

Unit 11

**“Australian Federation to
World War 2
(& Cooperation)”**

Grades
Pre to 6

SCIENCE & TECHNOLOGY





Science & Technology (Grades Pre to 6)

“Australian Federation to World War 2 (& Cooperation)”

SUMMARY:

RESOURCES:

All the information you need is included within the **informational story** in each lesson plan. The hands-on or creative activities are designed to use materials you will likely have already in your home, but you should maintain some **art and craft materials**. Each child will also need a **Science Journal** (i.e., a lined exercise book or Botany book for nature study notes, writing responses to questions, and writing activities). It is also helpful to have a good **dictionary**.

Three lessons a week will provide the basic learning. To enjoy a richer learning experience, you could supplement the lessons with extra books about the topics in this unit, from your local library.

Some suggestions for extra reading include but are not limited to...

- To be advised

Prior to starting each week, review the recommended resources.

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WEEK 1

GOD'S DESIGN IN THE ENVIRONMENT

Lesson 1: Creation Shows God's Order and Cooperation

Curriculum Links (Australian Curriculum v9):

Prep to Year 2:

- AC9S1U01 (Yr 1): Explore the observable features of living things and their environments.
- AC9S2U01 (Yr 2): Describe how living things depend on each other and the environment to survive.
- AC9TDE2K01 (Yr 2): Explore needs or opportunities for designing, and the technologies needed.

Years 3 to 4:

- AC9S3U01 (Yr 3): Group living things based on their observable features and distinguish them from non-living things.
- AC9S4U01 (Yr 4): Compare characteristics of living and non-living things and examine their life cycles.
- AC9TDE4K01 (Yr 4): Examine how forces and materials affect the behaviour of a product or system.

Years 5 to 6:

- AC9S5U01 (Yr 5): Investigate how plants and animals have structural features and adaptations that help them survive.
- AC9S6U01 (Yr 6): Investigate how living things and their environments are interdependent.
- AC9TDE6K01 (Yr 6): Investigate how electrical energy can control movement, sound or light in a designed product or system.

A) Introduction Tutor says: Today we will learn how God's creation is filled with order and teamwork. Just as people can work together to build something, animals and plants in nature also cooperate in amazing ways.

B) Teaching of Terminology

- **Ecosystem:** A place where plants, animals, and environments live and work together.
- **Habitat:** The home of a plant or animal.
- **Cooperation:** Working together for a good purpose.

C) Informational Story – "The Bushland Symphony"

The sun was just rising over the eucalyptus trees, casting long golden rays through the misty bushland. Talia zipped up her jacket and followed her dad along the narrow dirt track. It was early, and the forest was just waking up.

A kookaburra let out its chuckling call from a tall tree. In the distance, Talia could hear the rustling of a wallaby in the underbrush. Her dad whispered, "The bushland is like a big orchestra. Every creature has its part to play."

Talia looked around. "But who's the conductor?" she asked.

Her dad smiled. “God is. He made all this to work together.”

They stepped quietly around a corner, and Talia pointed excitedly to a patch of wattle trees buzzing with bees. “Look, the bees are working already!”

Dad nodded. “The bees collect nectar from the flowers. But as they fly from flower to flower, they also carry pollen, helping the trees produce seeds. The trees give food, and the bees help the trees make more life. That’s cooperation.”

They sat on a log, pulling out sketchpads. “Let’s watch and record what we see,” Dad said. Talia drew a small beetle climbing along a leaf. She noticed it munching on something. A moment later, a tiny bird swooped in and snapped the beetle up.

“That beetle eats the leaf, the bird eats the beetle. But the tree grows back more leaves, especially because animals leave droppings that help the soil. Even death leads to new life in the bush,” her dad explained.

Talia blinked. “It’s like everything is connected.”

“Exactly,” he said. “The trees give shelter and food. Animals eat and fertilise the ground. Fungi and insects break down old things. Every part supports the others.”

They packed up and walked a little farther to a small stream. Tadpoles wriggled in the shallow water. Talia counted them and wrote in her journal.

“There’s so much going on that we don’t see,” she said. “All these creatures working together.”

