 Scientists

Learning across the curriculum – literacy

Outcomes

Values and attitudes

SC4-1VA appreciates the importance of science in their lives and the role of scientific inquiry in increasing understanding of the world around them

Working scientifically

SC4-WS9 presents ideas, findings and information to a given audience using appropriate scientific language, text types and representations

* 1. selecting and using in presentations, for different purposes and contexts, appropriate text types including discussions, explanations, expositions, procedures, recounts or reports
	2. selecting and constructing an appropriate table, type of diagram, table or graph (histogram or sector, column or line graph) to present information and show relationships clearly and succinctly using digital technologies as appropriate
	3. using appropriate units for physical quantities and symbols to express relationships, including mathematical ones

Knowledge and understanding

Depending on the scientist chosen, this task may also contribute to:

* SC4-11PW
* SC4-13ES
* SC4-15LW
* SC4-17CW

Learning across the curriculum

Cross-curriculum priorities

☐Aboriginal and Torres Strait Islander histories and cultures

☐Asia and Australia's engagement with Asia

☐Sustainability

General capabilities

☐Critical and creative thinking

☒Ethical understanding

☐Information and communication technology capability

☐Intercultural understanding

☒Literacy

☐Numeracy

☒Personal and social capability

Other areas of learning

☐Civics and citizenship

☐Difference and diversity

☒Work and enterprise

Teacher notes

This assessment task aims at developing students understanding and writing of historical recounts using the context of the history of science and scientists. This research task highlights the contributions of scientists from around the world to the development of science. It highlights how the work of dedicated scientists changes the world we live in.

Students could be asked to imagine if they were to be a working scientist in a field of science. They could be asked to investigate what qualifications they would need and how they could pursue this career path. Teacher could allocate scientists or have them randomly selected with scope to have strategic division between the genders and cultural backgrounds of the scientists. Inclusion of indigenous scientists/engineers/inventors may raise awareness of ATSI contributions.

A challenging task may be presented to students to imagine the world without the scientist they have chosen and how their lives would be different if the scientist’s contributions were not made available.

Students may wish to use [Kahoot](https://kahoot.com/)! for their chosen scientist to ensure their peers are paying attention to their presentation.

Student can use the [Careers with STEM](https://careerswithstem.com/) website for information and stimulus.

Introduction

Through science, humans seek to improve their understanding and explanations of the natural world. Science involves the construction of explanations based on evidence and scientific knowledge can be changed as new evidence becomes available. Scientists build upon the work and knowledge of previous scientists.

The term *science* comes from the Latin word *scientia*, which means knowledge. Over time, the different branches or disciplines of science evolved to try and explain all areas of our universe.

There have been many scientists who have contributed to our knowledge and understanding, and influenced the pattern of human history. They have performed experiments and made valuable observations. Famous scientists such as Isaac Newton and Albert Einstein are well known to us because of the important work they performed.

Today, there are thousands of scientists around the world finding out new information, uncovering new species and detecting new cures for diseases.

Task

You are to identify ONE scientist or inventor who has contributed to the advancement of science and create a historical recount of their life. If you wish to choose someone not on the list provided, please discuss this with your teacher.

This is an independent project. The guided enquiry booklet may help you to refine your research and presentation skills as you complete this task, or you may choose to organise your research in your own way.

1. You may present the information in any format, for example a PowerPoint presentation or a poster. Your presentation should include pictures and be visually appealing.
2. You must hand in your draft with your final presentation. The draft is evidence of your skills in gathering and processing information. You will receive feedback on these essential skills as well as on the quality of your final work.

Historical recount

**Features to include in a historical recount**

**Orientation**

* Date of birth
* Place of birth
* Early life, such as schooling

**Record of Events**

* Include at least 3 dates of importance
* Include details, explaining why these dates were important
	+ This may include awards or recognition the scientist or inventor received
* Identify any difficulties the scientist experienced or overcame in his/her life

**Evaluation of their Contribution**

* Identify the area of science that this scientist or inventor is known for
* Identify the contributions the scientist or inventor is recognised for
* Explain why their work has been, or is, important to society

**References**

* All sources of information considered during your work on this task must be noted.
* Include at least 2 of these references in your final presentation. One reference must be a book.

Scientists

Below are a list of possible scientists showing their names, country and their approximate date of discoveries. The tables list scientists which are traditionally known for students to link famous scientists to the development of important scientific concepts, such as the discovery of oxygen, discovery of splitting light, development of classical physics, etc.

The lists are not exhaustive and it is encouraged that students also research a modern scientist which has developed scientific understanding or discovered something new.

Astronomy

| Scientist | Origin | Date of discovery  |
| --- | --- | --- |
| Ptolemy | Greece | 150 |
| Nicolaus Copernicus | Poland | 1540 |
| Tycho Brahe | Denmark | 1600 |
| Galileo Galilei | Italy | 1600 |
| Johannes Kepler | Austria | 1610 |
| Christian Huygens | Holland | 1660 |
| Giovanni Cassini | Italy | 1670 |
| Olaus Roemer | Denmark | 1680 |
| Edmond Halley | England | 1680 |
| Immanuel Kant  | Germany | 1750 |
| William Herschell | England | 1800 |
| Stephen Hawkins | England | 1980 |

