



JOHN EDMONDSON HIGH SCHOOL

Assessment Notification

Faculty: Science Course: Investigating Science Year: 11

Assessment Task: Depth Study

Assessment Weighting: 30% Due: Term 1 Week 10 Date: 4/4/2024 8:25am on Canvas

Task Type: Hand in Task In Class Task Practical Task

Outcomes assessed (NESA)

- develops and evaluates questions and hypotheses for scientific investigation INS11/12-1
- designs and evaluates investigations in order to obtain primary and secondary data and information INS11/12-2
- conducts investigations to collect valid and reliable primary and secondary data and information INS11/12-3
- selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media INS11/12-4
- analyses and evaluates primary and secondary data and information INS11/12-5
- communicates scientific understanding using suitable language and terminology for a specific audience or purpose INS11/12-7
- identifies that the collection of primary and secondary data initiates scientific investigations INS11-8

Task Description/Overview

You are to develop an investigation question that you will then explore through experimentation. You are required to design experiment/s, conduct them, review and modify as suitable. You are required to include an investigation report.

Detailed Assessment Task Description

As part of your studies in Investigating Science, you have been studying how scientists' initial observations and discoveries opened up new opportunities for further scientific investigation.

Your task is to select one of the topics provided below. You are then required to plan and conduct an investigation on your selected topic and submit a final Scientific Investigation Report.

Topics:

- Collision Theory (Chemistry)
- Enzyme Activity (Biology)
- Pendulum Swing (Physics)

The following equipment and materials will be provided for you:

Collision Theory	Enzyme Activity	Pendulum Swing
<ul style="list-style-type: none"> - Sulfuric acid (0.5-1M) - Hydrochloric acid (0.5-2M) - Magnesium strip (1cm) - Berocca Tablet - Kettle - Ice - Measuring Cylinder - Stopwatch - Test tube - Beakers of various sizes - Mortar and pestle 	<ul style="list-style-type: none"> - Potato - Mortar and pestle - 100 mL measuring cylinder - 30 cm ruler - 6% hydrogen peroxide - 15% hydrogen peroxide - 25% hydrogen peroxide - 4 x large test tubes - Thermometers - Cutting board - Knife - Electronic scale - Plastic pipette - Stopwatch - Dishwashing soap - Vegetable peeler 	<ul style="list-style-type: none"> - Retort stand - Clamp - String - Ruler - Slotted masses - Blu Tac - Electronic scales - Stopwatch - Scissors

Your scientific investigation report should include:

- Title
- Scientific research question
- Background research (approx. 200 words)
- Scientific hypothesis
- Methodology (variables, equipment, method, risk assessment)
- Results (tabulated, graphed and photos)
- Discussion (approx. 600 words)
- Conclusion (approx. 250 words)
- Reference list (as per school website)
- Appendices

This task is to be completed as a component of the Year 11 Depth Study requirements and approximately **NINE lessons during Week 6-8, Term 1** will be used to complete the task.

Lesson breakdown:

- Lesson 1 and 2: (Week 6 Thursday p. 1 and 2) Select equipment and conduct a risk assessment - get teacher approval.
- Lesson 3: (Week 6 Friday P. 4) Plan investigation

- Lessons 4-5: (Week 7 Thursday p. 1-2) Conduct investigations and gather data
- Lesson 6: (Week 8 Monday p. 5) Data analysis or catch up practical
- Lesson 7 and 8: (Week 8 Thurs p. 1 and 2) Writing up final Scientific report
- Lesson 9: (Week 9 p. 6) Finalising Report

At the completion of the time allocated to the depth study you are to submit a final **Scientific Report** of your investigation on Canvas by 8:25am April 4.

