IB Design Tech IA – Tips and Tricks

The following is a detailed list of guidance and tips and tricks to help you score well (4+) on your DT IA. These are based on what I have learned from various trainings, including being an external grader for HL Design Tech IAs.

General Formatting

- There is not one appropriate format type for DT IA's. However, your report should have some form of overall organization.
- You should have four Leve 1 headers, one for each of the four main Criteria found in a DT IA.
- You should have three Level 2 headers within each criteria, one for each of the strands mentioned in the DT IA Rubric for that Criteria.
- You should use Level 3 headers as needed to help guide the reader/grader and to help you organize your thoughts.
- Citations – You should use the footnote approach for citations, where superscript numbers are used to indicate a source and then an appropriate footnote at the bottom of that page cites that source. Citations for websites are more than just the URL!
- Color – I would encourage you to include some color in your formatting to help guide the reader/grader and also to add some individual characteristic to the report. Use a certain color for Criterion A, then a different color for B, C, D.
- Make sure you adhere to the recommended word counts for each strand
- Use metric measurements with English measurements in parenthesis (e.g. 23 cm (~10 inch))
- For money, remember to add USD at the end instead of the dollar sign since there are several denominations that use the dollar sign in common usage (e.g. 24.95 USD instead of $24.95)
- Maximum page count of 38 pages
- Maximum word count of 3,000 words (not counting annotations of ten words or less)
- I encourage the use of figure labels (ex: Figure 1) so that graphs/sketches/photos can be easily referenced later

Criterion A: Analysis of a Design Opportunity

- Make sure you address each of the three strands in Criterion A!
  - o Strand 1 = Problem Description/Introduction/Exploration
  - o Strand 2 = Development of Design Brief
  - o Strand 3 = Development of Design Specs
- Strand 1 has a word count of ~200 words

- o Use these words to describe the problem….where did this idea stem from, what can you say about the problem? DO NOT discuss the solution to the problem
- o You should have ~ ¾ page of pictures showing evidence of the problem. These pictures should have text box annotations pointed to them showing your analysis of the problem and what needs to be solved. Annotations can be 10 words.
- o You can also show graph results of survey results with textbox annotations showing what was learned from the survey results.
- o Don't cram everything too close together but also think about ways to minimize wasted space.
- o Need to include a mixture of primary (interviews, surveys) and secondary (articles) research.
- Strand 2 has a word count of ~ 150 words
  - o Suggested subheadings for this section include Design Goal, Broad Requirements, Broad Constraints
  - o Refer back to research shown in previous strand to help build your requirements and constraints
- Strand 3 has a word count of ~ 800 words
  - o Suggested subheadings for this section include each of the categories of design specs that need to be addressed.
  - o Use a table for each category that looks like the one shown below
  - o Remember that the key to scoring well in this strand is being thorough (covering all the possible specs), incorporating quantitative metrics (numbers), and justifying or providing rationale that references secondary research (again these should be cited in-text with the full citation showing in footnotes) or primary research (e.g. "my survey results indicated that 85% of people preferred _____ over other options)

Function

Design Spec	Description of Spec	Justification/Rationale
1.1		
1.2		

Aesthetics

| Design Spec	Description of Spec	Justification/Rationale
2.1		
2.2		

Criterion B: Conceptual Design

- The three strands of Criterion B are:

- o Strand 1 = Development of Feasible Ideas
- o Strand 2 = Use of Modelling to Guide Design Development
- o Strand 3 = Final Idea for Detailed Development
- Strand 1 features no extended writing and should be limited to sketches with annotations
  - o You need 10-12 **unique** concept sketches that meet your design specs
    - ▪ Make sure that these sketches are able to be scanned with a high degree of fidelity if you are not doing them digitally
  - o Should have annotations highlighting some features.
    - ▪ I would add the annotations using textboxes again to increase readability
  - o These should cover maybe 2-3 pages and should look like the photo below. Try adding some color if possible.

