ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	iSTEM
Year	9
Weighting	20%
Teachers	Mr Boardman
Head Teacher	Ms Huggett
Date given	Term 1 Week 5
Due Date	Friday the 15th March (Term 1 Week 7) 2024

Process Diary

You have been introduced to the iSTEM Engineering Design Process. You will refer to the *Define*, *Identify* and *Brainstorm* sections for this assessment task as you complete the scaffold.

Using *The Idea Machine* (www.theideamachine.org) generate your 3 prompts: user, industry and sense.
In the space provided you need to *brainstorm* your product. You can do this using words or sketches.

After your initial brainstorming you will add additional detail to the *Define* and *Identify* sections of the iSTEM Engineering Design Process.

Finally, you will reflect on your approach throughout this task, and the suitability of beginning the design process at the *Brainstorm* step

Submission:
You can choose to physically complete each section of the task in the booklet or complete it digitally and submit via Google Classroom.

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Non-completion of Task:
If you know you are going to be away on the day that the task is due, you must make alternative arrangements with your classroom teacher and attempt to submit your task prior to this absence. If you are unable to submit your task on the due date you will need to complete illness/misadventure paperwork upon your return to school.

Failure to follow the above procedures may result in a zero award.

Outcomes Assessed

ST5-5 analyses a range of contexts and applies STEM principles and processes

ST5-7 selects and applies project management strategies when developing and evaluating STEM-based design solutions

ST5-9 collects, organises, and interprets data sets, using appropriate mathematical and statistical methods to inform and evaluate design decisions

Part 1: Initial Brainstorm

Using *The Idea Machine* (www.theideamachine.org) generate your 3 prompts: user, industry and sense.
In the space provided you need to *brainstorm* your product. You can do this using words or sketches.

User: _____

Industry: _____

Sense: _____

Brainstorm words / sketches:

Part 2: Research

Now that you have your initial idea you need to research relevant technologies that will enhance your product.

This research should include information on the *cost of the technology*, as well as statistical data on its *use either locally, nationally or globally*.

Record your research in the space below, ensuring you include any *links to your findings*.

Part 3: The Design Process

Choose and answer four (4) key questions from both the *Define* and *Identify* sections of the iSTEM Engineering Design Process (8 questions total).

Both sections are included at the end of this task for your reference.

Record the question and your response in the space below:

Define

1. _____
   _____
   _____
   _____
   _____

2. _____
   _____
   _____
   _____
   _____

3. _____
   _____
   _____
   _____
   _____

4. _____
   _____
   _____
   _____
   _____

Identify

1. _____
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2. _____
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3. _____
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4. _____
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_____

Part 4: Process Diary

In the space below reflect on your experiences in this task.

In this reflection you need to *explain* how you refined your original brainstorm idea based on the *research* you undertook.

You also need to make a *judgement* on if this was the best way to carry out your design work, or if you should have followed the iSTEM Engineering Design Process.

Marking Criteria:

	9-10	7-8	4-6	2-3	1	Marks
ST5-5 analyses a range of contexts and applies STEM principles and processes	Completes *brainstorm* and lists generated prompts. Includes a labelled sketch. Comprehensive answers provided for four *identify* and four *define* questions.	Completes *brainstorm* and lists generated prompts. Includes a sketch. Plausible answers provided for four *identify* and four *define* questions.	Completes *brainstorm* and lists generated prompts. Answers four *identify* and four *define* questions.	Attempts *brainstorm* and lists generated prompts. Answers fewer than four *identify* and/or four *define* questions.	Attempts *brainstorm* and lists generated prompts.	**/10**
	5	**4**	**3**	**2**	**1**	
ST5-7 selects and applies project management strategies when developing and evaluating STEM-based design solutions	Explanation of *brainstorm* refinement provided, referring to research and statistical data. Reasoned *judgement* made about the suitability of the conducted design process.	Explanation of *brainstorm* refinement provided, referring to research. Reasoned *judgement* made about the suitability of the conducted design process.	Explanation of *brainstorm* refinement provided. *Judgement* made about the suitability of the conducted design process.	Explanation of *brainstorm* refinement provided.	Reflection of *brainstorm* / task provided.	**/5**
ST5-9 collects, organises, and interprets data sets to inform and evaluate design decisions	Considerable information provided on technology *cost* and use, including *statistical data*. Includes *links* to research.	Summarises findings on technology *cost* and use and clearly explain how this will *enhance* your product. Includes *links* to research.	Summarises findings on technology *cost* and use. Includes *links* to research.	Summarises findings on technology *cost* and use.	Summary does not include findings on technology *cost* or use.	**/5**
					Total:	**/ 20**

Define – the problem

Table 1 – Define the problem or need to gain understanding.

Key questions	Possible activities
• Why does the problem need to be solved? • What experiences can you relate to in the problem? • What are your initial thoughts of how you could possibly solve the problem? • How can different members of the team contribute to the solution? • Do you have more questions about the problem? • Who does the problem concern? • How will you know that your solution will suit them? • What processes will need to occur to solve the problem? • How will I know the solution was successful?	• Produce a clear statement describing the problem to be solved. • Mind map initial thoughts and additional questions. • Review prior knowledge and experience. • Determine what assets are available. • Identify resources available or needed. • Write a clear and concise design brief statement. • Identify sources of information. • Articulate the scope and nature of the problem. • Define the success criteria for the project.

Identify – the constraints

Table 2 – Outline specific boundaries by which the project will be confined.

Key questions	Possible activities
• What are the constraints of the problem you are trying to solve? • What other solutions are people using and how will that affect their ability to use your solution? • How much will it cost and what is the overall budget? • What skills and knowledge does the team possess? • How much time do I have for completion? • What tools and equipment are required and available? • What data or information will be needed? • What is the aesthetic, functional and ergonomic considerations?	• Clearly identify all relevant constraints. • Identify constraints of the end user. • Produce a budget or finance plan. • Identify start and finish dates and any milestones for the project. • Develop a resource list, including tools, materials, and people. • Identify data and information that needs to be collected. • Produce matrix identifying aesthetic, functional, ergonomic considerations.