

Plant Magic

Band level: Year 6 and Year 8

Description: Students will explore the energy cycle of plants with Augmented Reality and the Merge Cube. This lesson is a science simulation for a deeper look into the **About Plants** section of the **Merge Explorer** app. Here students can explore inside a plant cell and see what makes plants tick.

Resources:

- iPad, (no internet required)
- Merge cubes
- Mega Merge Cube (optional)
- MERGE Explorer app – **About Plants**
- Worksheet – **About Plants**



Prior Student Learning: Merge Cube Magic lesson.

What is Augmented Reality? Augmented reality is using technology to superimpose information such as sounds, images and text onto real world objects that we see. It works by adding the digital content onto a live camera feed, making that digital content look as if it is part of the physical world. This could be anything from making your face look like a dinosaur to overlaying digital directions onto the physical streets around you.

What is a Merge Cube? The Merge Cube is a spongy, dense black foam cube with silver markings on all six sides in patterns similar to QR codes. The patterns provide an Augmented Reality trigger that launches when any of the Merge apps are pointed at the cube. It provides a powerful interactive experience in a real world environment where an object (the cube) is enhanced by a 3D digital-generated image that comes to life by using the camera on a digital device.

What is the Merge Explorer App? With the MERGE Explorer app students will learn about topics such as earth science, life cycles, the solar system, anatomy, properties of matter, weather and climate, ecosystems and more. The app provides students with an interactive experience in which digital images, sounds and text can be seen on the Merge Cube. Students can investigate a volcano, examine inside the human body, and hold the earth in the palm of their hands. They can even dissect a frog (humanely)!



Curriculum Links:

Year 5 to 6	<p>Digital Technologies Achievement Standard By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks.</p> <p>Content Descriptions: Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014)</p>
Year 7 to 8	<p>Digital Technologies Achievement Standard By the end of Year 8, students distinguish between different types of networks and defined purposes. They plan and manage digital projects to create interactive information.</p> <p>Content Descriptions: Investigate how data is transmitted and secured in wired, wireless and mobile networks, and how the specifications affect performance (ACTDIK023)</p> <p>Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness (ACTDIP025)</p>
Year 6	<p>Science Achievement Standard By the end of Year 6, students ... describe and predict the effect of environmental changes on individual living things.</p> <p>Content Descriptions: Science Understanding: The growth and survival of living things are affected by physical condition of their environment (ACSSU094)</p>
Year 8	<p>Science Achievement Standard By the end of Year 8, students ... analyse the relationship between structure and function at cell, organ and body system levels.</p> <p>Content Descriptions: Science Understanding: Cells are the basic units of living things; they have specialised structures and functions (ACSSU149)</p>



Whole class activity: Explore Phase

The teacher introduces the students to the importance of plants as a source of food for human life through Augmented Reality and using the **About Plants** section of the MERGE Explorer app (see Attachment A). Explain how the AR happens through the camera of the device and superimposes the image onto the cube. This could be done using the Mega Cube for the whole class to see.

Group work activity: Play Phase

1. Divide the students into pairs or groups and provide an iPad and merge cube to each.
2. Open the Explorer app and navigate to the **About Plants** section.
3. Read through the topic card information.
4. Interact with each AR activity to explore, discover and learn.
5. Students should be able to answer the following questions.

<p>Healthy Plants What do plants need?</p> <p>Plants are a vital part of our world. They provide an important source of food for most animals. They capture energy from the sun. But how do they do this? Using the Merge Cube take a look inside a plant cell. Use the slider to separate all the parts (organelles). What is a eukaryotic cell? What is the function of the chloroplasts?</p>	<p>Plant Cycle How does my plant grow?</p> <p>Think about some plants you might have at home. Sometimes people buy plants that have already started growing, so you won't see them as seeds. Press play to sprout a sunflower seedling!</p> <p>Describe the function of each labeled part as you move through the plant's life cycle in the model. What do you think are some things that might prevent a seed from growing?</p>
<p>Plants + Energy Where does energy come from?</p> <p>Plants need lots of things to help them grow. But think about how they give back too. Tap on the hotspots to see how plants create energy. This is the plant energy cycle. What helps the flowers to grow? How do plants give back to the environment?</p>	<p>Bee Magic How can bees help plants?</p> <p>Tap the flower to watch the bee move across the flower. Think about how bees help plants to reproduce. Explain what the bee is doing. How does the bee help to pollinate the flowers? Are there other animals besides bees that serve as pollinators?</p>



Author: Sue Carter

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Computer Science Education Research (CSER) Group, The University of Adelaide.



Attachment A



About Plants

Essential Questions

- What is a plant's energy source?
- Where do plants get the essential materials needed for growth?
- Where does the energy in an animal's food come from?
- What needs do all organisms have in common?

Activity:

1. Plants provide an important source of food for animals, including humans. Think about your last meal. Did it include plants? Maybe you ate a salad or some vegetables. Have you ever noticed that sometimes the plants in your garden, yard, or neighbourhood grow very well - and other times they wither and die? Let's find out more about plants, how they grow, and their importance to life on Earth!
2. How do wildflowers grow across a vast field? Do you think plants reproduce? How could plants create another plant without moving or interacting with other plants?
3. Using your Merge Cube, access the "About Plants" Topic Card inside Merge Explorer. Open **Activity One** and meet the plant cell! Read or listen to the description. View the plant cell from the inside, then use the slider to separate out all the organelles. What is the function of the chloroplasts?
4. Now explore **Activity Two** and press play to interact with a plants life cycle. Are seeds part of a plant's reproductive system? Describe the function of each labelled part as you move through the plant's life cycle in the model. What do you think are some things that might prevent a seed from growing?
5. Next read **Activity Three** about give and take. Tap on each of the hotspots to learn more about the energy cycle of a plant. As you interact with the plant energy cycle, think about the following: What things are helping these flowers grow? What does this plant give to the environment that animals can breathe? How is everything in nature connected by energy?
6. Go to **Activity Four** to see how a bee moves on a flower. Think about how bees help flowering plants reproduce. Press play to watch the bee work! What does a bee pick up on a flower? Are there other animals besides bees that serve as pollinators? Do you think all flowers attract the same pollinators?

Assessment:

Video Recording: Create a video recording describing either the life cycle of your favorite plant or the process of pollination. Describe the things plants need to grow and how they give back to the environment.

Class Notebook: Answer the Essential Questions in your science notebook.

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