Isaiah's guide to writing assignments (if I could go back to senior year)

Disclaimer: Everything is written from personal experience

By no means is this a perfect guide but this is just a couple of things that helped me when I was in year 12 (I only got to apply these strategies in my research investigations, but I'd use them in my student experiments too)

Step 1: Overcome procrastination monkey

No number of tips and strategies will help you if you don't actually apply anything or write anything because of procrastination (even in grade 12 I left things to last minute but trust it's not healthy). The first step is to overcome what I call 'monkey brain procrastination'. Most advice when it comes to this topic is just yapping yapping yapping because most will tell you you're just lazy and unmotivated when it's not actually about willpower or a 'just do it' mentality.

There were two setbacks I personally experienced myself with assignments and I'll explain it with monkey brain to simplify it. The first setback I experienced is what I call the **perfectionist monkey** effect, and this is how it goes:

- Monkey brain want good grade
- Monkey brain want assignment to be perfect
- Monkey brain get scared that what it writes won't be perfect
- Monkey brain doesn't want to write
- Monkey brain finds something else to do to avoid writing
- Monkey procrastinates

The second setback is linked to the first one and I call it the **overwhelmed monkey** effect, you know that feeling of staring at a blank page with nothing on it? Yeah, that's this effect but in monkey terms:

- Monkey brain see big blank screen
- Monkey brain see monkey only has title written down
- Monkey panic
- Monkey close screen and say "Its due in 4 weeks"
- Monkey procrastinates

Both problems, the perfectionist monkey and overwhelmed monkey can be fixed with one main principle, and that's clarity. You see monkey brain gets overwhelmed and scared because it knows it wants to do the assignment, but it doesn't know how to do it. Think of clarity like the banana that guides the monkey brain. Now for what to actually do, rather than looking at a blank screen that monkey brain don't like, start by outlining your assignment headings (you probably already do this anyways but just in case you don't) then in **REALLY SIMPLE DOT POINTS**, you want to start outlining the main and broad ideas of your assignment; This ensures that you both have a task that is really simple which monkey brain likes and a task that you know you don't have to be perfect on (monkey brain also like). The main function of this simple outline is to fill in the blank page and make monkey brain feel good because monkey brain can see that writing an assignment is no longer that overwhelming. When you make your assignment outline and dot points, remember to go very broad and don't add any finer details (except for important numbers/figures), also don't worry too much about grammar and making sense at this stage. This step gives your monkey brain the bananas it needs to keep writing your assignment.

Step 2: Writing the assignment and researching

So now monkey brain is ready to write after overcoming the procrastination monkey, but monkey is still a bit lost in what the best way to go about writing is; like yeah write dot points about main ideas but what ideas? This is where you get specific to your assignment, so instead of straight up writing dot points with all of your facts and figures (I know I told you to do this before, but it'll make sense trust). The true first step is to write your assignment in questions that you'll look up later. For example, if your assignment is about 'Circular motion' then you've got to write down the questions "what is circular motion" and then you'll find that it's got something to do with forces and then you'll start writing more questions like "what is centripetal force" and "what variables are included in centripetal force". The answers to the questions you make in this step will eventually build the dot points which build the paragraphs of your assignment. This method ensures that you aren't going to be yapping about random stuff that is irrelevant to your assignment (as long as all the questions you make are related to your assignment's main idea (your claim/research question/etc.))

Another technique you can use is to use the criteria sheet as a guide to create your questions, if you break each criterion down into a question, you'll be able to show whoever's marking your assignment that you know your stuff which is all they need to give you that top mark.

> *Tip: In your criteria you'll see words like 'interpret' and 'limitations', make sure you use these words in your dot points to show your marker that you're talking about that specific criterion*

A general concept you should always be following with your assignment is to make sure that everything links nicely together, you can do this by making sure each time you make a point, you link it back and answer the question "why is this important to (insert your topic)" and every time you present evidence you answer the question "why is this relevant to (insert your point you're proving)".

> *NOTE: When you make your dot point answers, make sure you right really general and simplified answers to fill out the skeleton of your assignment then add the rest of the finer details later*

Step 3: General paragraph structure (for science assignments)

This section is about writing body paragraphs for science assignments, as most of you will probably spend most of your assignment writing doing either student experiments or research investigations. By now you know the usual paragraph structure for stuff, usually it's like PEEL or TEEL or something like that.

