Gymea Technology High School
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Year 9 Design & Technology

Task 1: Music Maker

Due Date: Term 1 Week 9 31.03.25

Task Distributed: 17/02/25

Unit: A Holistic Approach – Materials Technologies

Task Type: Practical Project & Portfolio

Task Weighting: 25%

Outcomes: 1, 3, 4, 5, 6

Task Description – **Acoustic Boom Box**

DESIGN BRIEF:

Design in today's world is a complex interdisciplinary process that plays a significant role in our daily lives. In our ever-changing world, new technologies have meant that design solutions are now applied to nearly every aspect of our lives. We have a choice in the kind of technology we use, and must select that which is the most appropriate, such as environmentally friendly technology, technology that meets national health and safety guidelines, and technology that considers the responsible use of resources.

You are to research, design and produce an environmentally friendly, acoustic boom box from sustainable and appropriate technologies and materials to amplify music playing from a phone's speakers without the need of a power source.

In this task, you will have the opportunity to use information technologies, multiple materials, handheld tools and CNC machinery to produce a unique acoustic boom box. You will also need to document the 'Design and Production' Process in a portfolio booklet, that is to be submitted with your boom box by the due date.

Part A – Practical Design Solution

Students will design, produce and manufacture a working acoustic boom box to be used with their mobile phone.

Product Restrictions:

The final product must:

- Include appropriate design elements
- not exceed build dimensions of 250x180x100mm
- include a functioning amplification channel
- incorporate at least one modification to achieve a unique and individualised product.

Part B - Digital Design Portfolio:

Students are to compile and present evidence, tracking the processes and progress of their design solution from concept to finished product via a digital design portfolio.

The design portfolio will include scaffolded questioning and management tools to assist students.

The design portfolio will address and cover the 4 steps of the *Design and Production Process*:

- Identifying and Defining
- Research and Planning
- Production and Manufacturing
- Testing and Evaluating.

NESA Glossary of Key Words

Understand the verb associated with the task. The verb will provide an understanding of the detail needed to successfully answer the question.

- **Describe:** Provide characteristics and features
- **Outline:** Sketch in general terms; indicate the main features of
- **Evaluate:** Make a judgement based on criteria; determine the value of

Check the NESA Glossary of Key Words for further guidance https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/hsc/hsc-student-guide/glossary-keywords

Details of Submission

The successful completion of this task requires your completed portfolio to be submitted on Google Classroom and your practical design solution submitted to your teacher by the due date.

Teacher Feedback and Student Self-Reflection

- The task will typically be returned to students within 14 days of the due date.
- At this time feedback including information on how to improve will be provided through an annotated marking criteria.
- Students can clarify or seek further feedback by speaker with their teacher or the assessment marker.
- You will also receive feedback on your literacy performance based on the criteria in the school's literacy marking rubric. The marks achieved for literacy will account for between 10% – 20% of the maximum task value.

Upon return of the task, students will also be expected to complete a self-reflection.

Students will be required to complete a self-reflection form at the time students receive their assessment mark and teacher feedback. Self-reflection is an important part of the learning process as it provides an opportunity to reflect on the strength of our performance, as well as areas that have been identified to strengthen in future tasks.

How does this link to my learning?

- Project work in the Design & Technology course is intended to give students the opportunity to plan, design and create a product that has a specific purpose
- Students identify needs that have personal relevance, apply design theory and use design and production processes that encourage flexibility, resourcefulness and imagination in the development, communication and production of quality solutions. Through completion of this task, students will gain an understanding of, environmental sustainability, traditional and modern production methods and tools.
- Report Outcomes

1. Analyses, applies and justifies a range of design concepts and processes when developing design ideas and solutions.

3. Analyses the work and responsibilities of designers and the factors affecting their work and can evaluate designed solutions according to principles, ethics and preferred futures.

4. Develops and evaluates creative, innovative and enterprising design ideas and solutions using the appropriate management strategies and technologies competently.

5. Uses appropriate techniques when communicating design ideas and solutions to a range of audiences.

6. Applies risk management practices and works safely in developing design solutions.

Assessment Procedures

All students should be fully aware of the School Assessment Procedures for their year group. These were provided at the beginning of the school year and are available off the school website under the Learning Tab for each year group.