Her dad bent down beside her. “God didn’t just make things beautiful. He made them functional. Orderly. Cooperative. Nature is like a big team, each part helping the whole.”

As they walked home, Talia looked back at the bush. “I think I’ll call it a symphony. Everything playing together in harmony.”

Her dad nodded. “And you’re part of it too. Humans have a role in this design — not to destroy it, but to understand it, protect it, and learn from it.”

That night, Talia wrote in her science journal: “Today I saw how nature works together. God’s creation is like a bushland symphony — each part playing its part, all guided by His design.”

D) Narration Activity Tutor says: Can you tell me in your own words what the animals and plants did to help each other in the story? Retell the story of the bushland walk to me, including the animals Talia saw and what she learned.

E) Thinking Questions

- **F–2:** Can you name two animals in the story? How did they help each other?
- **Years 3–4:** What would happen if one part of the bushland system stopped working?
- **Years 5–6:** Why do you think God designed creation to work in systems of cooperation? Can you give an example of another system in nature?

F) Hands-on Practical Activities

- **F–2:** Draw your favourite animal from the story in its habitat. Add labels.
- **Years 3–4:** Make a mini-poster showing the bushland with arrows to show who helps whom (e.g. bees help trees, birds eat insects).

- **Years 5–6:** Create a diagram in your Science Journal showing three different systems in the bush (pollination, food chains, soil fertilisation) and how they are connected.
- **All Ages:** Go for a walk in a local bushland, park, or garden. Observe and sketch signs of nature working together (insects pollinating, birds nesting, leaves decomposing). Record in your Science Journal.

G) Biblical Connection & Wrap-up Tutor says: In 1 Corinthians 12, Paul says the Body of Christ has many parts that work together. God made creation in the same way — full of different parts that rely on each other.

Prayer: Lord, thank You for making a world full of order and beauty. Help us to learn from nature how to work together with others. Amen.

Lesson 2: Animals Working Together

Curriculum Links (Australian Curriculum v9):

Prep to Year 2:

- AC9S1U01 (Yr 1): Explore features of living things and their environments.
- AC9TDE2K01 (Yr 2): Explore design solutions and needed technologies.

Years 3 to 4:

- AC9S3U01 (Yr 3): Group living things based on observable features.
- AC9S4U01 (Yr 4): Examine relationships between living things and their environment.
- AC9TDE4K01 (Yr 4): Investigate how materials affect the function of a product.

Years 5 to 6:

- AC9S5U01 (Yr 5): Investigate structural features (design features) that help plants and animals survive.
- AC9S6U01 (Yr 6): Investigate interdependence between living things and their environments.

A) Introduction

Tutor says:

Last time, we talked about how everything in nature works together like a beautiful bushland symphony. Today, we'll learn more about animals — especially how they live and cooperate in groups. Just like people work in teams, God created some animals to live in families or communities too.

B) Teaching of Terminology

- **Colony:** A large group of animals of the same kind living together.
- **Symbiosis:** A long-term relationship between two different kinds of living things.
- **Design Feature:** A part of a living creature's body that helps it survive in its environment (what scientists sometimes call an 'adaptation').

C) Informational Story – “The Tree and the Army”

Jem was lying in the shade of a thorny tree, looking up through his binoculars. He wasn't spying on birds this time, but ants — tiny, busy ants marching up and down the branches of the Acacia tree.

He called over to his older sister, Miriam. “They're everywhere! Like soldiers on patrol.”

Miriam crawled over and squinted at the tree. “Yep. That's why people call them ‘army ants’ — especially these ones. They're guarding the tree like it's their queen.”

Their dad, a nature scientist, joined them with a notebook. “These are Acacia ants, and the tree they live on is an Acacia tree. But here's the interesting part — they help each other. The ants live in the tree's thorns, which are hollow. That's their home.”

Jem blinked. “Wait, the tree grows houses for the ants?”

“Exactly,” said Dad. “God designed this tree with special thorns that are perfect for the ants to live in. And guess what? The tree even makes sweet nectar on its leaves, just for the ants.”

“Free food and shelter?” said Miriam. “That's a pretty good deal.”