> *Point/Topic, Evidence, Explain, Link*

Now this is completely fine but in science assignments the 'explain' part is a bit too broad and can be broken down into more parts to make it easier for you to answer. From most science criteria sheets, you can see that they ask for areas like analysis, interpretations, and limitations. So for your body paragraphs in your science reports, I found the best way to frame the paragraph was to split it into the following structure:

> *Point, Evidence, Analysis, Interpretation, Limitations, and a Link*

Now it looks like you've got so much to write about but because of how much you've broken the explain part down, in reality you only need to write about 1-2 sentences per subsection. You should have the gist of each of the sections, but I'll put them in really simple terms that even monkey brain can understand.

- Point: What you are trying to prove/An idea
    - Eg. *X medicine is effective in treating Y disease*
- Evidence: Self-explanatory; this is usually your graph/table/figure, you don't really need to add more but make sure you clarify what the labels mean
    - Eg. *The x-axis shows time after patient takes medicine and y-axis shows disease concentration.*
- Analysis: The trend/pattern/relationship that you observe in the data
    - Eg. *After taking X medicine, figure 1 shows that after 15 hours, the concentration of Y disease has decreased by 42%*
    - Note: the trend/pattern/relationship you observe and choose to measure is probably the most important choice you make when making your assignment; depending on how relevant the trend/pattern/relationship you decide to observe is can make or break your assignment
- Interpretation: This is where you state the importance of your analysis, why is the trend you've chosen important to your point? (Make sure you relate this to your research question)
    - Eg. *It can therefore be interpreted that X medicine is effective in treating Y disease.*
- Limitation: Self-explanatory and sometimes you can put this part in your evaluation rather than your analysis, but you usually just want to state anything you found that could diminish your interpretation/analysis
    - Eg. *The journal article that the data was gathered from stated that the figure only displays one patient's reaction to X medicine and thus, the reliability of the interpretation is diminished as there was an insufficient number of trials.*
- Link: Connect your paragraph to your main claim

The example sentences used are all very simple and broad dot points that could be used to fill out an assignment outline, although they would definitely not make it to the final version of the assignment, it provides a good foundation for you to fix up later and make it sound much more academic. The last piece of the puzzle is probably going to be finding the right sources and journal articles for your assignments and this is probably the hardest part because you're on your own finding out what to make your assignment about.

If you find journal articles but they are locked because they want you to pay or subscribe, send them to me and I'll probably be able to access it with my UQ account.

Example assignment writing (Biology example)

You don't need to know what the variables mean in this example but in simple terms: Higher Factor IX = Good

Evidence

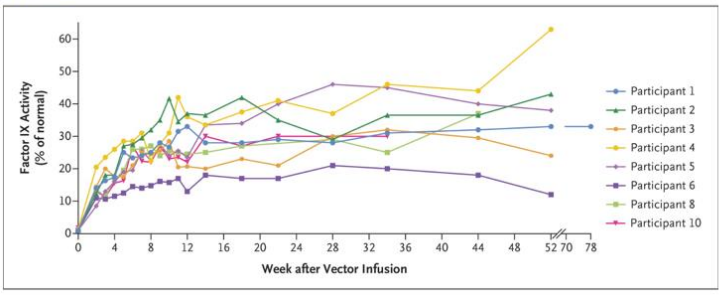

Figure 1: Hemophilia B Gene therapy using AAV and Factor IX activity (George, 2017)

(Ctrl)

Remember: Blank document = Monkey panic

So first we ask some questions to give our monkey brain a sense of direction. We'll use the criteria sheet first to create these questions.

Criterion: Analysis and interpretation

Assessment objectives

3. analyse research evidence about DNA, genes and the continuity of life or the continuity of life on Earth
4. interpret research evidence about DNA, genes and the continuity of life or the continuity of life on Earth

The student work has the following characteristics:	Marks
• systematic and effective analysis of qualitative data and/or quantitative data within the sources about DNA, genes and the continuity of life or the continuity of life on Earth demonstrated by – the identification of sufficient and relevant evidence – thorough identification of relevant trends, patterns or relationships – thorough and appropriate identification of limitations of evidence • insightful interpretation of research evidence about DNA, genes and the continuity of life or the continuity of life on Earth demonstrated by justified scientific argument/s	5–6

- The first dash point is solved by the presence of our source
- The second dash point we use to ask the question
    - "What is the relevant trend, pattern, or relationship?"
- The third dash point is asking us for the limitations
    - "What is limiting this data?"
- The second dot point asks for an insightful interpretation of the evidence through a justified scientific argument and thus we can ask a question like
    - "Why is this analysis important? What interpretation can we make from it?"