Criteria	1	2	3	4	5
Identifying & Defining	• Provides a limited explanation of the design brief and/or mentions design features needed to meet the product restrictions.	• Provides a basic explanation of the design brief. • Provides an explanation of the design features needed to meet the product restrictions	• Provides a sound explanation of the design brief, with reasoning for the need of such products in today's world. • Provides an explanation of the design features needed to meet the product restrictions. Uses examples.	• Provides a clear explanation of the design brief, with detailed reasoning for the need of such products in today's world. • Provides a detailed explanation of the design features needed to meet the product restrictions. Uses examples.	• Provides an outstanding explanation of the design brief, with extensive reasoning detailing the need for such products in today's world. • Provides a detailed explanation of the design features needed to meet the product restrictions. Uses examples.
	Uses existing class developed evaluation criteria	Develops an evaluation criteria	Develops an evaluation criteria related to the design brief	Develops a detailed evaluation criteria directly related to the design brief	Develops an extensive evaluation criteria directly related to the design brief
Research & Planning • Identification & Design	• Identifies and provides images of current design/s. • Provides limited details on positive and negative aspects of identified design/s.	• Identifies and provides clear legible images of current design/s. • Provides basic details on positive and negative aspects of identified design/s.	• Identifies and provides clear legible images of four current designs. • Provides details on positive and negative aspects of each design related to the design brief.	• Identifies and provides clear legible images of four current designs. • Provides thorough details on positive and negative aspects of each design clearly related to the design brief.	• Identifies and provides clear legible images of four current designs. • Provides extensive details on positive and negative aspects of each design clearly related to the design brief.

• CAD Drawing Skills	Provides concept design sketches. Sketches contain limited information detailing; • materials, • dimensions, • possible modifications to base design and their added purpose to the design.	Provides concept design sketches. Sketches contain basic information detailing; • materials, • dimensions, • possible modifications to base design and their added purpose to the design.	Provides three concept design sketches. Sketches contain annotations detailing; • materials, • dimensions, • possible modifications to base design and their added purpose to the design.	Provides three clear and legible concept design sketches. Sketches contain detailed annotations outlining; • materials, • dimensions, • possible modifications to base design and their added purpose to the design.	Provides three clear and legible concept design sketches. Sketches contain extensively detailed annotations outlining; • materials, • dimensions, • possible modifications to base design and their added purpose to the design.
• Planning	Demonstrates ability to; • create a CAD model	Demonstrates satisfactory ability to; • create a CAD model	Demonstrates sound ability to; • create a CAD model	Demonstrates high ability to; • create an individualised CAD model	Demonstrates outstanding ability to; • create an individualised CAD model
	Demonstrates ability to; • produce a basic PDF print out or drawing of non-dimensioned single view.	Demonstrates satisfactory ability to; • produce a basic PDF print out or drawing of partially dimensioned 2 views and title block.	Demonstrates sound ability to; • produce a PDF print out or drawing of partially dimensioned 3 view orthogonal drawing with border, title block and annotations.	Demonstrates high ability to; • produce a PDF print out or drawing of partially dimensioned 3rd angle 3 view orthogonal drawing, fully rendered 3D view, border, title block and annotations.	Demonstrates outstanding ability to; • produce a PDF print out or drawing of fully dimensioned 3rd angle 3 view orthogonal drawing, fully rendered 3D view, border, title block and annotations.

	Provides a limited justification for the selection of final design and its design features.	Provides a basic justification for the selection of final design and its design features.	Provides a sound justification for the selection of final design and its design features with links to the design brief.	In detail, justifies the selection of final design and its design features with clear links to the design brief.	In extensive detail, justifies the selection of final design and its design features with clear links to the design brief.
	List of resources required for the production of design is limited.	List of resources required for the production of design is basic.	Provides a list of all resources required for the production of design.	Provides a detailed list of all resources required for the production of design.	Provides a detailed and extensive list of all resources required for the production of design.
Producing & Implementing • Machining & Construction	Student selects and employs minimal techniques and equipment. Personal and environmental safety practices (use of PPE, dust extractor, tool specific safety guidelines etc.) are not evident.	Student selects and employs different techniques and equipment. Personal and/or environmental safety practices (use of PPE, dust extractor, tool specific safety guidelines etc.) are evident but need to be maintained throughout the whole process.	Student selects and employs different techniques and equipment. Personal and/or environmental safety practices (use of PPE, dust extractor, tool specific safety guidelines etc.) are not maintained throughout the whole process.	Student selects and employs appropriate techniques and equipment in a timely manner. Personal and environmental safety practices (use of PPE, dust extractor, tool specific safety guidelines etc.) are maintained throughout the process.	Student selects and employs appropriate techniques and equipment in a professional and timely manner. Personal and environmental safety practices (use of PPE, dust extractor, tool specific safety guidelines etc.) are maintained professionally throughout the process.

● Assembly of Boom Box	Requires assistance to; ● create and produce components of design out of a nominated material.	Requires minimal supervision to; ● create and produce components of design out of a nominated material.	Demonstrates sound ability to; ● create and produce components of design out of a chosen material or materials.	Demonstrates high ability to; ● create and produce components of design out of a chosen material or materials.	Demonstrates outstanding ability to; ● create and produce components of design out of a chosen material or materials.
	Requires assistance to; ● select and operate appropriate machinery and hand held tools, identifying and correcting issues. ●	Requires minimal supervision to; ● select and operate appropriate machinery and hand held tools, identifying and correcting issues. ●	Demonstrates sound ability to; ● select and operate appropriate machinery and hand held tools, identifying and correcting issues. ●	Demonstrates high ability to; ● select and operate appropriate machinery and hand held tools, identifying and correcting issues. ●	Demonstrates outstanding ability to; ● select and operate appropriate machinery and hand held tools, identifying and correcting issues. ●
	Produces and assembles a boom box including; ● an acoustic amplification channel	Demonstrates ability to produce and assemble a boom box of satisfactory quality including; ● a functioning acoustic amplification channel	Demonstrates sound ability to produce and assemble a boom box of good quality including; ● a modification of base design, ● a functioning acoustic amplification channel	Demonstrates high level ability to produce and assemble a boom box of excellent quality including; ● modifications and additions to base design base design, ● a functioning acoustic amplification channel	Demonstrates outstanding ability to produce and assemble a boom box of professional quality including; ● modifications and additions to base design, ● a functioning acoustic amplification channel