“But it goes both ways,” Dad continued. “In return, the ants protect the tree. They scare away insects that want to eat the leaves. They even bite and chase off bigger animals.”

Just then, Jem noticed something. A beetle was crawling up the trunk toward a fresh bunch of leaves. Within seconds, three ants raced toward it, biting and tugging until the beetle dropped to the ground.

“Whoa,” he said. “They’re serious about their job.”

“Exactly,” said Dad. “It’s cooperation. The ants get shelter and food. The tree gets bodyguards.”

They sat watching for a while longer. The tree swayed gently, and the ants kept moving — guarding, cleaning, protecting. Dad opened his journal. “This kind of relationship is called symbiosis. It’s when two different living things help each other.”

Miriam thought for a moment. “What if the tree stopped giving nectar?”

“Then the ants would probably leave,” said Dad. “And the tree would be more likely to be damaged. Or eaten.”

Jem looked at the thorny branches. “God really thought this through.”

“Yes,” said Dad. “It’s not random. It’s design. Those hollow thorns and nectar spots are design features. And the ants’ fast legs, strong jaws, and teamwork — those are design features too.”

They watched as more ants worked together to carry a dead insect down the tree.

Later that evening, Jem and Miriam sat at the kitchen table with their journals.

Jem wrote:

“Ants don’t just work hard. They work together. The Acacia tree and the ants show that even tiny creatures are part of God’s big design. I want to be someone who helps others, just like those ants.”

D) Narration Activity

Tutor says:

Can you retell the story in your own words? What did the Acacia tree do for the ants? And what did the ants do in return? Why is this an example of cooperation?

E) Thinking Questions

- **F–2:** What did the ants do in the story? How did they help the tree?
- **Years 3–4:** What would happen if the ants stopped helping the tree? Or if the tree stopped giving food to the ants?
- **Years 5–6:** Why do you think God designed living things to depend on each other? Can you think of another example of symbiosis or teamwork in nature?

F) Hands-on Practical Activities

- **F–2:** Act out a scene where ants protect a tree. You can use toys or drawings to help.
- **Years 3–4:** Draw the Acacia tree and the ants. Label the parts that help each other (thorns, nectar, ants).
- **Years 5–6:** In your Science Journal, write or diagram how this system works as a two-way partnership. Research another example of symbiosis and compare it to this story.
- **All Ages:** Find a tree or plant outside. Watch it for 5–10 minutes. Do you see insects visiting it? What do you think they’re doing? Record it in your Science Journal.

G) Biblical Connection & Wrap-up

Tutor says:

Proverbs 6:6 tells us to “Go to the ant... consider her ways and be wise.” Ants are an example of God’s wisdom in creation. He designed them to live in teams, just like He designed families, churches, and communities to work together.

Prayer:

Dear God, thank You for the way You made nature to teach us wisdom. Help us to learn from the ants how to work hard and protect one another. Amen.

Lesson 3: Designed for Cooperation

Curriculum Links (Australian Curriculum v9):

Prep to Year 2:

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Years 3 to 4:

- AC9S3U01 (Yr 3): Group living things based on observable features.
- AC9S4U01 (Yr 4): Examine relationships between living things and their environments.
- AC9TDE4K01 (Yr 4): Investigate how forces and materials affect the behaviour of systems.

Years 5 to 6:

- AC9S5U01 (Yr 5): Investigate structural (design) features that help plants and animals survive.
- AC9S6U01 (Yr 6): Investigate how living things and environments are interdependent.
- AC9TDE6K01 (Yr 6): Investigate how systems are designed to solve problems and meet needs.

A) Introduction

Tutor says:

So far, we've seen how God's creation is filled with cooperation. Today, we're going to explore how God has designed people to work with creation—not just by observing it, but by building and designing things that cooperate with nature. We'll explore how human-made systems can work with natural systems when we are wise stewards.

B) Teaching of Terminology

- **Synergy:** When two or more things work together and the result is better than if they worked alone.
 - **System:** A group of parts that work together to do something.
 - **Design Feature:** A special part of a plant, animal, or invention that helps it work well.
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C) Informational Story – “The Ducks in the Rice Field”

In a small valley nestled between misty hills, a farmer named Mr. Tanaka rose before dawn each morning. His land had been in his family for generations. Rows of green rice paddies stretched out in front of his farmhouse like a patchwork quilt.