As you can see this whole criterion is pretty much asking you for the paragraph structure I outlined before and so we'll use that to make dot points. Through this process we'll end up with something like this

Evidence

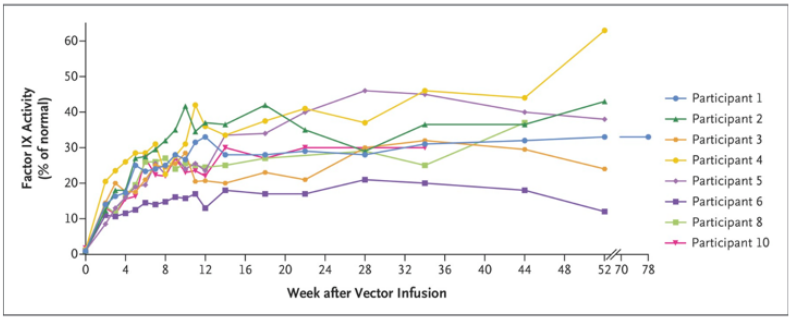

Figure 1: Hemophilia B Gene therapy using AAV and Factor IX activity (George, 2017)

- Point
  - What's the purpose of this information?
- Evidence
  - What is this data showing us?
- Analysis
  - What is the relevant trend, pattern, or relationship?
- Interpretation
  - Why is this analysis important? What interpretation can we make from it?
- Limitation
  - What is limiting this data?
- Link
  - How does this relate to the bigger picture?

Now we just need to answer these questions broadly and see how our assignment comes together.

- Point
  - What's the purpose of this information?
    - This study shows the effectiveness of gene therapy as it shows 10 participants who successfully underwent AAV vector infusion to increase FIX activity.
- Evidence
  - What is this data showing us?
    - (not necessary in this case, the graph is easy enough to read)
- Analysis
  - What is the relevant trend, pattern, or relationship?
    - Figure 1 shows that after 4 weeks, all participants increase in FIX activity
    - After prolonged period of time, data shows that every participant slowly increases in FIX activity except participant 6
    - FIX activity consistently rises around until week 12
    - After week 12 the FIX activity appears to plateau
- Interpretation
  - Why is this analysis important? What interpretation can we make from it?
    - As there is an increase in FIX activity across all participants after gene therapy, it can be interpreted that the use of the AAV gene therapy was effective in increasing the FIX activity and treating patients with Hemophilia B
- Limitation
  - What is limiting this data?
    - There is a high amount of spread between participants in the activity which shows that the effectiveness of gene therapy varies based on the patient
    - data is limited by the massive variance, as after 52 weeks, some participants experience above 60% increases while others only increase 10% increase
    - AAV gene therapy does not yield consistent results which harms the validity of the interpretation.

From this skeleton, remove your dot points and add your finer details (specific numbers and more detailed elaborations) and you will come up with a pretty good paragraph.

Note: This example should just show the process of going from questions -> dot points -> paragraphs; don't worry too much about what I've wrote

Evidence

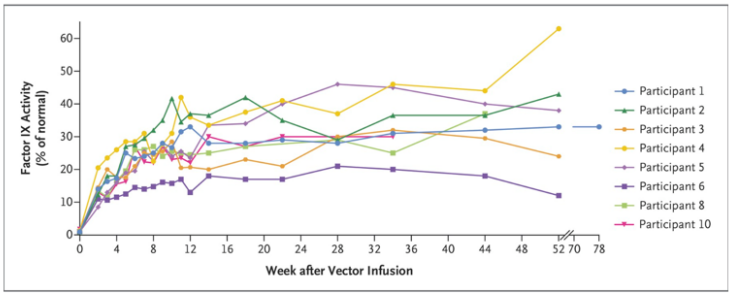

Figure 1: Hemophilia B Gene therapy using AAV and Factor IX activity (George, 2017)

