ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	HSC Investigating Science
Topic	All topics in the Year 12 course
Class Teacher	Mr A Routh
Head Teacher	Mr P Shea
Year	12 HSC
Date Given	Week 2 Monday 6th of May
Date Due	Week 7 Friday 14th of June **(8:30am – 9am in the library)**
Weighting	25%

Assessment Outline

Students are required to produce a science style magazine. (This will allow students to deepen their knowledge of the course content) This magazine must have 5 separate double pages of articles (example on task detail outline sheet.), aimed at a HSC Year 12 student. Students will research FIVE major concepts from at least 3 topic areas on any of the four Investigating Science Modules from the Year 12 course (Module 5 'Investigations', Module 6 'Technologies', Module 7 'Fact or Fallacy' and Module 8 'Science in society') (ONE concept per double page spread).

Students are to describe the concept, and explain the science involved in each of the concepts. They must present this information as a double page spread created as a digital product that can be printed for each concept. They must link each double page spread to the content points, within the relevant Inquiry Questions from the syllabus.

For additional information, please see the attached task detail outline sheet.

Non-completion of Task:
If you know you are going to be away on the day that the task is due, you must follow illness/misadventure procedures and make alternative arrangements with your teacher beforehand. If you are suddenly away on the day that the task is due, you must contact your teacher or Head Teacher on your return to school. Documentation will be required to support your claim for illness/misadventure.

Plagiarism:
Plagiarism, the using of the work of others without acknowledgement will incur serious penalties and may result in zero award. Any cheating will also incur penalties.

Failure to follow the above procedures may result in a zero award.
The policies and procedures that are outlined on the ROSA booklet will be followed regarding the non-completion of assessment tasks.

Outcomes Assessed

INS12-4 Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
INS12-5 Analyses and evaluates primary and secondary data and information
INS12-6 Solves scientific problems using primary and secondary data, critical thinking skills and scientific processes
INS12-7 Communicates scientific understanding using suitable language and terminology for a specific audience or purpose
INS12-12 Develops and evaluates the process of undertaking scientific investigations
INS12-13 Describes and explains how science drives the development of technologies
INS12-14 Uses evidence-based analysis in a scientific investigation to support or refute a hypothesis
INS12-15 Evaluates the implications of ethical, social, economic and political influences on science

Orange High School
Stage 6, Assessment 3, 2019
Subject: Investigating Science Year: 12

Topics – All

<u>Task Detail Outline Sheet</u>

Students are required to produce a science style magazine. (This will allow students to deepen their knowledge of the course content) This magazine must have 5 separate double pages of articles (example on task detail outline sheet.), aimed at a HSC Year 12 student. Students will research FIVE major concepts from at least 3 topic areas on any of the four Investigating Science Modules from the Year 12 course (Module 5 'Investigations', Module 6 'Technologies', Module 7 'Fact or Fallacy' and Module 8 'Science in society') (ONE concept per double page spread).

Students are to:

a) Describe the scientific concept from any of the four topics,
b) Explain the science involved in each of the concepts.
c) All the information needs to be converted into their own words.
d) Present each concepts information as a double page spread, created as a digital product that can be printed (this will include information, pictures, headings, graphs etc).
e) They must link each double page spread to the dot points in the syllabus.
f) Each concept needs to link to at least 4 different websites, journal articles, textbooks etc.
g) Must present an overall bibliography for the entire assessment task. (roughly 20 resources used).
h) **A PHYSICAL COPY OF THE TASK MUST BE HANDED INTO MR ROUTH IN THE LIBRARY BETWEEN 8:30AM – 9AM ON JUNE THE 14TH.**

<u>Planning:</u>

1. Choose **FIVE** concepts from any of the topics.
2. Decide how you will present your work. (Using Word, Publisher, SWAY or Google Sites etc).
3. Research your chosen concept, and write a description, including images, if needed.
4. Investigate the science behind each concept.
5. Link the concepts to the dot points in your syllabus.
6. Find images relevant to your concepts (make sure you reference where you found your images). You might include scientific diagrams, pictures, graphs showing relevant data, graphics.
7. Also hand in a list of all your sources (bibliography) on a separate sheet.