  - o Next, do a more detailed sketch of three to four of the initial ideas that seem most feasible. These sketches should like the photo below, feature multiple viewpoints, be colorful, and should be ~ ½ page per concept. Make sure to include annotations that show features AND reference to new research
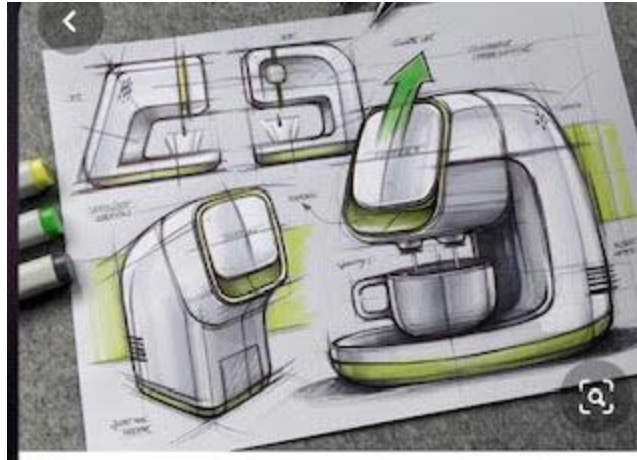
- Strand 2 again has limited extended writing and focuses on you picking a few (~3) of your initial ideas and develop them further.
    - You need to also use modelling to investigate these ideas.
        - Models should be physical and should be able to test multiple things about the design (e.g. is this hole too big?)
        - Show this through pictures.
        - Use annotations to show what was learned through the modelling process AND how that changes the design. Suggested that you use two different colors to differentiate between the two types of annotations. Include a key somewhere.
        - Most importantly, get feedback from your client or focus group! Include their opinions in textbox annotations
    - Evaluate the existing designs based on feedback, perhaps using a rubric

- Strand 3 has a recommended word count of 300 words
    - Add a CAD render of your final design (multiple angles) with textbox annotations showing features
    - Discuss why this idea is best in reference to the three/four finalists and how it fulfills your design specs

Criterion C: Development of a Detailed Design

- This criterion focuses on all the necessary work that goes into turning your idea from the end of Criterion B into a prototype. The three strands of Criterion C are:
    - Strand 1 = Material, Component, and Technique Selection
    - Strand 2 = Design Proposal
    - Strand 3 = Detailed Plan of Manufacturing
- Strand 1 should most likely have three Level 3 sub-headings, one for materials, one for components, and one for techniques. The word count for this section is ~ 400 words
    - Materials refers to raw materials that you will be using and turning into something

- For a given part of your prototype, explore two to three possible materials, offering pros and cons before picking one **with a justification**
    - Components (aka "Commercial Off The Shelf Parts" or COTS) refers to things you will be buying and using in your prototype (e.g. an Arduino board or LEDs) **with a justification**
    - Manufacturing Techniques refer to the methods you will be using to manufacture a prototype (e.g. CNC machining or abrading using a sander) **with a justification**
- Strand 2 is where you include the measurements needed to build your prototype. There is no extended writing to be used in this section.
    - Need a four view drawing **for each part**. These should be ½ page minimum in size. Increase font size for better readability of measurements. Be thorough!
    - Need an assembly drawing with balloons. If your prototype is complex, I encourage the use of sub-assemblies.
    - Need a complete bill of materials that includes not only parts but also components
    - A cut list showing how the raw resources are to be used is beneficial (e.g. I have a 4' x 8' sheet of plywood. I draw a box and show how it will be sectioned into parts)
- Strand 3 is about how you make your prototype.
    - You should use a construction plan template (aka a table) with no more than 10 words per cell.
    - Be detailed.
    - Focus on risk assessments and quality control and be specific. Don't be vague

Step	Description	Risk Assessment	Quality Control

Criterion D: Testing and Evaluation

- This final criterion deals with testing and refining your design. The three strands of this criterion are:
    - Strand 1 = Testing Strategies
    - Strand 2 = Results of Testing
    - Strand 3 = Improving the Design
- Strand 1 has a recommended word count of ~ 200 words. In this strand you should:
    - Describe a variety of testing strategies that allow you to collect data **across all specs**, including performance
    - **Justify** why these strategies are appropriate
- Strand 2 has a recommended word count of ~ 700 words
    - Include photographic evidence of testing with textbox annotations showing what was learned. Be specific and thorough

- o Evaluate the results of the testing against each spec. I suggest using a three-tier system (color coded perhaps) of met, partially met, was not met to evaluate. You could also use a Likert scale (1-5).
  - o Data collected should include results of discussion of users!
- Strand 3 has a recommended word count of ~ 250 words
  - o Suggest multiple valid, specific improvements
  - o Include a new presentation sketch or render that has annotations of features