The New England Journal of Medicine experimented on 10 participants with Hemophilia B and found that the use of AAV with a FIX Padua transgene was effective in increasing FIX activity (George, 2017). Figure 1 shows that after only 4 weeks, FIX activity has increased by at least 10% in all participants, a trend is shown that as time goes on, the FIX activity slowly increases to around at least 25% except for participant 6. The increase in the protein activity is consistent through every participant up until week 12 where past this point in time, the FIX activity begins to plateau ranging from 15% all the way to 40%. After a prolonged period of around 44 weeks, some participants experienced drops in FIX activity while some participants such as participant 4 experienced even greater increases of above 60% FIX activity. There is a high amount of spread between participants in the activity which shows that the effectiveness of gene therapy varies based on the patient. Further study in the journal article noted in the results that there was an average of 11.1 bleeding episodes per year in the participants before the AAV vector infusion and only an average of 0.4 bleeding episodes per year after the gene therapy (George, 2017). As there is an increase in FIX activity across all participants after gene therapy, it can be interpreted that the use of the AAV gene therapy was effective in increasing the FIX activity and treating patients with Hemophilia B. However, the data is limited by the massive variance, as after 52 weeks, some participants experience above 60% increases while others only increase 10% increase. This means that the use of the AAV gene therapy does not yield consistent results which harms the validity of the interpretation.

Paragraph Labeled with different sections

The New England Journal of Medicine experimented on 10 participants with Hemophilia B and found that the use of AAV with a FIX Padua transgene was effective in increasing FIX activity (George, 2017). Figure 1 shows that after only 4 weeks, FIX activity has increased by at least 10% in all participants, a trend is shown that as time goes on, the FIX activity slowly increases to around at least 25% except for participant 6. The increase in the protein activity is consistent through every participant up until week 12 where past this point in time, the FIX activity begins to plateau ranging from 15% all the way to 40%. After a prolonged period of around 44 weeks, some participants experienced drops in FIX activity while some participants such as participant 4 experienced even greater increases of above 60% FIX activity. There is a high amount of spread between participants in the activity which shows that the effectiveness of gene therapy varies based on the patient. Further study in the journal article noted in the results that there was an average of 11.1 bleeding episodes per year in the participants before the AAV vector infusion and only an average of 0.4 bleeding episodes per year after the gene therapy (George, 2017). As there is an increase in FIX activity across all participants after gene therapy, it can be interpreted that the use of the AAV gene therapy was effective in increasing the FIX activity and treating patients with Hemophilia B. However, the data is limited by the massive variance, as after 52 weeks, some participants experience above 60% increases while others only increase 10% increase. This means that the use of the AAV gene therapy does not yield consistent results which harms the validity of the interpretation.

Point/(Context -> showing where the article is from etc.)

Analysis

Interpretation

Limitation

Chemistry Example

That biology example included lots of analysis and was very lengthy, however you can still get top marks with smaller paragraphs like this one.

Youngs Modulus

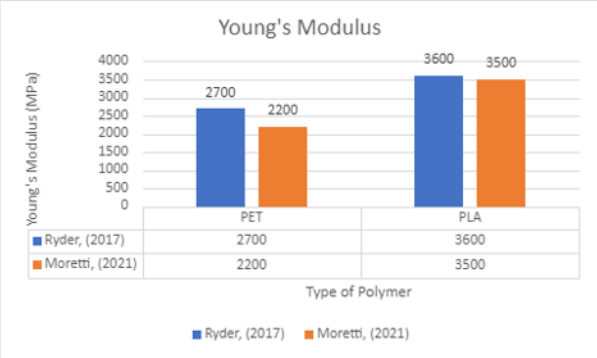

Figure 1: Comparison of Young's modulus of PET and PLA

Ryder, (2017) was investigating the potential for dairy byproducts to produce non-food biomaterials and explored the application of proteins in biopolymers as an alternative to petrochemical based polymers. Moretti, (2021) was assessing single use cups made from different polymers and both studies found data on the Young's Modulus of PLA and PET. In both studies, a pattern is present where PLA is significantly higher than PET in terms of young's modulus, PLA is hovering around 3550 MPa while PET only has a young's modulus below 2700 which is an increase of 31%. It can be interpreted that PLA can be a viable alternative to PET in terms of young's modulus as the data suggests it can withstand more stress before undergoing permanent deformation. This means that PLA would be stiffer as a material than PET because it will require more elastic stress to change its shape which makes it a viable alternative for items like plastic cups and bottles. PLA has a significantly higher young's modulus, this means that it won't be as flexible as PET, this limits the validity of the interpretation as this means that it cannot be used as an alternative for items that require flexible materials such as plastic bags.

Point/(Context -> showing where the article is from etc.)

Evidence

Analysis

Interpretation

Limitation