Presenting (making the double article spread):

1. Your assessment must be in the form of printable digital product (eg, publisher or word).
2. On the **DUE** date you must hand in a printed version to Mr Routh in the library.
3. Use visual images to make your double spread appealing to your target audience.
4. Use scientific terminology, eg, surfactant, sinoatrial valve, biodegradability and explain what these terms mean based on your Year 12 target audience.
5. Below is an example of a double spread article featured in a Science magazine (Double Helix). – This gives you an idea of how it could look.

IMAGINING THE FUTURE

By Simon Torok and Paul Holper

We're living in a rapidly changing world. Hardly a week passes without an exciting technological breakthrough. That's the power of human innovation – it never stops happening. Inventors keep inventing.

Mind reading, invisibility, instant transportation and lots of gadgets were once the dreams of science fiction … now they might become science fact! Imagining the future is the first step in arriving there. If you can dream it, perhaps one day you can invent it.

Strap yourself in and get ready for the future!

This article is an excerpt from *Imagining the Future*, a new book from CSIRO Publishing. Get prepared for the fantastic future with this guide to the unbelievable and incredible inventions just over the horizon.

Flip to page 23 to see this book reviewed by *Double Helix* reader, Nick Bouletos.

IMAGINING THE FUTURE
invisibility, immortality and 40 Other Incredible Ideas
Simon Torok and Paul Holper

WHAT'S ON YOUR MIND?

to know what your friends are really thinking?

MUSICAL BRAINWAVE

Mind reading is certainly possible – if you have the assistance of specialised brain imaging.

A medical technique called magnetic resonance imaging (MRI) measures changes in blood flow within the brain. When a part of the brain is more active, it needs more oxygen and attracts greater blood flow.

University of Washington scientists thought that nerve cells in the area of the brain that processes sound might respond to different sound frequencies. If that happened, perhaps you could use imaging to work out what music someone is listening to. Volunteers listened to different songs while having their brains scanned by the MRI machine. Sure enough, the scientists were able to identify songs such as *Twinkle, Twinkle, Little Star* from the brain scans.

In a separate study, imaging showed whether people were listening to quick, medium or slow-paced piano music. Brain activity matched the speed of the music. For example, when people listened to music playing at eight notes per second, their brain waves occurred eight times per second.

University of California researchers recorded brain activity in seven patients who were having brain surgery as part of treatment for a condition called epilepsy. During brain surgery, a patient has to be awake, to make sure that the doctors don't accidentally harm any parts of the brain.

The patients in the study read text on a screen during the surgery. First, they read the text aloud while the researchers recorded the pattern of brain nerve cell activity. Then the patients read the text silently to themselves, while the researchers matched the nerve cell activity with the pattern seen while the patient was reading the words aloud. During the surgery, the researchers could link the patients' brain activity patterns with individual words. The recordings weren't perfect, but they could determine which words some of the patients were thinking just from their brain patterns.

A magnetic resonance imaging machine

Scientists can identify some songs from brain scans like these

MILLION DOLLAR READINGS

Having paranormal powers will do more

James Randi is a former stage magician. He doesn't believe in the paranormal, occult or the supernatural. The James Randi Educational Foundation offers a

Record all your sources of information using the following structure

BOOKS				
Author(s)	**Date of publication in brackets**	**Title of book in italics**	**Name of publisher**	
Example: Keay, J.	(2000).	*The Great Arc.*	Harper Collins.	
WEBSITES				
Author	**Date published if available**	**Title of Article**	**Title of website in italics**	**From URL**
	If no date available write (n.d.)			
Example: Landsberger, J.	(n.d.)	Citing Websites.	In *Study Guides and Strategies.*	http://www.studygs.net/citation.htm**.**
MAGAZINES				
Author	**Date**	**Title of Article**	Name of Magazine	Volume, issue, pages
Example: Tumulty, K	(2006, April).	Should they stay or should they go?	*Time*	*167*(15), 3-40.
PERSONAL CONVERSATIONS AND EMAILS				
Person's name	**Date**	**How you know them**	**Nature of communication**	
Example: Mr B. Rock	**12/7/16**	Geologist and uncle	email	
VIDEOS, DVDS, TV SHOWS ETC				
Producer and writer / director or for youtube the person who uploaded video	**Date**	**Title and type of resource**	**Country and company producing video / or the URL**	
Example: Fothergill, A. (producer), Attenborough, D. (narrator).	(2005)	The Blue Planet – Coral Seas [DVD]	UK, BBC.	

