Creating Outcome Test on

Differentiation and Applications of Differentiation

Unit 3 &4 Mathematical Methods

Differentiation & Applications of Differentiation Assessment Task

19th of June, 2018

Wellington Secondary College has 5 Maths Methods groups in 2018. All the groups are finishing the two chapters on Differentiation. After that, students are completing an outcome test on Chapters 9 and 10.

Ms Mann, the coordinator of Year 12 Maths Methods is calling the students of Methods Group 3 to create a 30-minute outcome test which consists of:

- Section A: Multiple Choice (10 questions)
- Section B: Short Answer And Extended Response (15 marks)

Your task is to work in groups of 3 or 4 people and use Design Thinking to:

- create an outcome test which is to be used by the other four groups
- provide model solutions/marking scheme for teachers to use

Understanding Design Thinking

Design thinking is a human-centred, iterative design process consisting of 5/6 steps—Empathize, Define, Ideate, Prototype, Test and Implement.

The process of Design thinking can be summarised using the diagram below.

Design Thinking & Differentiation Assessment Task
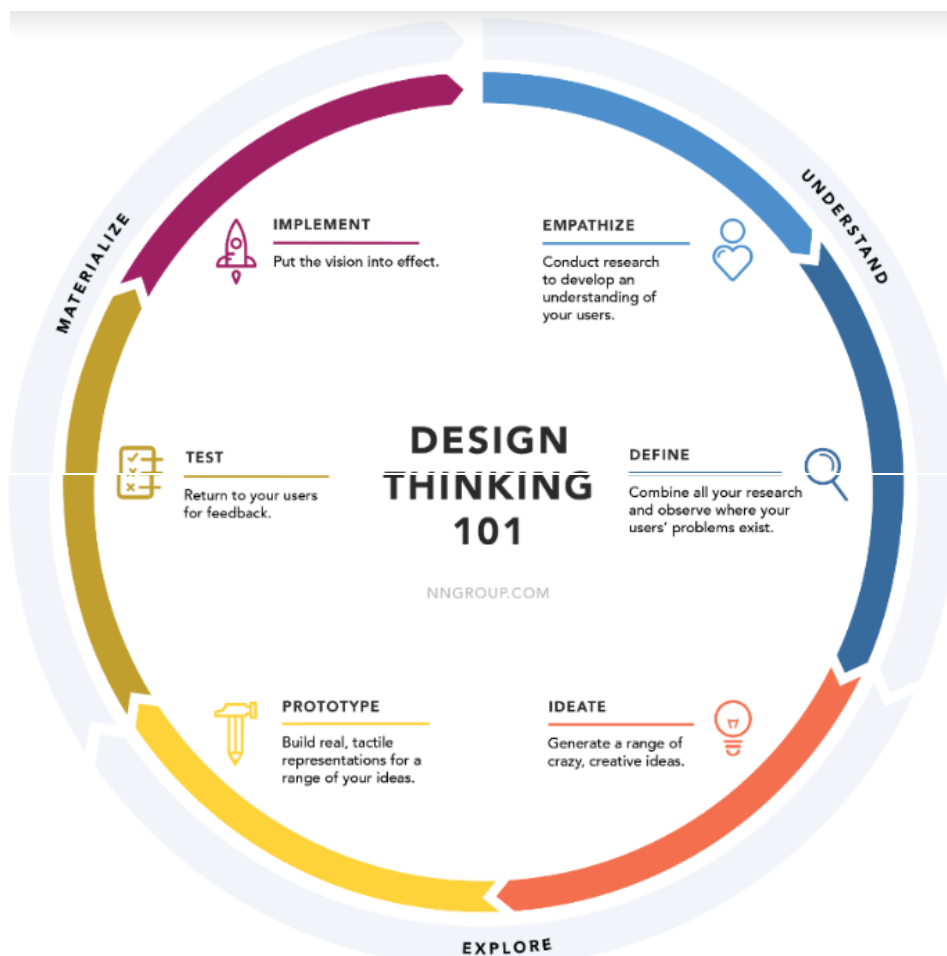
Use the following process to create a 40-minute outcome test on Differentiation (Chapters 9 & 10)

1. **Empathise**

At this stage, you need to conduct a research on:

- what are the key requirements for the test;

    (You may need to interview Ms Mann's representative -Ms Gao for requirements.)
- who are the users of the test;

You will need to:

- analyse previous tests, past VCAA exams and examination report regarding the topic;

- record your findings as a reference point.