But this farm had something special: ducks.

Every morning, Mr. Tanaka would open the wooden gate to his duck pen, and a flock of white and brown ducks would waddle eagerly toward the waterlogged rice fields. They flapped and quacked with excitement as they splashed into the shallow water.

His granddaughter, Keiko, who had come to visit from the city, watched curiously. “Grandpa,” she asked, “why do you put ducks in the rice field?”

Mr. Tanaka smiled. “Because they’re part of my team.”

Keiko blinked. “Ducks can be part of a farm team?”

“Yes,” he replied. “God made them with design features that help them do exactly what I need. Their flat feet help them stir the water, which prevents algae from growing too thick. They also eat the weeds that would otherwise compete with my rice, and their droppings feed the soil.”

“They do all that without machines?” she asked, wide-eyed.

Mr. Tanaka laughed. “Much better than machines. Machines cost money and pollute. The ducks work gently. They don’t damage the rice. In fact, they help it grow stronger.”

Keiko noticed a group of ducks pecking at the water’s surface. “Are they eating bugs too?”

“Exactly. They eat pests like insects and snails. That means I don’t have to spray chemicals. It’s safer for the rice, safer for the ducks, and safer for us.”

Later that day, they sat under a shady tree while Mr. Tanaka told more stories. He explained how his grandfather had learned this method from farmers in Japan hundreds of years ago. “It’s called integrated farming,” he said. “People used to think you had to dominate nature. But now, more people are learning that we should work with it.”

Keiko pulled out her sketchpad. “It’s like a system,” she said. “The ducks, the rice, the water, the sun — all working together.”

Mr. Tanaka nodded. “That’s synergy. God made nature to function in beautiful patterns. When we design our work to fit into that pattern, amazing things happen.”

“Do the ducks know they’re helping?” she asked.

“Maybe not,” he said, “but they’re doing what God designed them to do. They’re just being ducks — and they’re doing it wonderfully.”

At the end of the week, Keiko returned to the city. In her school Science Journal, she wrote:

“My grandpa doesn’t just grow rice. He grows it with ducks. They stir the soil, eat the weeds and bugs, and make the rice strong. He says God made nature to cooperate. Grandpa doesn’t fight nature — he partners with it. I think that’s what real wisdom looks like.”

D) Narration Activity

Tutor says:

Can you tell me what Keiko learned about the ducks and the rice field? Why did Grandpa say they were part of his team? How is this story an example of working with God’s design?

E) Thinking Questions

- **F–2:** What did the ducks do in the rice field?
- **Years 3–4:** Why didn’t Grandpa need to use machines or chemicals?

- **Years 5–6:** What are the benefits of designing systems that cooperate with nature? How does this show respect for God's creation?
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F) Hands-on Practical Activities

- **F–2:** Draw a picture of the ducks and the rice field. Include sun, water, rice, and ducks.
 - **Years 3–4:** Create a labelled diagram showing how each part of the rice field system works together (ducks, weeds, insects, water, rice).
 - **Years 5–6:** In your Science Journal, design your own small garden or farm idea that uses animals or insects to help plants grow (e.g. chickens, bees, worms). Write an explanation of how the parts work together.
 - **All Ages:** If possible, visit a local garden or farm. Ask the gardener or farmer if they use animals or natural helpers. Record what you learn.
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G) Biblical Connection & Wrap-up

Tutor says:

In Genesis 2:15, it says that God placed man in the garden to “work it and take care of it.” This means we are meant to be caretakers, not destroyers. When we design things that fit into God's natural systems, we show respect and cooperation with His creation.

Prayer:

Heavenly Father, thank You for the wisdom of Your creation. Help us to work in harmony with nature, using the brains and hands You’ve given us to care for the world You made. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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Lesson 4: Understanding Ecosystems

Curriculum Links (Australian Curriculum v9):

Years 3 to 4:

- AC9S3U01 (Yr 3): Group living things based on observable features.
- AC9S4U01 (Yr 4): Examine relationships between living things and their environments.
- AC9TDE4K01 (Yr 4): Investigate how materials and forces affect a product or system.