Testing & Evaluating • Evaluation	Uses existing evaluation criteria to: • provide a basic evaluation of a characteristic or feature of finished product.	Uses developed evaluation criteria to: • provide a basic evaluation of 2 characteristics and features of finished product.	Uses developed evaluation criteria to: • evaluate the characteristics and features of finished product.	Uses developed evaluation criteria to: • evaluate in detail the characteristics and features of finished product.	Uses developed evaluation criteria to: • extensively evaluates the characteristics and features of finished product. •
	Uses existing evaluation criteria to: • offer a suggestion for improvement	Uses developed evaluation criteria to: • offer a suggestion for improvement	Uses developed evaluation criteria to: • provides suggestions for aspects requiring further improvement	Uses developed evaluation criteria to: • provide detailed suggestions for aspects requiring further improvement	Uses developed evaluation criteria to: • provide extensively detailed suggestions for aspects requiring further improvement
	Uses existing evaluation criteria to: • mention the use of evaluation and/or refinement.	Uses developed evaluation criteria to: • discuss aspects of evaluation and/or refinement, and its impact on design aspects	Uses developed evaluation criteria to: • discuss the use of evaluation and refinement, and its impact on design aspects	Uses developed evaluation criteria to: • discuss in detail the use of an ongoing process of evaluation and refinement, and its impact on design aspects	Uses developed evaluation criteria to: • discuss in extensive detail the use of an ongoing process of evaluation and refinement, and its impact on design aspects
Feedback:				**Total:**	**/75**

Literacy Outcomes	Elementary achievement You have:	Limited achievement You have:	Satisfactory achievement You have:	High achievement You have:	Outstanding achievement You have:
Vocabulary *Uses technical vocabulary to explain concepts and/or range of precise and appropriate words for effect*	Very limited response. Few content words used.	Only simple words are used.	Some precise and technical words are used.	Sustained use of precise and technical words.	Sustained, consistent and fluent use of precise and technical words.
	0	1	2	3	4
Punctuation *Use of correct and appropriate sentence and other punctuation for effect, and to aid in reading of the text*	No evidence of correct sentence punctuation.	Sentence punctuation is correctly used in at least one place - *one sentence is punctuated correctly.*	Some correct sentence level punctuation (at least 50%). May attempt other punctuation where it is required.	Mostly correct sentence level punctuation (80%) and at least two correct examples of other punctuation.	Writing contains accurate use of all applicable punctuation.
	0	1	2	3	4
Sentences & Cohesion *The intentional construction of a variety of sentences to match purpose and audience, and the control of multiple sentence threads across the whole text.*	No clear evidence of sentences: a list of words OR text fragments.	At least one sentence is used correctly. Some meaning can be construed from the text.	Some correct formation of sentences. Mainly uses simple and compound sentences, but may attempt more complex structures.	Most sentences are correct. Range of sentence types and connectives are evident, but with varied effectiveness.	All sentences are correct, effective and controlled, and include a range of sentence types and connectives (complex sentences and other sophisticated structures)
	0	1	2	3	4
Paragraphs *Paragraphs are used to effectively structure information and partition events and ideas*	No correct use of paragraphing; may be a block of text or random breaks.	Ideas are separated; paragraphs may contain some unrelated ideas.	At least ONE paragraph is well structured and develops an idea	Writing is organised into paragraphs that assist the reader to digest chunks of the text, but may not be linked or executed effectively.	All components of the paragraphs are evident and paragraphing is consistent and well-developed across the whole text.
	0	1	2	3	4

Text Structure *Uses features of the appropriate text type*	No evidence of the structural features of the appropriate text type. *No attempt to write in the appropriate text type and/or response is off task.*	Minimal evidence of the structural features - *1 component evident* - of the appropriate text type.	Some evidence of the structural features - *2 components evident* - of the appropriate text type.	Substantial evidence of the structural features - *all components evident but there may be some lapses* - of the appropriate text type.	Coherent and controlled use of **all** the appropriate structural features of the text type.
	0	1	2	3	4
	Level of response is well below syllabus expectation	Level of response is below syllabus expectation	Level of response is equivalent to syllabus expectation	Level of response is above syllabus expectation	Level of response is well above syllabus expectation
					Literacy: /5 **Final Mark: /80**