Name: _____

Year 12 Magazine Assessment Task marking rubric – Term 2, 2019

INS12-4 Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
INS12-5 Analyses and evaluates primary and secondary data and information
INS12-6 Solves scientific problems using primary and secondary data, critical thinking skills and scientific processes
INS12-7 Communicates scientific understanding using suitable language and terminology for a specific audience or purpose
INS12-12 Develops and evaluates the process of undertaking scientific investigations **AND/OR**
INS12-13 Describes and explains how science drives the development of technologies **AND/OR**
INS12-14 Uses evidence-based analysis in a scientific investigation to support or refute a hypothesis **AND/OR**
INS12-15 Evaluates the implications of ethical, social, economic and political influences on science

Must select 3 or 4 Modules to obtain the maximum possible marks. (INS12-12 to INS 12-15)

Outcome and content addressed	Extensive	Thorough	Sound	Basic	Limited
INS12-7 Communicates scientific understanding using suitable language and terminology for a specific audience or purpose	5 • Summarised the information from secondary sources in their own words • Sophisticated language and sentences used. • Scientific terminology is used extensively. • Terms have been explained in a way that a Year 12 student could understand.	4 • Summarised the information from secondary sources in their own words • Sophisticated language and complex sentences used. • Scientific terminology is used thoroughly. • Terms have been explained in a way that a Year 12 student could understand.	3 • Summarised the information from secondary sources in their own words • Complex language and standard sentences used. • Scientific terminology is somewhat used. • Terms have been explained in a way that a Year 12 student could understand.	2 • Most of the information in their own words • Standard language used. • Scientific terminology present	1 • Most of the information in their own words • Standard language used.
INS12-4 Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media	5 • Student have made highly effective use of written text, pictures, maps, graphs and/or graphics to communicate the information. • Graphical representations of data are accurate and appropriate and enhance the meaning of the student's article. • Digital technology has been implemented in a highly effective way to communicate information in a format that enhances its impact.	4 • Student have made effective use of written text, pictures, maps, graphs and/or graphics to communicate the information. • Graphical representations of data are accurate and appropriate and enhance the meaning of the student's article. • Digital technology has been implemented in an effective way to communicate information in a format that enhances its impact.	3 • Student have used written text, pictures, maps, graphs and/or graphics to communicate the information. • Graphical representations of data are appropriate and enhance the meaning of the student's article. • Digital technology has been implemented to communicate information.	2 • Student have used written text, pictures, maps, graphs and/or graphics simply. • Graphical representations of data are appropriate. • Digital technology has been implemented to communicate information.	1 • Student have used written text, pictures, maps, graphs and/or graphics simply. • Graphical representations of data are appropriate.
INS12-12 Develops and evaluates the process of undertaking scientific investigations **AND/OR** INS12-13 Describes and explains how science drives the development of technologies **AND/OR** INS12-14 Uses evidence-based analysis in a scientific investigation to support or refute a hypothesis **AND/OR** INS12-15 Evaluates the implications of ethical, social, economic and political influences on science	5 • The information includes an extremely detailed outline of all **FIVE** scientific concepts • This is supported in extreme detail by evidence from the student's research. • Concepts from at least 3 different topics have been researched.	4 • The information includes a detailed outline of all **FIVE** scientific concepts • This is supported in detail by evidence from the student's research. • Concepts from at least 3 different topics have been researched.	3 • The information includes an outline of all **FIVE** scientific concepts • This is supported by evidence from the student's research. • Concepts from at least 3 different topics have been researched.	2 • The information includes a simple outline of all **FIVE** scientific concepts • This is supported by simple evidence from the student's research. • Concepts from at least 2 different topics have been researched.	1 • Simple outline of **3 – 4** scientific concepts • Concepts from at least 2 different topics have been researched.

