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| **Careering towards the future** |
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| Investigating Engineering careers |
| **Subject(s):** Engineering**Approx. time:** 50-70 minutes |  | **Key words / Topics:** * Career
* Engineering
* Technologist
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| **Suggested Learning Outcomes**  |  |  |
| * To understand that there is a wide variety of different activities and careers in Engineering.
* To understand what type of work is done by Engineers.
* To be able to state one great achievement in an area of Engineering and suggest an amazing achievement that could happen in the future.
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| **Introduction** |  |  |
| It is widely recognised that there is a shortage of Engineers in the UK. According to a government study, for the engineering sector to gain enough candidates to reduce the skills shortage, they would need around 186,000 skilled recruits each year until 2024. This is ironic considering that Engineering can offer some of the most diverse, interesting and rewarding careers.This resource facilitates learners’ understanding that Engineering covers a wide variety of activities. It allows learners to explore the Engineering careers that are available today, the potential rewards of these careers, how Engineering has shaped our society and how Engineering could transform the world we live in in the future. Depending upon the option selected, it can also include investigating the influence of famous Engineers/technologists of the past and people working in Engineering today. |
| **Purpose of this activity**In this activity learners will learn about the variety, availability and impact of Engineering careers. It could be used as a main activity in a careers lesson or during a PSD/PSCHE lesson. |
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| **Activity** |  | **Teacher notes** |
| **Introduction (5 minutes)**Teacher to ask what learners understand by Engineering. Teacher to subsequently explain that learners are going to research a variety of engineering careers. The sort card activity on the final slides of the PowerPoint could be used to indicate that Engineering covers a diverse range of careers.**Starter (10-15 minutes)**Play the *Future Focus – Career Cards* game.**(25-35 minutes)*** Step 1 – Learners to be allocated an engineering career or select an Engineering career from the card game.
* Step 2 – Learners to state in one sentence what their chosen Engineering career type does.

Research option:* Step 3a - Learners identify and investigate a famous Engineer/Technologist in the area of engineering they have chosen:
* Who they are?
* What they have achieved?
* How much are they worth?
* Any other interesting facts that are found.

Futures option:* Step 3b – Learners find out the following:
* Identify something done in that field of engineering which has had a profound effect on our society.
* Identify something amazing that they could do in the future.

**Discussing the results of the activity (10-15 minutes)**Selected learners to present their findings to the class. Teacher to discuss the results of the activity with learners.  |  | This activity allows learners to research and investigate a variety of Engineering careers. It can be carried out individually or in pairs.The careers listed in the sort activity on the final slides of the PowerPoint could be used. These could be allocated to individuals or pairs, or they could choose from this list. This list is not comprehensive – there are a wide variety of other Engineering careers which the teacher could use to supplement this list.There are two options available for this activity: research and futures. The teacher needs to decide in advance which option to complete (it is possible to carry out both).The Research option requires the learner to carry out research to find more information about a chosen Engineering career. Selected learners can then present their information to the class.The Futures option can be shorter – learners identify what the career involves, some way in which this field of engineering has already had a profound effect on society, and an amazing potential effect that it could have in the future. They then give a very brief presentation to the class of their findings. E.g.:*I am an Aerospace Engineer; I built the planes you fly on holiday in. In twenty years time I will design eco-airships that are powered by solar energy to replace the planes.**or**I am a Biomedical Engineer. I have designed artificial limbs for people who have lost an arm or leg. In twenty years time I will design cyborg bodies so that we can live for thousands of years.*Learners could be encouraged to be as fantastical in their consideration of future impacts as their creativity allows. |
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| **Differentiation** |  |  |
| **Basic** |  | **Extension** |
| Learners could be given the Engineering careers sorting task and, with separately cut out words, place the most appropriate word onto the pictures.Learners could be given one of the case studies on the IET education at work website as a basis for their presentation, rather than carrying out research. |  | Learners could complete both the Research and Futures options.Learners could investigate the full range of engineering careers available, drawing up their own list of options. |
| **Resources** |  | **Required files** icon-docicon-pdficon-ppt |
| * Projector/whiteboard
* Whiteboard marker pen
* *Future Focus – Career Cards* game
* Engineering careers sorting task
* Scissors
* Appropriate research materials or access to the internet.
 |  |  Teacher presentation – Look at me now – Careering towards the future |
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| **Additional websites** |  |  |
| * **IET Careers link:** <https://education.theiet.org/secondary/careers/careers-links/>
* **IET Engineers at work:** [https://education.theiet.org/secondary/careers/Engineers-at-work/](https://education.theiet.org/secondary/careers/engineers-at-work/)

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| **Related activities (to build a full lesson)** |  |  |
| **Starters** (Options) * Play the *Future Focus – Career Cards* game or carry out the sorting task depending on time available.
 | **Extension** (Options)* Complete both the research and Futures options.
* Learners could investigate the full range of engineering careers available, drawing up their own list of options.

**Plenary*** Discuss the outcome of the activity and what interesting facts they discovered about different Engineering careers and current (and past) Engineers/Technologists.
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| **The Engineering Context** film |
| With new technologies and a retiring workforce, the UK is faced with an Engineering skills shortage, with people in this career being more in-demand than ever. There has never been a better time to get into Engineering and make an impact on the world.  |

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| **Curriculum links**  |
| There are a wide range of teaching resources for STEM available for free on the IET education website (<https://education.theiet.org/>) – these include posters, lesson plans, worksheets and film clips. All of the activities include comprehensive links to the relevant national and GCSE specifications. Why not have a look and see what is available? |

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| **Assessment opportunities** |
| * Informal teacher assessment of the pupil presentations
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