After taking the actions above (not limited to the above), use the table below to record your findings.

facts/Importance/Issues	Requirements for test

2. Define

During this stage, your team members put together the information you have created and gathered during the Empathize stage. You analyse your results of interviews and researches and synthesize them in order to define the key facts and requirements you and your team have identified. Record your combined findings using a concept map below.

To the left of the concept map, write down the factors influencing the problems - be specific! On the right hand side of the concept map, write down the people involved in the problems; again, be specific. Make sure you write down the connection on the line.

Influencing factors   **People involved**

Key facts/issues:

1.

2.

3.

4.

.....
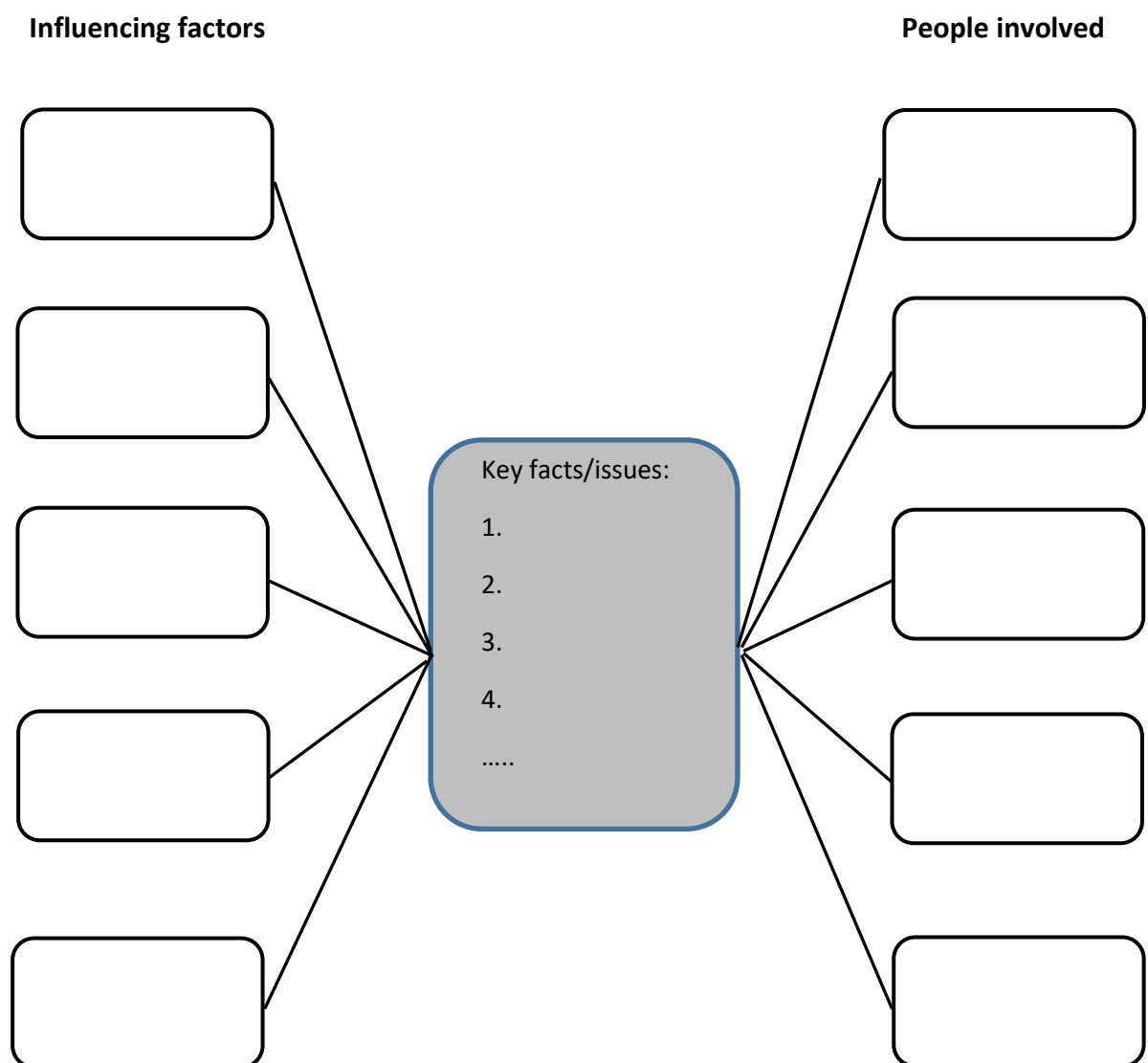
3. Ideate

At this stage, you start generating ideas. Coming up with your HMW (How Might We…?) questions. *For example, how might we design an outcome test to assess their key skills for finding derivatives of different functions?*

