actually performed
    - Use a narrative tone when writing the method, not a first-person tone. For example: "Prepare a solution of ....." rather than writing "I prepared a solution of.....".
    - Include captioned sketches or pictures to illustrate the procedure.

7. Section header: **Risk Assessment**
   Outline the safety, ethical and environmental considerations of the experiment. Include:
    - How and why did you keep yourself safe (gloves, hair, goggles)?
    - Are you using any chemicals? What does the materials safety data sheet say about safety and risk?
    - If you worked outside, how and why did you minimize your environmental impact?
    - How and why did you attempt to minimize waste? How was waste safely/ethically disposed of?
    - How and why were human consent forms collected?
    - How and why were ALL the IBO guidelines for microbiological studies followed?
    - If using a database, what safety and/or ethical issues were relevant to the collection, storing and sharing of the type of data within the database?

8. Section header: **Raw Data**
   Raw data is the data you collect directly from the measuring tool, without any calculations or processing. Create table(s) to communicate the **quantitative** raw data. Your table(s) should include:

- A specific title
- Column headings with metric units
- Uncertainty of measurements in the column heading
- Consistent number of digits for all measurements (ie all measurements of the same variable have the the same number of digits relative to the decimal point)
- The number of digits in each measurement is consistent with the number of digits of the measurement uncertainty
- Data related to the manipulated variable/correlation variable #1
- Data related to the responding variable/correlation variable #2
- Adequate number of trials / data points
- Quantitative data related to the control of variables

Create a table to present **qualitative** data related to your data collection. Qualitative data can be written descriptions or photographs.

9. Section header: **Works Cited**
   Provide complete academically formatted citation(s) for the methods, protocols, procedures, YouTube videos, lab reports and/or websites from which you learned how to design or perform your investigation.

10. Section header: **Artificial Intelligence (AI) Declaration**
    You must acknowledge any way you used an AI tool or technology in the process of completing the assignment (for example, brainstorming, understanding concepts, generating examples, summarizing readings). Include a declaration statement that creates clarity and transparency about:
    - the specific AI tools or technologies you used
    - what you used the AI tools or technologies for in the process of completing your assessment
    - the prompts you used in the AI tools or technologies
    - an explanation of how the output from the AI tools or technologies was used in your work.

11. Formatting
    - 11-12 point academically appropriate font
    - 1.5 line spacing
    - **No** title page
    - Anonymous; no reference to any names of people or specific locations
    - In-text citation formats can be parenthetical, numbered, footnotes or endnotes (just select one format and stick with it throughout the paper)
    - Switch the writing to **past tense**
    - Avoid plural pronouns of “we” and “our” - this is an individual investigation and must read as such
    - Sequentially caption images, diagrams, photos and graphs as “Figures.” For example, the 3rd photo in the paper might be captioned as “Figure 3: Photo illustrating the manipulated variable of the investigation.”
    - Sequentially caption tables as “Tables.” For example, the 2nd data table in the paper might be captioned as “Table 2: Controlled variables in the investigation.”
    - All images and tables must be referenced within the written body of the paper. i.e: “The data for each trial are shown in Table 3.”
    - Tables should not be split over multiple pages. If a table is larger than a single page, then the title and header row must be repeated on each subsequent page.
    - Word count at end of draft (**word count should not exceed 1500 words**). The following are not included in the word count:
      - Captions for charts, graphs and diagrams
      - Numbers in data tables
      - Equations, formulas and calculations
      - In-text citations

- Works cited list / bibliography
- Headers