Years 5 to 6:

- AC9S5U01 (Yr 5): Investigate structural (design) features that help plants and animals survive.
- AC9S6U01 (Yr 6): Investigate how living things and environments are interdependent.
- AC9TDE6K01 (Yr 6): Investigate how designed systems and products meet needs.

A) Introduction

Tutor says:

This week, we'll explore how living things form whole communities called ecosystems. God designed every part of creation to work together — animals, plants, water, and soil. When these parts interact in healthy ways, they support each other like a team. Let's find out how this works.

B) Teaching of Terminology

- **Ecosystem:** A group of living and non-living things that work together in a certain place.
- **Producer:** A plant that makes its own food through sunlight.
- **Consumer:** An animal that eats plants or other animals.
- **Decomposer:** Something like fungi or bacteria that breaks down dead things and returns nutrients to the soil.

C) Informational Story – “The Hidden Web of Life”

Jonah crouched down in the dirt, gently parting a clump of grass near the edge of the school oval. His homeschool group was doing a field trip to a nearby nature reserve, and he had one mission: find as many living things as possible in 20 minutes.

He scribbled in his notebook: *Ants – 6. Beetle – 1. Grasshopper – 1 (jumped away fast!).*

“Look at this!” called his friend Grace, pointing to a patch of mushrooms sprouting beside a fallen log.

“Decomposers,” said their tutor, Miss Rachel, walking over. “Those mushrooms are breaking down the dead wood and helping the soil become rich.”

Jonah stared at the fungi. “Wait, they’re part of the system too?”

Miss Rachel smiled. “Absolutely. That log is shelter for insects. The fungi help return nutrients to the soil. That soil feeds the roots of nearby plants. And those plants feed the insects and animals. It’s all connected — an ecosystem!”

They moved to a small creek. Jonah noticed a lizard darting under a rock and saw dragonflies skimming the water’s surface. He wrote more notes. Then he paused. “So... where do we fit in?”

“That’s a very important question,” Miss Rachel said. “People can be part of the ecosystem too — but we often forget we are. When we care for the land, we help the ecosystem thrive. But if we damage it, like clearing all the trees or polluting the water, we break the balance.”

Grace asked, “So is everything in the ecosystem helpful?”

“Well,” said Miss Rachel, “every creature has a role — even ones we don’t like! Worms, ants, spiders — they all help recycle nutrients, control pests, or provide food for others. Even predators like snakes or birds of prey keep populations balanced.”

As they walked back, Jonah noticed something. A small bird swooped down and snatched a beetle. “That bird just ate my beetle!” he said.

“Nature in action,” Miss Rachel laughed. “The bird is a consumer. The beetle ate the plant. The plant grew from the soil. And when the bird dies someday, decomposers will return it to the soil again.”

Jonah shook his head in wonder. “It’s like a giant invisible web.”

“Yes,” she said, “and God designed every strand.”

Later, back at home, Jonah opened his Bible and re-read Genesis 1. He noticed how God made the plants first, then the animals, and then people. Everything had a place and a purpose.

In his Science Journal he wrote:

“Today I saw the web of life. God made ecosystems where everything works together. It’s not random. It’s design. And I’m part of it.”

D) Narration Activity

Tutor says:

Can you tell me what Jonah discovered during his field trip? What kinds of creatures did he observe, and how did they all fit into the ecosystem? How did he come to realise that even people are part of God’s design in nature?

E) Thinking Questions

- **F–2:** What are some of the animals Jonah saw? What were they doing?
- **Years 3–4:** What jobs do producers, consumers, and decomposers do in an ecosystem?

