

MOBILE MAGIC

LEVEL

Level 7 – Level 8

ACTIVITY DESCRIPTION

Students explore the invention of mobile phone technology. They learn about the complexities in manufacturing and consider economic and sustainable choices. Students discover the use of materials and technology and develop a detailed storyboard and design a mobile phone for the future.

THEME

- Design and Technology

MATERIALS REQUIRED

- Access to computers and the internet for research
- Old unused mobile phones (one for each group) to pull apart
- Tools, Screwdrivers, Tweezers or mobile phone repair kit
- Access to Kahoot app (create a few quick starter questions for students to answer) or simply read the starter questions to the students, see instructions.
- Pens and pencils
- Workbook
- Poster Paper

INSTRUCTIONS

This activity is broken up into the following steps. Three 40-50mins lessons are required for students to complete all tasks.

- Fun Starter (10minutes)
- Activate Knowledge (30minutes)
- Engineering (30mins)
- Design and Technology (40mins)
- Sustainability (10mins)

STEP 1. FUN STARTER

Ignite student learning with a fun discussion starter.

Ask students to discuss with the person next to them. What are the positive and negative aspects of mobile phone technology in their lives?

Would you rather have a broken phone or a broken bone?

STEP 2. ACTIVATE KNOWLEDGE

Using the Kahoot app (free to download), create a quiz for students to engage with after they have researched and responded to the questions shown below.

Create a Kahoot quiz with the following questions. In groups, students are required to research the following questions and write their responses in their workbooks, in preparation for the quiz.

- What year was the mobile phone invented?
Answer: 1973
- Who invented the first mobile phone? Answer:
Martin Cooper
- What is the top mobile phone manufacturing
company? Answer: Huawei (China)
- Worldwide what is the most popular brand?
Answer: Samsung
- Worldwide how many people have a mobile
phone? 5.16 billion

- Which two countries have the most mobile phones uses? Answer: China and India

STEP 3. ENGINEERING

Introduce the concept of creating a storyboard or something similar to visually present their learnings. Students must use the sequential steps to engage an audience and present their information in an interesting way.

Now place an unused old mobile phone on each table.

Using the tools provided allow students to pull apart the mobile phone.

Students must sketch and label each component of the mobile phone.

STEP 4. ECONOMICS

Students explore the economic costs of owning a mobile phone and answer the following questions.

- How much does it cost to have a mobile phone?
- Research mobile phone products and providers and outline the monthly costs to the consumers?
- Who pays for mobile phones?
- Where does the money go?

STEP 5. DESIGN AND TECHNOLOGY

To get students started, ask these questions to the group and see what they think.

- What do you think mobile phones will be like in 20 or 100 years time?
- What will you be able to do with your phone?
- How big will phones be and what will they look like?

THE TASK – Continuing with the storyboard, ask the students to work in groups and design the mobile phone of the future. Tell them to imagine they work for a mobile phone company. They should decide:

- Who it is for? (men, women, professionals, teens, etc)
- What size it will be?
- What features it will have?
- How much will it cost?
- What brand will it be?

STEP 6. SUSTAINABILITY

Discuss the following question with the students:

- “What is one simple thing we could do to improve the sustainability of phones and other devices?”
- How does recycling mobile phones benefit our environment?
- How does recycling mobile phones benefit future generations
- How can recycling mobile phones be economically beneficial?
- Have organisations successfully used campaigns to encourage mobile phone recycling?
- Complete your storyboard as a group by adding considerations and improvements to sustainability.

✓ SUGGESTIONS FOR ASSESSMENT

SELF-REFLECTION

- How did I work in the group?
- What would I do differently next time?
- What was the best part of the project?
- What was the worst part and why?
- What impact did I have?
- What am I most proud of?

THE TASK

Assess group storyboard and individual contribution to the group activity.

BACKGROUND INFORMATION

HOW WERE MOBILE PHONES INVENTED?

In the 1970s, researchers at Bell Labs in the USA began to experiment with the concept of a cellular phone network. The idea was to cover the country with a network of hexagonal cells, each of which would contain a base station.

These base stations would send and receive messages from mobile phones over radio frequencies. Any two adjacent cells would operate at different frequencies, so there was no danger of interference.

The stations would connect the radio signals with the main telecommunications network, and the phones would seamlessly switch frequencies as they moved between one cell and another.

By the end of the 1970s the Bell Labs Advance Mobile Phone System (AMPS) was up and running on a small scale.

Meanwhile, Martin Cooper, an engineer at the Motorola company in the US, was developing something that came close to the Star Trek communicator that had fascinated him since he first saw it on TV.

Martin Cooper, the engineer from Motorola, developed the first hand-held phone that could connect over Bell's AMPS.

Motorola launched the DynaTAC in 1984. It weighed over a kilogram and was affectionately known as The Brick, but it quickly became a must-have accessory for wealthy financiers and entrepreneurs. It cost almost \$10,000 at today's prices.

<https://www.sciencemuseum.org.uk/objects-and-stories/invention-mobile-phones>

CURRICULUM LINKS

Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use ([VCDSTC037](#))

Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions ([VCDSCD038](#))

Generate, develop, communicate and document design ideas and processes for audience using appropriate technical terms and graphical representation techniques ([VCDSCD039](#))