MODULE 5.
WHAT'S IN A PHONE?

K-2 3-4 5-6 **7-8** 9-10

LESSON OBJECTIVE

In this module students develop an understanding of the raw materials that make up a mobile phone. They will learn the difference between renewable and non-renewable resources, and look at the role of recycling these resources in mobile phones. Finally students are to enhance their research skills and present their findings graphically.

AUSTRALIAN CURRICULUM CONTENT DESCRIPTION

YEAR 7 MATHEMATICS

- Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169)

YEAR 8 MATHEMATICS

- Investigate techniques for collecting data, including census, sampling and observation (ACMSP284)

YEAR 7 SCIENCE

- Some of Earth's resources are renewable, but others are non-renewable (ACSSU116)
- Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS124)

YEAR 8 SCIENCE

- Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS139)
- Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate (ACSIS144)
- Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS145)

LESSON OUTLINE

1. Ask students if they have ever wondered what's inside a mobile phone? If possible take apart an old and unused mobile phone to find out what is inside, use the MobileMuster display or view the image inside a mobile phone. Identify the mobile phone components that you find inside a mobile phone.

2. Students view the Video: Inside a Mobile Phone. This video identifies and classifies the various resources used and shows the amount of each material used in a typical mobile phone. Discussion questions:

   - What raw materials are mobile phones made from?
   - How are the raw material turned into a mobile phone?
   - What is a non-renewable resource? Discuss and then explain.
   - What are other examples of other non-renewable resources?
   - In your opinion, what role does recycling play in non-renewable resources?

3. Using information from the video, students independently reconstruct a visual representation of the resources used in the production of mobile phones. This can be done using the Worksheet: What's in a Phone.

4. Each section should be correctly located on the worksheet, according to their type and amount (as in the video). Students may colour-code each type of resource to highlight the main types of resources (plastics, metals, other).

5. Log on to the MobileMuster Resource Recovery Calculator. Use the calculator to work out what can be recovered from 1 tonne (1000kg) of mobile phone materials. Record and present the information in a table using the following categories:

   a. What materials can be extracted?
   b. What new things can be made?
   c. What are the environmental benefits?

RESOURCES

1. Interactive whiteboard (IWB)
2. Image: Inside a Mobile Phone
3. Display: Inside a Mobile Phone
4. Video: What's in a Mobile Phone
5. Game: Resource Recovery Calculator
6. Worksheet: What's in a Phone?

SUPPORT MATERIAL

- Fact Sheet: What's in a Phone?
- The Recycling Process (MobileMuster website)
- TES-AMM Website (MobileMuster recycler)
- Plastic Recycling (Plasmar: plastic fence posts)

EXTENSION ACTIVITIES

Research how the materials from mobile phones are recycled and reused. As a starting point look at the MobileMuster website and support material which outlines the recycling process and links to the different recyclers, identify:

- Where are materials processed and recycled?
- What type of machines do they use to extract materials?
- What happens to the plastics?

On a Periodic Table, highlight the elements that can be found in a mobile phone. Write a brief explanation of each element.