

Task 4: Research Report

Due Date: 13 Sept 2024

Distributed: 30 Aug 2024

Weighting: 10%

Task Type: Report

Syllabus Outcome/s: CT5-EVL-01, CT5-THI-01

Unit: Building Mechatronic and Automated Systems

Task Description

You are to research and examine an existing mechatronic system and create a report addressing the following criteria and include a reference list using APA referencing:

1. Systems Introduction:

- a. **Identify** a real-world problem that has been solved by a mechatronic system - examples could include:
 - i. [Amazon delivery robot](#) (transportation)
 - ii. Mars Rover (space exploration)
 - iii. [OceanOne](#) (deep sea exploration)
 - iv. [Erica](#) (humanoid robot)
- b. **Define** the needs of stakeholders for the chosen mechatronic system.
- c. **Evaluate** the effectiveness of the existing solution to the problem with reference to the needs of the stakeholders.
- d. **Analyse** the social and ethical and legal responsibilities associated with the mechatronic system.

2. Diversity: Discuss how the chosen system caters to a wide range of different cultural and linguistic perspectives.

In your response address the following groups.

- Aboriginal and Torres Strait Islanders,
- People of Different Ages and Gender
- People with Disabilities

3. **Careers:** *Identify* and *explain* a career in the mechatronic industry. You will need to address the following:

- a. Career description
- b. Educational requirements
- c. Average salary/wage
- d. Data visualisation of career (graph/data) - within your chosen career, explore relevant data, such as but not limited to, women versus male participation; wage/salary compared to another industry; average age; wage growth or time spent in the chosen career.
Include a graphical representation of the data (sector graph, line graph, bar graph etc) and provide a brief explanation of the data.

Glossary of Key Words

These verbs will provide an understanding of the detail needed to successfully complete this task:

- **Analyse:** Identify components and the relationship between them; draw out and relate implications.
- **Define:** State meaning and identify essential qualities
- **Discuss:** Identify issues and provide points for and/or against
- **Evaluate:** Make a judgement based on criteria; determine the value of
- **Explain:** Relate cause and effect; make the relationships between things evident; provide why and/or how
- **Identify:** Recognise and name

Details of Submission

Submit the report via Google Classroom using the scaffold provided by the due date

Teacher Feedback and Student Self-Reflection

The task will be returned to students within **21 days** of the due date. Information on how to improve will be provided through written teacher feedback and the marking criteria. Students can clarify or seek further feedback by speaking with their teacher.

Upon return of the task and teacher feedback, students will also be expected to complete the following self-reflection form, to provide them with the opportunity to reflect on the strength of their performance, as well as areas that have been identified to strengthen in future tasks - <https://forms.gle/Ck4y1jid49x7sKfq7>

How does this link to my learning?

This task will allow students to:

- The completion of this task links to student learning in class on the theoretical content for Building Mechatronics and Automated System
- Students will achieve through the completion of this task how to address the logistical needs, stakeholder demands through its user-friendly design of the mechatronic systems. While grappling with social, ethical, and legal responsibilities, and striving to enhance diversity considerations; careers in managing this mechatronic system offer diverse opportunities with varying educational requirements and salaries, providing students with practical skills for the evolving technology sector.
- Understands how innovation, enterprise and automation have inspired the evolution of computing technology

Assessment Procedures

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 menu for each year group.

Marking Criteria

Criteria	1	2	3	4	5
Identify a real-world problem	Student attempts to identify a real-world problem that has been solved by a computer system	Student correctly identifies a real-world problem that has been solved by a mechatronic system with an image	Student correctly identifies a real-world problem that has been solved by a mechatronic system including appropriate images.		
Define the needs of stakeholders	Student attempts to identify the needs of the stakeholders or key lists key people involved.	Student identifies some needs of the stakeholder	Student identifies and outlines a wide range of needs of the stakeholders		
Evaluate the effectiveness of the existing solution	Student attempts to identify the impact of the effectiveness of the existing solution	Student identifies the effectiveness of existing solution	Student outlines the effectiveness of existing solution	Student describes the effectiveness of the existing solution with relevant examples.	Student evaluates the effectiveness of existing solutions with highly relevant examples.
Analyse the social, ethical and legal responsibilities	Student attempts to identify a social or ethical or legal responsibility associated with the system.	Student identifies social or ethical or legal responsibilities associated with the mechatronic system.	Student outlines some social, ethical and legal responsibilities associated with the mechatronic system.	Student describes a range of relevant social, ethical and legal responsibilities associated with the mechatronic system.	Student analyses a wide range of social, ethical and legal responsibilities associated with the mechatronic system.
Criteria	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10
Diversity Discussion	Student attempts to identify how the chosen system does/does not meet the needs of Aboriginal or Torres Strait Islander People or People of Different Ages and Gender or People with Disabilities	Student identifies how the chosen system does/does not meet the needs of Aboriginal and Torres Strait Islander People or People of Different Ages and Gender or People with Disabilities	Student outlines some ways in which the chosen system does/does not meet the needs of Aboriginal and Torres Strait Islander People; Aboriginal and Torres Strait Islander People; People of Different Ages and Gender and People with Disabilities	Student describes a range of methods of how the chosen system does/does not meet the needs of Aboriginal and Torres Strait Islander People; People of Different Ages and Gender and/or People with Disabilities	Student clearly describes how the chosen system does/does not meet the needs of Aboriginal and Torres Strait Islander People; People of Different Ages and Gender and People with Disabilities

Criteria	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10
Career Discussion	Student attempts to identify ONE career aspect in the mechatronics industry and/or provides a limited outline of the aspect identified.	Student identifies and outlines at least TWO career aspect in the mechatronic industry OR describes ONE aspect of the career.	Student identifies and outlines FOUR aspects of the career OR describes at least TWO career aspects in the mechatronic industry.	Student identifies and describes at least THREE career aspects in the mechatronic industry with relevant examples.	Student identifies and explains all FOUR aspects of careers in the mechatronics industry with highly relevant examples.
Criteria	1	2	3		
APA Referencing	Incorrect referencing used in their research report or includes limited number of sources	Incomplete APA referencing used for research report and includes some relevant sources	Correct APA referencing used for research report including an appropriate amount of sources		
					OVERALL TOTAL / 39

Literacy Criteria

Literacy Outcomes	Elementary achievement You have:	Limited achievement You have:	Satisfactory achievement You have:	High achievement You have:	Outstanding achievement You have:
	0	0.25	0.5	0.75	1
Vocabulary <i>Uses technical vocabulary to explain concepts and/or range of precise and appropriate words for effect</i>	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.
Punctuation <i>Use of correct and appropriate sentence and other punctuation for effect, and to aid in reading of the text</i>	No evidence of correct sentence punctuation.	Sentence punctuation is correctly used in at least one place - <i>one sentence is punctuated correctly.</i>	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.
Sentences & Cohesion <i>The intentional construction of a variety of sentences to match purpose and audience, and the control of multiple sentence threads across the whole text.</i>	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)
Paragraphs <i>Paragraphs are used to effectively structure information and partition events and ideas</i>	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.
Text Structure <i>Uses features of the appropriate text type</i>	No evidence of the structural features of the appropriate text type. <i>No attempt to write in the appropriate text type and/or response is off task.</i>	Minimal evidence of the structural features - <i>1 component evident</i> - of the appropriate text type.	Some evidence of the structural features - <i>2 components evident</i> - of the appropriate text type.	Substantial evidence of the structural features - <i>all components evident but there may be some lapses</i> - of the appropriate text type.	Coherent and controlled use of all the appropriate structural features of the text type.
	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 Total / 5

Grand Total / 44