Chemistry

| Chemistry | Origin | Date of discovery  |
| --- | --- | --- |
| Leucippus | Greece | 490BCE |
| Democritus | Greece | 400BCE |
| Aristotle | Greece | 350BCE |
| Andreas Liebau (Libavius)  | Germany | 1600 |
| Robert Boyle | Ireland | 1650 |
| Robert Hooke | England | 1650 |
| Anders Celsius | Sweden | 1740 |
| Karl Wilhelm Scheele | Germany | 1770 |
| Antoine Lavoisier | France | 1780 |
| Amedeo Avogadro | Italy | 1810 |
| Robert Bunsen | Germany | 1860 |
| James Clark Maxwell | England | 1860 |
| Dmitry Mendeleyev | Russia | 1870 |
| Joseph John Thomson | England | 1890 |
| Marie Curie | Poland | 1900 |
| Ernest Rutherford | New Zealand | 1900 |
| Henry Moseley | England  | 1910 |

Biology

| Biology | Origin | Date of discovery  |
| --- | --- | --- |
| Galen | Greece | 200BCE |
| Vesalius | Belgium | 1540 |
| Zacharias Janssen | Holland | 1590 |
| Hieronymus Fabricius | Italy | 1600 |
| William Harvey | England | 1630 |
| Jan Swammerdam | Holland | 1660 |
| Marcello Malpighi | Italy | 1650 |
| Francesco Redi | Italy | 1670 |
| Nicolaus Steno | Denmark | 1670 |
| Anton van Leeuwenhoek | Holland | 1680 |
| John Ray | England | 1690 |
| Carolus Linnaeus | Sweden | 1730 |
| Buffon | France | 1750 |
| Edward Jenner  | England | 1800 |
| Jean-Baptiste de Lamarck | France | 1810 |
| Robert Brown | England | 1830 |
| Charles Darwin | England | 1850 |
| Matthias Jacob Schleiden | Germany | 1840 |
| Theodor Schwann | Germany | 1840 |
| Louis Pasteur | France | 1860 |
| Alfred Wallace | England | 1860 |
| Gregor Mendel | Austria | 1870 |
| Walther Fleming | England | 1880 |
| Jokichi Takamine | Japan | 1900 |
| Walter Sutton | USA | 1900 |
| Thomas Hunt Morgan | USA | 1910 |
| Wilhelm Johannsen | Holland | 1910 |
| Alexander Fleming | England | 1930 |
| Howard Walter Florey | Australia | 1940 |
| Willard Frank Libby | USA | 1950 |
| Francis Crick | England | 1950 |
| James Watson | England | 1950 |
| Rosalind Franklin | England | 1950 |

Physics

| Physics | Origin | Date of discovery  |
| --- | --- | --- |
| William Gilbert | England | 1600 |
| Mikhail Lomonosov | Russia | 1750 |
| Daniel Bernoulli | Netherlands | 1740 |
| Joseph Priestley | England | 1770 |
| Benjamin Franklin | USA | 1750 |
| Luigi Galvani | Italy | 1790 |
| Charles de Coulomb | France | 1790 |
| Michael Faraday | England | 1820 |
| Alessandro Volta | Italy | 1800 |
| Christian Doppler  | Germany | 1840 |
| Georg Simon Ohm | Germany | 1830 |
| James Joule | England | 1850 |
| Hermann von Helmholtz | Germany | 1850 |
| Heinrich Hertz | Germany | 1890 |
| William Thomson (Kelvin) | England | 1850 |
| Max Planck | Germany | 1900 |
| Wilhelm Rontgen | Germany | 1900 |
| Niels Bohr | Denmark | 1910 |
| Wolfgang Pauli | Germany | 1920 |
| Werner Heisenberg | Germany | 1920 |
| Robert van der Graaff | Holland | 1930 |
| Otto Hahn | Germany | 1940 |
| Robert Oppenheimer | USA | 1940 |
| Wernher von Braun | USA | 1950 |
| Robert Millikan | England | 1910 |

Marking guideline/rubric

| Task component | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Orientation*Details the early life of scientist* |  |  |  | Names scientist. Contains details of early life including DOB, place of birth and schooling. | Names scientist. Some information provided. | Names scientist only. No details of early life, DOB or place of birth. | Not completed. |
| Record of Events*Date and event details including importance* | 3 or more dates mentioned with detail of events. Importance mentioned. | 3 dates mentioned with some detail of events. | 2 dates mentioned with detail of event. | 2 dates mentioned with some detail of event. | 1 date mentioned with detail of event. | 1 date mentioned with some detail of event. | Not completed. |
| Record of Events*Difficulties overcome by scientist* |  |  |  |  | Details a difficulty or struggle in the scientist’s life. | Mentions difficulty or struggle in the scientist’s life. | Not completed. |
| Evaluation*Contributions to science and the impact on society.* |  |  | Details the scientist’s contributions to science and successfully links this to their impact on society. | Outlines a contribution to science with some links to its impact on society. OR Provides information on more than one contribution. | Outlines a contribution of the scientist to science and society. | Mentions a contribution to science or society. | Not completed. |
| Spelling & Grammar |  |  |  | Correct spelling (or evidence of spell checker). Scientific terms and historical sequencing used correctly. Correct tense and grammar used. | Correct spelling (or evidence of spell checker). Evidence of scientific words and historical sequencing.Mostly correct tense and grammar. | Some spelling errors. Few technical terms used.Mostly correct tense and grammar. | Poor spelling and grammar distracts the reader. |
| Presentation |  |  |  |  | Presentation media appropriate and engaging, with. pictures and an effective consideration of its aesthetic appeal. | Presentation media lacks imagination or organisation. Some effort to include pictures and colour. | Typed or handwrittenORNot handed in. |
| References |  |  |  | 3 references correctly referenced in Harvard. ONE book included. | 3 references with errors in formatting OR2 references correctly referenced in Harvard. ONE book included. | 1 reference correctly referenced in Harvard. | No reference list. |
| Draft |  |  |  |  | Research notes and draft provided and indicate well developed skills. | Evidence of research and draft presentation provided. | No draft presented. |