

Learning Task: Innovative Design Investigation

Year Level: 7-10

Objective:

To apply coding and electronics skills gained from the previous course in investigating and selecting materials and tools for innovative design solutions.

Task Description:

Students will work individually or in pairs to identify a real-world need or opportunity for innovative design. Drawing upon coding and electronics skills, students will investigate and analyse a range of materials, components, tools, and processes suitable for addressing the identified need or opportunity. For Level 7/8, students will develop design ideas that incorporate these materials and tools. For Level 9/10, students will refine their investigation to include an increasingly sophisticated selection of materials, systems, components, and equipment.

Curriculum Alignment:

Design Investigation: Practical application of investigating and analysing materials, components, tools, and equipment to develop innovative design ideas.

Problem Identification: Identifying real-world needs or opportunities in line with the curriculum's emphasis on critiquing design needs.

Material and Tool Selection: Application of coding and electronics skills in selecting appropriate materials and tools for design solutions.

Through this task, students practically apply their coding, electronics, and investigation skills, fostering critical thinking, problem-solving, and design thinking. It aligns with the Victorian Curriculum's goals of nurturing design skills, critical analysis, and innovative thinking within the context of practical design solutions.

Assessment:

Criteria	Excellent	Proficient	Basic	Limited
Problem Identification	Clearly and insightfully identifies a real-world need or opportunity for innovative design.	Identifies a relevant real-world need or opportunity for innovative design.	Identifies a somewhat relevant real-world need or opportunity for innovative design.	Fails to identify a clear real-world need or opportunity for innovative design.
Coding and Electronics Application	Applies coding and electronics skills effectively to select appropriate materials and tools for design solutions.	Proficiently applies coding and electronics skills to select materials and tools for design solutions.	Somewhat applies coding and electronics skills to select materials and tools for design solutions.	Limited or no application of coding and electronics skills in selecting materials and tools.
Design Idea Development (Level 7/8)	Develops innovative design ideas that incorporate selected materials and tools, demonstrating creativity.	Develops design ideas incorporating selected materials and tools with reasonable creativity.	Develops basic design ideas with limited creativity, incorporating some selected materials and tools.	Fails to develop design ideas incorporating selected materials and tools.
Investigation Refinement (Level 9/10)	Demonstrates sophisticated refinement of investigation, including advanced material/component selection.	Effectively refines investigation, demonstrating a well-considered selection of materials and components.	Shows basic effort in refining investigation, with a somewhat refined selection of materials and components.	Lacks significant refinement in investigation, with limited material and component selection.