

Tech for Manufacturing and Engineering

To understand how technology is used for manufacturing and engineering and broaden my knowledge of careers available in this field.



RESOURCES NEEDED

- A3 paper and pens
- Scissors (or pre-cut the head shaped hole for the groups)
- Spaghetti (approx 1 pack per group)
- Marshmallows/Sweets (approx 20 per group)
- Printouts of robot matching sheet
- Printouts of Loomia group worksheet
- Printouts of homework sheets

SUGGESTED TIME FOR LESSON

- 2 Hours

SUGGESTED VENUE

- Computer Suite/Classroom with laptops

PREPARATION NEEDED

- Collect and prepare resources above

NATIONAL CURRICULUM LINKS

Design and technology

- Investigate new and emerging technologies
- Understand developments in design and technology, its impacts on individuals, society and the environments, and the responsibilities of designers, engineers and technologists.
- Develop specifications to inform the design of innovative, functional, appealing products that respond to the needs in a variety of situations.
- Develop and communicate design ideas using annotated sketches

Spoken English

- Giving short speeches and presentations, expressing their own ideas and keeping to the point

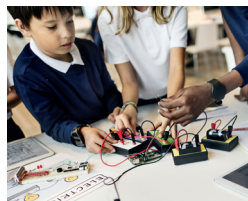
Art and design

- To use a range of techniques and media

1

How is Tech used in Manufacturing? (5 min)

Discuss the examples on the presentation – can the students think of any other examples?



2

What careers could you aspire to have in Manufacturing and Engineering? (5 min)

Discuss the examples on the PPT and the related starting salaries. Do any of these careers appeal to the students and why?

3

This is Engineering Videos (20 min)

Created by the Royal Academy of Engineering

Discuss: What is an engineer? What do they do? What are they like? What kind companies employ them?

Give the students time to explore the videos and testimonials on the This Is Engineering site. <https://www.thisisengineering.org.uk/>

Ask the students to work in groups to make notes about all of the things they discover about engineering. What kind of engineering careers can you have? What do engineers enjoy about their job? What led the engineers into their careers?



4

Hole in Wall Presentation – What is an Engineer? (25 min)

Ask the students to work in groups to turn their notes into a 'Hole in the Wall' activity. Ask them to cut out a head shape in the middle of the piece of paper. Around the hole, ask them to write everything they know about an engineer.

Ask the children to present to another group with one group member presenting from inside the poster.

5

Become Engineers – Spaghetti and Marshmallow Tower (15min)

Challenge the students to become structural engineers. In groups, give them 15 minutes to build the highest tower made of marshmallows/sweets and spaghetti.

Discuss: What makes a good engineer? Did any of you draw a plan first? Did any of you test your products to find out how strong they were? What would you do differently next time?

6

The use of Robots (10 min)

Discuss uses for robots in manufacturing, engineering, space etc. What do you think robots look like?

Children to work in groups to complete the robot matching activity. Go through the answers.

Discuss: What kind of jobs do you think robots will do in the future? Draw out the fact that these roles are currently performed by people therefore they will lose their jobs.

Highlight the fact that we will still need robotics engineers to create and code the robots.

7

Loomia Group Design and Role Model Video (25 min)

Watch the following video:

<https://www.youtube.com/watch?v=yT9zMPDYZnE>

Watch today's role model video from Janet at Loomia.

Tell the students: Imagine Loomia have asked you to design their next piece of 'Tech Fashion' – this could be sportswear, trainers etc. What do you imagine tech for fashion looking like in the future?

Ask the students to work in groups to design a piece of clothing/full outfit which uses tech.

Draw and label your outfit: How does tech help/appeal to the user? How do they control their outfit? Why do you think people would want to buy it? Who would your target market be? How would you advertise your outfit?

Present as a group to the class, or another group.

8

Class discussion (5 min)

Watch the following clip and use the information below the clip to discuss a career as an engineer:

<https://www.firstcareers.co.uk/careers/what-does-a-senior-engineer-do/>

What does his job involve? Would any of the students like this career?

9

Class discussion (5 min)

Can you see yourself working in any tech for manufacturing and engineering careers?

Did anything particularly interest you today?

10

Homework and further learning opportunities (5 min)

All of the daily products and devices we use will have been designed and manufactured at some point.

Products and devices are constantly evolving and changing as technology advances.

Draw a picture of a device/product you use daily i.e. phone, pen, sofa etc.

Redesign the product to include an element of tech and special features which will help the user.

Annotate and draw over the existing picture to explain your product's new tech enabled features.