INS12-12 Develops and evaluates the process of undertaking scientific investigations **AND/OR** INS12-13 Describes and explains how science drives the development of technologies **AND/OR** INS12-14 Uses evidence-based analysis in a scientific investigation to support or refute a hypothesis **AND/OR** INS12-15 Evaluates the implications of ethical, social, economic and political influences on science	5 • Student have included information that has been retrieved from a wide variety of types of sources. • The information is accurate and detailed as well as being relevant to the chosen concept. • The students' bibliography demonstrates that a wide range (20) of different types of sources has been used. Eg scientific articles and websites, newspaper articles, videos. • The sources are consistently and accurately listed following the scaffold provided with no mistakes. 20 + sources used.	4 • Student have included information that has been retrieved from a variety of types of sources. • The information is accurate and detailed as well as being relevant to the chosen concept. • The students' bibliography demonstrates that a wide range (20) of different types of sources has been used. • The sources are consistently and accurately listed following the scaffold provided with one mistake. 20 + sources used.	3 • Student have included information that has been retrieved from a variety of types of sources. • The information is detailed as well as being relevant to the chosen concept. • The students' bibliography demonstrates that a wide range (15 -20) of different types of sources has been used. • The sources are consistently and accurately listed following the scaffold provided with few mistakes. 15 - 20 sources used.	2 • Student have included information that has been retrieved from a variety of types of sources. • The information is relevant to the chosen concept. • The sources are consistently listed following the scaffold provided with few mistakes. 5 - 14 sources used.	1 • Student have included information that has been retrieved from sources. • The information is relevant. • The sources are listed following the scaffold provided with several mistakes. 2 - 10 sources used.
INS12-12 Develops and evaluates the process of undertaking scientific investigations **AND/OR** INS12-13 Describes and explains how science drives the development of technologies **AND/OR** INS12-14 Uses evidence-based analysis in a scientific investigation to support or refute a hypothesis **AND/OR** INS12-15 Evaluates the implications of ethical, social, economic and political influences on science	10 – 9 • Student have explained in outstanding detail the science involved in each of the **FIVE** concepts. • Discuss the application in society for **ALL** five concepts • Describe possible future directions in great detail.	7 – 8 • Student have explained in great detail the science involved in each of the **FIVE** concepts. • Discuss the application in society for **ALL** five concepts • Describe possible future directions in good detail.	5 – 6 • Student have explained in good detail the science involved in each of the **FIVE** concepts. • Discuss the application in society for **some** concepts • Discuss possible future directions in some detail	3 – 4 • Student explains the science involved in each of the **FIVE** concepts to a simple level • Discuss the application in society for **some** concepts • Identify possible future directions	1 – 2 • Explains the science involved in most concepts to a simple level • Identify the application in society for **some** concepts • Identify possible future directions
INS12-5 Analyses and evaluates primary and secondary data and information INS12-6 Solves scientific problems using primary and secondary data, critical thinking skills and scientific processes	5 • Student have linked each article to the associated dot points (4+) in the syllabus. • This must be noted on each article magazine spread.	4 • Student have linked each article to the associated dot points (3) in the syllabus. • This must be noted on each article magazine spread.	3 • Student have linked each article to the associated dot points (3) in the syllabus. • Noted on a separate page.	2 • Student have linked each article to the associated dot points (2) in the syllabus. • Noted on a separate page.	1 • Student have linked each article to the associated dot point in the syllabus. • Noted on a separate page.

Grade	**Outstanding**	**High**	**Sound**	**Basic**	**Limited**
Mark	**35 – 32** **(A)**	**31 – 27** **(B)**	**26 – 12** **(C)**	**11 – 5** **(D)**	**4 – 0** **(E)**

Total - /35 (Knowledge and Understanding = 15% and Working Scientifically = 10%)

Comment:

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