Each of you needs to take 5 minutes in silence to write down at least 5 HMW questions on the post-it notes below.
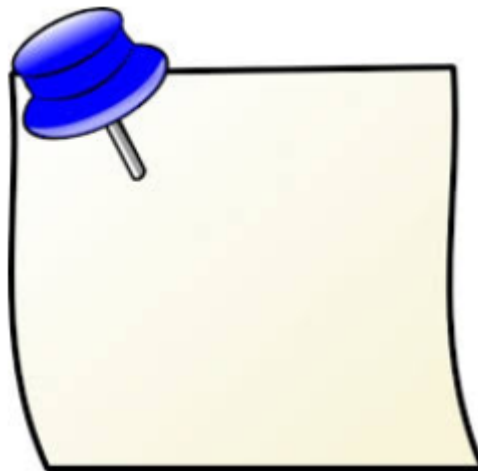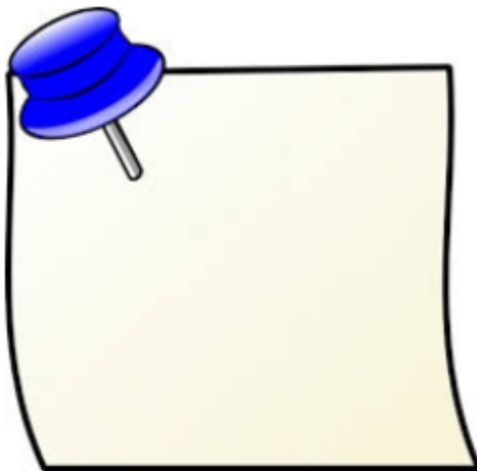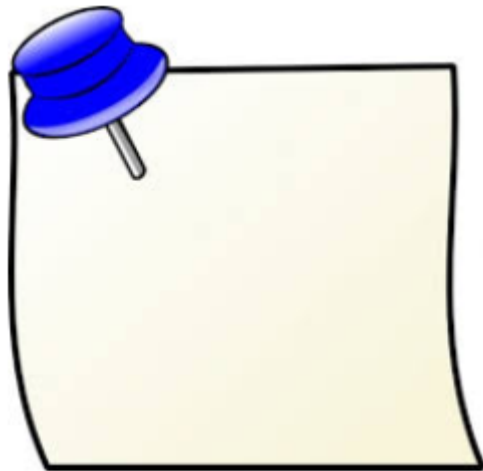
Design Thinking & Differentiation Assessment Task

Share and discuss the HMW questions from each member. Group the similar HMW questions and sort out the key questions according to their priorities in the precinct design.

Come up with an idea that will solve the problems and satisfy the requirements. Sketch the idea in the table of **Crazy 8S** below. Think about **SCAMPER.**

1. **Original idea**	2. **Substitute**
3. **Combine idea**	4. **Adapt**
5. **Max or Min**	6. **Put to other uses**
7. **Eliminate**	8. **Rearrange**

Write or attach the test created by your group below. You may need to add more pieces of papers.

4. Prototype, Critique and iterate

At this stage, you team produces a version of an outcome test. You work through the questions and produces solutions. You check for following things but not limited to them:

- Have I covered all key mathematical points?
- Are there any repeating questions/points?
- Are the questions at different levels of difficulties?
- …….
- …….

Be critical on the test that you have produced to produce a final version as a group.

Our prototype 1

Prototype 2

….

5. Test
At this stage, you may bring the test to your teacher and/or teachers of other groups to get feedback; however, in an iterative process, the results generated during the testing phase are what you will often use to redefine one or more problems.

6. Implement
At the Implement stage, you present your final version with model solutions/marking scheme to Ms Gao.