Assignment Brief and Front Sheet PGT

This front sheet for assignments is designed to contain the brief, the submission instructions, and the actual student submission for any WMG assignment. As a result the sheet is completed by several people over time, and is therefore split up into sections explaining who completes what information and when. Yellow highlighted text indicates examples or further explanation of what is requested, and the highlight and instructions should be removed as you populate 'your' section.

This sheet is only to be used for components of assessment worth more than 3 CATS (e.g. for a 15 credit module, weighted more than 20%; or for a 10 credit module, weighted more than 30%).

To be completed by the student(s) prior to final submission:
Your actual submission should be written at the end of this cover sheet file, or attached with the cover sheet at the front if drafted in a separate file, program or application.

Student ID or IDs for group work	**5569029**

To be completed (highlighted parts only) by the programme administration after approval and prior to issuing of the assessment; to be consulted by the student(s) so that you know how and when to submit:

Date set	3/3/25
Submission date (excluding extensions)	**14/3/25 by 12 pm UK time**
Submission guidance	Tabula link
Marks return date (excluding extensions)	11/4/2025
Late submission policy	If work is submitted late, penalties will be applied at the rate of **5 marks per University working day** after the due date, up to a **maximum of 10 working days** late. After this period the mark for the work will be reduced to 0 (which is the maximum penalty). "Late" means **after the submission deadline time as well as the date** – work submitted after the given time even on the same day is counted as 1 day late. For **Postgraduate** students only, who started their **current course before 1 August 2019**, the daily penalty is **3 marks** rather than 5.
Resit policy	If you fail this module and/or component, the University allows students to remedy failure (within certain limits). Decisions to authorise resits are made by Exam Boards. These will be issued at specific times of the year, depending on your programme of study. More information can be found from your programme office if you are concerned. If this is **already a resit** attempt, this means you will not be eligible for an additional attempt. The University allows as standard a maximum of two attempts on any assessment (i.e. only one resit). Students can only have a

	third attempt under exceptional circumstances via a Mitigating Circumstances Panel decision.

To be <u>completed</u> by the <u>module leader/tutor</u> prior to approval and issuing of the assessment; to be <u>consulted</u> by the <u>student(s)</u> so that you understand the assignment brief, its context within the module, and any specific criteria and advice from the tutor:

Module title & code	WM9F7-15 Managing Design and Manufacturing Technology
Module leader	Helen Ascroft
Module tutor	See above
Assessment type	**Module Assignment 2 (IMA2) – Individual business report**
Weighting of mark	20 %

Assignment brief

"Critical review of final design proposal based on module case study work"

Assignment Task

Produce a **800 word business report** appraising your case study new product proposal by reviewing the task outputs and overall recommendation used to complete Module Assessment 1 (IMA1).
This assignment should include an analysis and a critical evaluation of the IMA1 proposal your group presented.
It should include discussion of:

- Appraisal of the rigour and confidence in the market/needs analysis.
- Assessment of the quality/uniqueness/originality of the idea.
- A critique of the PDS. Why is it important? Is it complete? What difficulties did the group encounter? How will this document be managed in the next phases of the design process?
- Evaluation of the design selection process

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Criteria for Assessment PMA (20% of final mark)

This table details the weightings of the criteria by which your work will be assessed.

	Allocated Marks
1. **Critical analysis of the group's proposal:** • Appraisal of the rigour and confidence in the market/needs analysis (LO1) • Assessment of the quality/uniqueness/originality of the idea (LO1) • Evaluation of the design selections process(LO2)	70%
2. **The proposal must follow clearly from the IMA tasks outputs and analysis:** • Look operationally practicable (LO2) • Include alternative recommendations and reasons given for the chosen path In short, the "what", "why" and "how" (LO2)	20%
3. **Overall structure of the report:** • Logical structure / sequence • Clarity / written style/grammar/ spelling/referencing • Proper business report style (page numbers, table of contents; sub-headings etc.) • Appropriately presented charts / diagrams/figures and other illustrations	10%
Total	100%

Word count	The word count is 800 (+/- 10%). **Deductions for excess length:** More than 10% and less than 30% - 10 percentage points from original total mark. More than 30% - Mark is capped at the pass mark. Note: marks less than the pass mark are returned as normal. The word limit includes quotations and citations but excludes figures, tables, references list and appendices.
Module learning outcomes (numbered)	1. Demonstrate an advanced understanding of the fundamentals of product design and development processes, including: methods; technologies; latest trends; tools and techniques; outcome and functional/resource interdependence, interpreting their relationships from concept to customer. 2. Critically evaluate and make recommendations on approaches to the management of product design and development processes. 3. Critically evaluate and contrast: materials; manufacturing processes; manufacturing tools and technologies that are most used in the manufacturing industry. 4. Critically evaluate manufacture-design, demonstrating detailed knowledge

	of fundamental aspects of manufacturing and materials processes and technologies in the context of a circular /sustainable economy.
Learning outcomes assessed in this assessment (numbered)	1,2

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1.0 Introduction

The Levi Stool is a unique piece of furniture inspired from a shape of pentahedron which resembles the shape of a pyramid. This design helps in stability as compared to normal four leg stools (Sofronie 2017). The stool serves a dual purpose, allowing users to sit on it or stand on it and also comes with extended side arm for extra support while standing on it. This particular feature is really helpful for the people with acrophobia (Raypole 2019).

