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| **Victorian Engineering Research** | | | |
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| Using the internet to research engineering inventions that were made during the Victorian era | | | |
| **Subject(s):** Design and Technology, Computing/ICT, Engineering, History, Literacy  **Approx timings:** 80-120 minutes (additional time may be needed for multiple presentations) |  | | **Key words / Topics:**   * cars * engineering * kings and queens * light bulbs * photography * radio * research techniques * technological inventions * Victorian era |
| **Stay safe**  Whether you are a scientist researching a new medicine or an engineer solving climate change, safety always comes first. An adult must always be around and supervising when doing this activity. You are responsible for:    • ensuring that any equipment used for this activity is in good working condition  • behaving sensibly and following any safety instructions so as not to hurt or injure yourself or others    Please note that in the absence of any negligence or other breach of duty by us, this activity is carried out at your own risk. It is important to take extra care at the stages marked with this symbol: ⚠ | | | |
| **Suggested Learning Outcomes** |  | |  |
| * To be able to research engineering inventions that were made during the Victorian era. * To understand the impact of Victorian inventions on engineering and society today. | | | |
| **Introduction** |  | |  |
| This is one of a set of resources developed to support the teaching of the primary national curriculum. This resource was inspired by the theme of the Victorians. It supports the teaching of design and technology in context by investigating the key inventions made during the Victorian era, and how they have influenced engineering today. | | | |
| **Purpose of this activity**  In this activity learners will learn about the Victorian era and the changes to how people lived and worked. They will then discuss how technology and engineering moved forward during the Victorian era, before researching at least one engineering invention made during that time. They will then present their findings to the class.  This activity could be used as a main lesson activity to teach learners about the impact of Victorian inventions on modern engineering and society as a whole. It could also be used as part of a wider scheme of learning focussing on the history of design, technology and engineering, alongside other Victorian themed IET resources. | | | |
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| **Activities** |  | | **Teacher notes** |
| **Introduction (5-10 minutes)**  Teacher to introduce the aim of the project and the theme of the Victorians.  Teacher to use presentation slide 3 to briefly discuss what the Victorian era was, when it occurred and why it was such an important period of time.  **Researching Victorian engineering (75-110 minutes)**  Explain that technology and engineering moved a long way forward during the Victorian era.  Use presentation slide 4 to give examples of engineering inventions and innovations that were made during the Victorian era:   * Motor cars * Light bulbs * Photographs * Telephones * Radio   Ask learners to use the internet to research one engineering invention that was made during the Victorian era and produce a short presentation about it. This should include:   * The name of the invention * A picture of the invention * Who invented it and when * A summary of what it does/how it works * How it has impacted on engineering or society today   Learners should make their presentation to the class. |  | | This activity could be carried out in small groups or individually.  **Introduction**  Teacher could ask learners to write down five things that that they already know about the Victorians and/or the Victorian era.  The Victorian era is sometimes also defined as being between around 1820 and 1914, based on the defining characteristics of society at the time, rather than the exact dates of Queen Victoria’s reign as monarch. Either definition, or a mixture of the two, is historically accurate to use.  **Researching**  Learners could use the internet to complete their research.  Learners could consider areas such as who invented the technology, when it was invented and how it affected society. Learners could select one invention from the list, or this could be assigned by the teacher to ensure good overall class coverage.  Teacher could set a maximum length for the presentation e.g. 10 minutes or 5 slides. One good way of doing this is where they complete their research independently, then form small groups and combine what they have found and create a group presentation.  Learners could be given additional time to practice their presentation before speaking to the class. Additional time may be needed for multiple presentations |
| **Differentiation** |  | | **Teacher notes** |
| **Basic** |  | | **Extension** |
| * Provide a list of websites to use when researching Victorian inventions. * Provide a list of inventions, inventors and dates to look for when researching. * Provide a template for the presentation. |  | | * IET Victorian themed activity – Making a Pinhole Camera * Produce a class display of different technological innovations and inventions that occurred during the Victorian era, and how they have influenced technology today. |
| **Resources** |  | | **Required files** icon-docicon-pdficon-ppt |
| * Computers with internet and presentation software * Whiteboard projector or interactive whiteboard |  | | icon-ppt Primary Presentation – Victorian Engineering Research |
| **Additional websites** |  | |  |
| * **Britannica – Victorian era:** <https://www.britannica.com/event/Victorian-era> * **English Heritage – 7 ingenious Victorian inventions:** <https://www.english-heritage.org.uk/visit/inspire-me/victorian-inventions/> * **Wikipedia – Edison light bulbs:** <https://en.wikipedia.org/wiki/Edison_light_bulb> * **History of the camera and photography:** <https://www.adorama.com/alc/camera-history/> , <https://en.wikipedia.org/wiki/Thomas_Wedgwood_(photographer)> , <https://en.wikipedia.org/wiki/Camera_obscura> | | | |
| **Supporting starter and plenary ideas** |  | |  |
| **Starters** (Options)   * Use a mind map or spider chart to brainstorm the important facts about how Victorian people lived. * Write down five things already known about the Victorians and five things the learner would like to learn in this activity. * Mix and match card game matching different Victorian engineering inventions to their names. * True or false quiz – what facts about the Victorians are true and which are not true. E.g. television was invented during the Victorian era – false – this happened in 1927. | | **Plenary**   * Produce a word puzzle using key words from the activity. E.g. wordsearch or crossword. * CLOZE/missing word questions to assess knowledge gained in the activity. * Anagrams and picture quizzes. E.g. identifying images of different Victorian inventions or technologies. | |

