JOHN EDMONDSON HIGH SCHOOL
Assessment Notification

Faculty: Science Course: Investigating Science Year: 12

Assessment Task: Practical Investigation and Report

Assessment Weighting: 30% Due: Term 1 Week 9 Date: 25/3/24

Task Type: Hand in Task ☒ In Class Task ☒ Practical Task ☒

Outcomes assessed (NESA)
INS11/12-1 - develops and evaluates questions and hypotheses for scientific investigation INS11/12-2 - designs and evaluates investigations in order to obtain primary and secondary data and information INS11/12-3 – conducts investigations to collect valid and reliable primary data and secondary data and information INS11/12-4 – selects and processes appropriate qualitative and quantitative data and information using a range of media INS11/12-5 – analyses and evaluates primary and secondary data and information INS11/12-7 – communicates scientific understanding using suitable language and terminology for a specific audience or purpose INS12-13 – describes and explains how science drives the development of technologies
Task Description/Overview
In class, you will conduct a practical investigation during class time to collect data to investigate **the effect of temperature on reaction rate**. You will compare the use of analogue and digital technologies to collect data in your investigation. You will communicate and submit your findings in a scientific report. **Practical Investigation:** You will be investigating the effect of temperature on the rate of reaction of sodium thiosulfate with hydrochloric acid. The reaction, which produces solid sulfur, will be followed by measuring the time needed for the reaction mixture to become opaque. The general method is as follows: 1. Prepare 10 mL of 0.2M hydrochloric acid (Solution A) 2. Place 40 mL of 0.2M sodium thiosulfate into flask (Solution B) 3. Alter the temperature of Solution B 4. Mix Solution A and Solution B 5. Record the time taken for the reaction while continuously stirring You have access to all the glassware in the class lab and to thermometers and temperature data loggers.
Detailed Assessment Task Description
Your scientific investigation report should include:

- A title
- Background research
- A scientific research question
- A scientific hypothesis
- Methodology
- Results
- Discussion
- Conclusion
- Reference list

Your scientific report must also include in the appropriate sections:

- Risk assessment
- A comparison of the analogue and digital technologies used
- Evaluation of the limitations of the technology used

You are to submit a **final report** of your investigation in CANVAS which will go through Turnitin for plagiarism check.

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 qunatitative 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 scientfic 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	**0-27**

	data disorganised and not in an appropriate format. Student communicated scientific understanding using basic language to present a report that lacks any structure.	

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 CRITERIA				
Outcomes	**Outstanding: 4**	**High: 3**	**Sound: 2**	**Developing: 0-1**
INS11/12-1 develops and evaluates questions and hypotheses for scientific investigation	- aim and hypothesis are clearly stated relating the independent and dependent variables appropriately - conclusion answers the aim, addresses the hypothesis, and suggests further experiments	- aim and hypothesis are stated addressing the independent and dependent variables appropriately - conclusion answers the aim and addresses the hypothesis	- aim and hypothesis are stated describing the independent and dependent variables - conclusion answers the aim OR addresses the hypothesis	- aim and hypothesis are stated - conclusion partially addresses the aim OR the hypothesis
INS11/12-2 designs and evaluates investigations in order to obtain primary and secondary data and information	- method for collecting data is appropriate, well designed, systematic and logical - method explains how independent, dependent and controlled variables are used or maintained - materials list is detailed and chosen technologies allow for accurate data to be collected - method clearly describes which technologies will be employed to collect data	- method for collecting data is appropriate and well designed - method describes how independent, dependent and controlled variables are used or maintained - materials list includes all materials necessary for investigation - method makes reference to technologies	- method for collecting data is appropriate - method addresses independent, dependent and controlled variables - materials list is included	- method for collecting data is described - materials list is included
INS11/12-3 conducts investigations to collect valid and reliable primary data and secondary data and information **INS11/12-4** selects and processes appropriate qualitative and quantitative data and information	-results are organised correctly. -tables have appropriate headings and units; correct type of graph is used; graphs are well constructed and show the line or curve of best fit where appropriate	-results are organised and meaningful; most scientific conventions are followed	-results are organised but are not presented using scientific conventions	-results not presented appropriately.
INS11/12-5 analyses and evaluates primary and secondary data and information	- discussion shows use of the data to derive trends, patterns and relationships. It assesses error and limitations in data, including accuracy and precision of results. - The student correctly uses a control and justifies its use. Reliability and validity are justified and evaluated.	-discussion shows use of the data to derive trends, patterns and relationships. It assesses error or limitations in the data with some omissions or incorrect statements. - Validity and reliability are justified and/or evaluated with some omissions or lack of depth.	- discussion identifies a trend, pattern or relationship in the data. It attempts to assess error or limitations in the data. - Validity and reliability are discussed in the discussion, however, they are poorly evaluated or not evaluated at all.	- Discussion attempts to identify a trend, pattern or relationship in the data. - It mentions validity and/or reliability.
INS11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose	- consistently uses language that is clear and precise including accurate relevant scientific terminology and information - provides an accurate reference list using the appropriate referencing style - report organised, and includes all sections in correct order	- uses language that is mostly clear and precise with accurate and relevant scientific terminology and information -provides an accurate reference list using the appropriate referencing style some minor errors -report includes most sections in correct order	- uses language that is mostly clear and relevant with accurate scientific terminology and information - provides a reference list using the appropriate referencing style that may be limited and/or have minor errors - report includes some sections in correct order	- uses basic scientific terminology with limited information - provides a reference list attempting to use the appropriate reference style - uses an appropriate presentation style - report includes information but does not address sections of

				scientific report
INS12-13 describes and explains how science drives the development of technologies	- discussion shows a sophisticated understanding of the relationship between science and technology - provides justification for possible errors in results and suggests improvements - assesses safety of chemicals/technologies used with reference to the chemical safety data	- discussion shows some understanding of the relationship between science and technology and/or - provides suggestions for limitation of errors - assesses the safety of chemicals /technologies used	- importance of technology is stated and/or - identifies reasons for errors/ limitations - describes how safe work practices were followed	- discussion shows basic understanding of importance of technology or errors - shows basic understanding of safety issues