This report focuses on the entire design process mainly highlighting the methods and tools that have been used and will critique them. Methods included, Double Diamond Method which include SWOT analysis followed by Product Design Specification and lastly the Pugh Matrix. This report will discuss about the practical implementation of these tools.

2.0 Review of the Methods

2.1 Double Diamond Method

We chose Double Diamond method because it delivers clear separation between problem identification and solution development which helped us refine our ideas efficiently (Gustafsson 2019). For the Discover phase, we used SWOT analysis. Our market research indicated that the stool industry is expanding. Till 2023 the market valued at $1.8 billion and expecting to reach up to $2.9 billion by 2032 (Patel 2023). With the help of SWOT analysis, we found the strength like aesthetic design, weakness which include new design concept, opportunity which include the increase in market and threats from intensive competition in the market.

The Double Diamond method was really helpful but it required a plethora of time and data as well. Since the design concept was newer to the market we lacked in finding the Data. Also, the SWOT was clear bit we missed the depth of it. Our analysis was fair but limited. We only considered the secondary data, we could have improved by interviewing people to confirm the safety concerns.

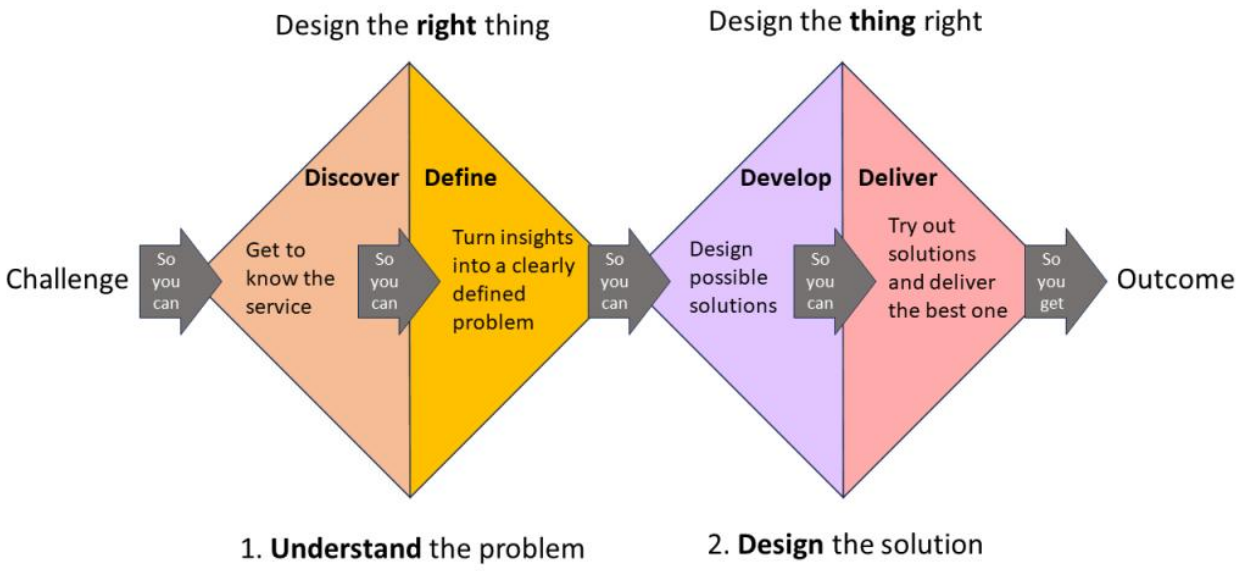

Fig. 1 Double Diamond (Council 2024)

2.2 Assessment of the Quality, Uniqueness and Originality of the Idea

The design of our stool is inspired from the well know architect LE CORBUSIERS and its architectural styles (Corbusier 2013). The stool is of high quality and unique design which stands out with its pentahedron shape. It helps in providing more stability than the traditional stools. The additional and stand out features like extended side arm for support especially for the people with acrophobia (Raypole 2019), storage area and a detachable hanger, along with the use of sustainable Oak Wood Material which makes it more functional and eco-friendly alternative to other competitors.