Assessment Criteria		
Grade	Description	Mark Range
Outstanding (O)	Student has demonstrated an extensive knowledge and understanding. Student represented quantitative data in a range of appropriate formats using digital technologies. Student communicated scientific understanding effectively using language that is clear and succinct to present a logical and cohesive report that followed the guidelines provided.	84.5-100
High (H)	Student has demonstrated a thorough knowledge and understanding. Student represented quantitative data in a range of appropriate formats. Student communicated scientific understanding using language that is mostly clear to present a well-organised report that followed the guidelines provided.	69.5-84
Sound (S)	Student has demonstrated a sound knowledge and understanding of circular motion. Student represented quantitative data in a range of appropriate formats. Student communicated scientific understanding using language that is mostly clear to present a report that followed the guidelines provided.	49.5-69
Basic (B)	Student has demonstrated a basic knowledge and understanding of circular motion. Student represented data in a logical format. Student communicated scientific understanding using basic language with limited scientific terminology to present a report that follows some guidelines.	27.5-49
Limited (L)	Student has demonstrated a limited knowledge and understanding of circular motion. Student represented data disorganised and not in an appropriate format. Student communicated scientific understanding using basic language to present a report that lacks any structure.	0-27

Satisfactory completion of courses

A course has been satisfactorily completed, when the student has:

- Followed the course developed/endorsed by the NSW Educational Standards Authority (NESA)
- Applied himself/herself with diligence and sustained effort to the set tasks and experiences provided in the course.
- Achieved some or all of the course outcomes

Marking Rubric

Marks	4	3	2	1	0
COMMUNICATING (PH11-7)					
Proposal		Proposed inquiry question included, list of equipment required, risk assessment completed	Missing one detail	Missing two details	Missing three details or proposal was not submitted on time
Abstract	Summarises the question, method, key results and conclusion	Missing one detail	Missing two details	Missing three details	No abstract included
QUESTIONING AND PREDICTING (PH12-1)					
Introduction	Relevance of the experiment, important background and theory with references	Relevance of the experiment, important background and/or theory with references	Purpose of the experiment, important background and/or theory with no references	Purpose of the experiment OR important background/theory stated	No introduction included
Aim				Begins with the word 'To' and includes how the independent variable affects the dependent variable	No aim included or poorly written
Hypothesis				Clear statement about the predicted outcome	No hypothesis included or poorly written
PLANNING INVESTIGATIONS (PH12-2)					
Risk Assessment			In table format, 2+ risks identified and minimised	In table format, 1 risk identified and minimised	No risk assessment provided
Appropriate Method	Clear relevant steps are included in logical order, appropriate measuring technique with calculations included and repetition included	3 of the "4 mark" criteria	2 of the "4 mark" criteria	1 of the "4 mark" criteria	No method included
PROCESSING DATA AND INFORMATION (PH12-4)					
Table		Data recorded appropriately in table, trials & averages included, independent and dependent variable with correct units labelled	Missing one detail	Missing two details	No results recorded

Graph			Correct & appropriate use of graphs. All axis with units identified, appropriate title and line drawn correctly	Missing details	No graph included
ANALYSE DATA AND INFORMATION (PH12-5)					
Discussion Analysis of results & data incorporated in discussion			Explains trends, patterns and relationships in data and information	Identifies trends, patterns and relationships in data and information with limited analysis	Presents data with limited analysis
Reliability			Evaluates the reliability of the data	Discusses the reliability of the data	Presents limited aspects of reliability
Validity			Evaluates the validity of the data	Discusses the validity of the data	Presents limited aspects of validity
Sources of error		2 or more errors of investigation are discussed with reference to validity, reliability and accuracy	2 or more errors of investigation are discussed	1 error of investigation is discussed	No errors of investigation are discussed
Improvements suggested			2 or more significant improvements of investigation are discussed	1 improvement of investigation is identified	No improvements of investigation are identified
Conclusion				Concisely answers aim	Poorly written conclusion/conclusion not included
COMMUNICATING (PH12-7)					
Scientific language used			Correct tense used, punctuation and homophones. Less than 3 grammatical errors throughout report	3-5 grammatical errors throughout report	Grammatical errors throughout report
References			3 or more different sources referenced as per school website	1-2 sources referenced as per school website	No sources listed or not referenced as per school website
Marks Awarded				/40	