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| **The Engineering Context** |
| * Understanding about the history of engineering and design helps engineers to learn from past successes and mistakes. For example, learning about early photography or electric lighting helps us to understand the science behind these ideas and how this can be used and developed to make better products in future. |

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| **Curriculum links** | |
| **England: National Curriculum**  Design & Technology KS2   * apply use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups   English KS2   * speak audibly and fluently with an increasing command of Standard English * participate in discussions, presentations, performances, role play, improvisations and debates * identifying the audience for and purpose of the writing, selecting the appropriate form * noting and developing initial ideas, drawing on reading and research where necessary   Computing KS2   * use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content * select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information   History KS2   * the changing power of monarchs using case studies such as John, Anne and Victoria | **Northern Ireland Curriculum**  Language and Literacy KS2   * prepare and give a short oral presentation to a familiar group, showing an awareness of audience and including the use of multimedia presentations * write for a variety of purposes and audiences, selecting, planning and using appropriate style and form   The World Around us KS2   * interdependence of people and the environment and how this has been accelerated over time by advances in transport and communications * the effect of people on the natural and built environment over time * change over time in places * the effects of positive and negative changes globally and how we contribute to some of these changes |
| **Scotland: Curriculum for Excellence**  Technologies   * TCH 1-01a, TCH 2-01a, TCH 1-02a, TCH2-02a * TCH 2-05a   Literacy   * LIT 2-02a, LIT 2-04a, LIT 2-06a, LIT 2-10a * LIT 2-15a, LIT1-18a * LIT 2-21a, LIT 2-22a, LIT 2-24a, LIT 2-25a, LIT 2-26a, LIT 2-28a | **Wales: National Curriculum**  Humanities   * I can collect and record information from given sources * I can recognise the difference between facts and beliefs * I can present what I have discovered in a variety of ways and draw simple conclusions * I can recognise similarities and differences between people’s lives, both in the past and present   Languages, Literacy and Communication   * I can find and use information from different materials that I read * I can speak clearly, varying expression and gestures to communicate my ideas * I can talk to plan writing and write for different purposes and audiences   Science and Technology   * I can make design decisions, using my knowledge of materials and existing products, and suggest design improvements |

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| **Assessment opportunities** |
| * Formal teacher assessment of research presentations. * Self/peer assessment of research presentations. * Informal assessment of literacy skills used. |