Although, the design is innovative but not completely original as multifunctional stools are available in the market and few users might find the pentahedron shape unfamiliar for a stool. The Define phase of the Double Diamond method helped us identify important user needs, but some of our choices were based on assumptions rather than direct comparisons with competitors.

2.3 Critique of Product Design Process

The PDS acted as a clear guide for what the Levi Stool needed to achieve, covering both functional and non-functional requirements. Functionally, the stool had to support both sitting and standing while including an extendable side arm for extra safety. On the non-functional side, the PDS offered a modern and ergonomic design, making the stool not only strong and durable but also visually appealing and easy to use (Jiang, Kwong et al. 2015).

Overall PDS helped us in every aspect but still it lacked some important aspects like cost of the final product, disposal after end of life of the stool. Moreover, turning broad design ideas into precise technical details was challenging. We faced difficulties in defining the exact ergonomic measurements. This highlights the need for more user testing and further adjustments in future design stages.

2.4 Evaluation of Design Selection Process

We used the Pugh Matrix to compare different design ideas fairly. We had come up with 5 different designs which shared the same base but were different in features. This tool helped us rate each design based on important factors like safety, functionality, cost, ease of manufacturing, and appearance (Ayağ 2016). By comparing each option to a baseline design, we found that the pentahedron-inspired structure with removable hook design was the best choice which is shown in the figure given below. The Pugh Matrix made our decision process clear and data-driven, helping us justify why this design was the best option (Guler and Petrisor 2021).

However, the Pugh Matrix had some limitations. The scoring process included some personal judgment, which could have led to bias. Also, the price range could have been discussed which we didn't. It was mainly dependent on the theoretical designs rather than the practical impact. Despite these challenges, the Pugh Matrix played a key role in helping us select a unique and practical design for the Levi Stool.

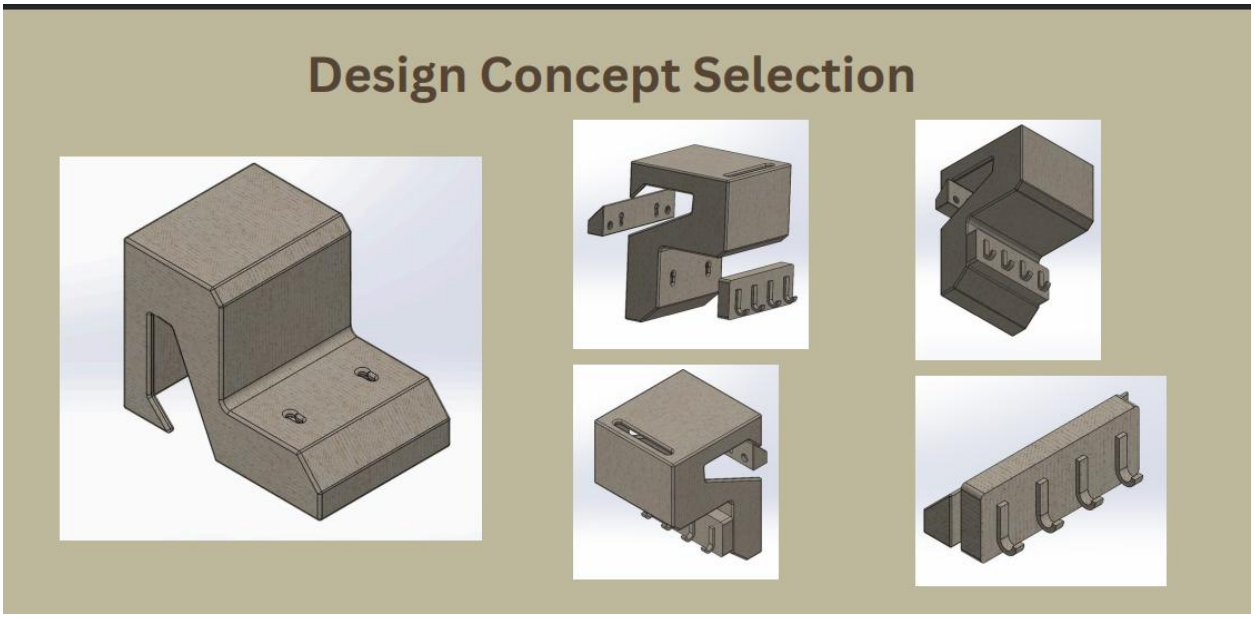

Fig. 2 Final Design Concept Selection

3.0 Conclusion

The Levi Stool combines modern design, functionality, and safety with a pentahedral-inspired shape for better stability. Its dual-use design and extendable side arm improve safety and usability. Using the Double Diamond method, PDS, and Pugh Matrix helped us develop a stool that meets market needs while staying practical to produce. Each tool had its strengths and challenges, but together they provided a clear design process. Moving forward, user feedback, more prototyping, and cost improvements will make the Levi Stool even better for the market.

4.0 References

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