Gymea Technology High School
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Year 11, Physics

Task 3: Depth Study

Due Date: Thursday 24/08/2023 3pm

Task Distributed: 05/08/2023

Unit: Module 4

Task Type: Depth Study

Task Weighting: 30%

Outcomes:,PH11/12-5,PH11/12-6,PH11/12-7, PH11-11

Task Description

In 1845, a German physicist, **Gustav Kirchhoff** developed a pair or set of rules or laws which deal with the conservation of current and energy within electrical circuits.Kirchhoff's first law applies to currents at a junction in a circuit. It states that at a junction in an electrical circuit, the sum of currents flowing into the junction is equal to the sum of currents flowing out of the junction. Kirchhoff's second law applies to voltage drops across components in a circuit. It states that around any closed loop in a circuit, the directed sum of potential differences across components is zero.

This depth study will involve analysis of a practical investigation into **Kirchhoff's First Law**. You will be required to write the discussion of a scientific report given the results that a student has obtained to demonstrate this law.

Your task:

You will be given an incomplete scientific report that a student has started. They have written their aim, hypothesis, method and results. You will then analyse their results and write a discussion for the scientific report

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.

- **Explain**
  Relate cause and effect; make the relationships between things evident; provide why and/or how
- **Analyse**
- Identify components and the relationship between them; draw out and relate implications

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

A printed copy of your Depth Study must be handed in to your teacher by 3pm on the due date.

Teacher Feedback and Student Self-Reflection

- The task will typically be returned to students within 14 of the due date.
- At this time feedback including information on how to improve will be provided through written annotations on your assessment.
- Students can clarify or seek further feedback by speaker with their teacher or the assessment marker.

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

This will be written self reflection activity where students should identified strengths and weaknesses.

How does this link to my learning?

- This depth study will demonstrate student ability analyses and evaluates primary and secondary data and information
- The depth study will enable students to further develop of one or more concepts found within or inspired by the syllabus.

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.

PART 1 *Outcomes*	**0 marks**	**1 mark**	**2 marks**	**3 marks**	**Marks**
Analysing data and information PH11/12-5 analyses and evaluates primary and secondary data and information	No Discussion of Results	Communicates interpretation of results. May show some linkage to background research	Succinctly and logically communicates interpretation of results, showing extensive linkage to background research		
Problem solving PH11/12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes	No Discussion of Accuracy	Discussion of some equipment and limitations	Extensive discussion of relevant equipment and limitations of accuracy		
	No Discussion of Reliability	Discussion about reliability but may be incomplete or does not link to results	Extensive discussion of reliability with specific reference to results		
	No Discussion of Validity	Discussion about validity but may be incomplete or does not link to experimental method, design and variables	Succinct and logical discussion of validity with specific reference to experimental method, design and variables		

	No improvements in experiment discussed.	Discussion about mistakes, accuracy, reliability and validity and potential improvement of each of these aspects but maybe incomplete or missing sections	Communicates succinctly and logically an understanding of mistakes, accuracy, reliability and validity and potential improvement of each of these aspects.		
Communicating PH11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose	Report is very brief with sections missing and with incorrect information.	Report is brief AND/OR difficult to read. Sections miss key information or contain incorrect information.	Uses appropriate language on the whole for a specific audience and displays good written communication but it does contain areas that are unclear or hard to understand.	Uses appropriate language proficiently for a specific audience and displays very high quality written communication which is clear and concise.	
	Most of the report is grammatically incorrect.	Spelling, grammar, and formatting have many errors.	Spelling, grammar, and formatting of report is to good standard but contains some errors.	Spelling, grammar, and formatting of report is to a very high standard and adds to clarity of writing. There are very minor or no errors.	
	No reference list.	The reference list is missing or contains many mistakes and missing.	There is a reference list that contains all sources used in text. The sources are referenced with a few mistakes and inconsistencies.	There is a reference list that contains all sources used in text. The sources are consistently and correctly referenced with minor or no mistakes.	
Analysing data and information PH11/12-5 analyses and evaluates primary and secondary data and information	Explanation is very brief with sections missing and with incorrect information.	Explanation is brief AND/OR difficult to read. Sections miss key information or contain incorrect information.	Uses appropriate language on the whole for a specific audience and displays good written communication but it does contain areas that are unclear or hard to understand.	Uses appropriate language proficiently for a specific audience and displays very high quality written communication which is clear and concise.	
	Most of the explanation is grammatically incorrect.	Spelling, grammar, and formatting have many errors.	Spelling, grammar, and formatting of report is to good standard but contains some errors.	Spelling, grammar, and formatting of report is to a very high standard and	

Problem solving PH11/12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes				adds to clarity of writing. There are very minor or no errors.	
	No reference list.	The reference list is missing or contains many mistakes and missing.	There is a reference list that contains all sources used in text. The sources are referenced with a few mistakes and inconsistencies.	There is a reference list that contains all sources used in text. The sources are consistently and correctly referenced with minor or no mistakes.	
Communicating PH11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose	No evaluation of secondary sources.	There are some comments as to the relevance OR accuracy OR validity OR reliability of secondary sources. This may be weak.	There is an evaluation of secondary sources including relevance, accuracy, validity and reliability. Some aspects may be missing.	There is a very well-developed evaluation of secondary sources for relevance, accuracy, validity and reliability.	

TOTAL / 3