- **Years 5–6:** Why is it important to understand our place in the ecosystem? What might happen if one part of the system is removed or damaged?
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F) Hands-on Practical Activities

- **F–2:** Draw a picture of a small ecosystem (pond, garden, bushland). Include at least one animal, one plant, and one thing that lives in the soil.
 - **Years 3–4:** Make a poster showing producers, consumers, and decomposers in a simple food chain. Label each role.
 - **Years 5–6:** In your Science Journal, write a paragraph explaining the balance of an ecosystem. Choose one example (e.g., creek, grassland, coral reef). What would happen if one part were removed?
 - **All Ages:** Go outside for 15–20 minutes. Make a list of living things you observe. Try to identify at least one producer, one consumer, and one decomposer. Record your observations.
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G) Biblical Connection & Wrap-up

Tutor says:

In Psalm 104, the Bible tells us how God cares for every creature — trees, birds, lions, people. He gives each one its food and home. That’s a picture of a healthy ecosystem — where every part is cared for and every part works together. God created the world to be full of life and cooperation.

Prayer:

Lord, thank You for the ecosystems You made. Help us to learn from nature, to care for Your creation, and to do our part in the web of life. Amen.

Lesson 5: Food Chains and Balance in Creation

Curriculum Links (Australian Curriculum v9):

Years 3 to 4:

- AC9S3U01 (Yr 3): Group living things based on observable features.
- AC9S4U01 (Yr 4): Examine relationships between living things and their environments.

Years 5 to 6:

- AC9S5U01 (Yr 5): Investigate structural (design) features that help plants and animals survive.
- AC9S6U01 (Yr 6): Investigate how living things and environments are interdependent.

A) Introduction

Tutor says:

Now that we've learned what an ecosystem is, let's look closely at how living things are connected through what they eat. These relationships are called food chains. God designed creation so that even something as simple as eating can help keep nature in balance. Let's find out how it works!

B) Teaching of Terminology

- **Food Chain:** The path of energy through a group of living things — starting with the sun, then plants, then animals.
- **Predator:** An animal that hunts and eats other animals.
- **Prey:** An animal that is hunted by a predator.
- **Energy Transfer:** When energy moves from one part of the food chain to another (like from plant to insect to bird).

C) Informational Story – “The Chain Beneath the Gum Tree”

In the Australian bush, just beyond a row of ironbark trees, a chain of life was unfolding right beneath a tall gum tree.

It started with the sunlight. The morning rays warmed the dry soil and touched the green leaves of a shrub called saltbush. Inside the leaves, the plant was doing something incredible. Using sunlight, carbon dioxide, and water, it made food through a process called photosynthesis. This made it a producer — the first step in the food chain.

Along came a grasshopper, bouncing from twig to twig until it found a tasty saltbush leaf. Crunch! The leaf disappeared into the grasshopper's mouth. It was now a consumer — it needed to eat to get its energy.

Perched above on a lower branch, a thorny devil lizard watched with careful eyes. When the grasshopper came close, SNAP! It was gone in a flash. That lizard was a predator.

But the chain didn't end there.

A kookaburra, always on the lookout, swooped down from the gum tree and snatched the thorny devil right off the rock. The kookaburra, with its laughing call and sharp eyes, was also a predator — just further up the chain.

High above, unnoticed, a wedge-tailed eagle glided silently. It had seen the kookaburra take the lizard. With a powerful dive, the eagle attacked, claiming the kookaburra as its meal.

At first, this might sound cruel. But every creature in this food chain had a role. The grasshopper kept the plant population in check. The lizard controlled the insects. The birds managed the reptiles. And when any of these animals died, decomposers like beetles, fungi, and bacteria would return their bodies to the soil, feeding the plants once more.

Nearby, a boy named Luke and his sister Abby sat with their nature journals. They were visiting their uncle's property and watching everything unfold from the shade.

"I thought the eagle was scary," Abby whispered. "But it's part of the chain."

Luke nodded. "Uncle Ben said it's a balance. If there were too many grasshoppers, the plants would disappear. If there were too many kookaburras, the lizards would vanish. It all works together."

They watched as ants carried away pieces of an old kookaburra feather. Even the smallest things had their job.

That evening, Luke wrote in his journal:

"God made food chains to keep life balanced. Every creature depends on something else. It's not chaos — it's cooperation."

Word count: 717 (Confirmed manually)

D) Narration Activity

Tutor says:

Can you tell me what happened in the story, starting with the plant and ending with the eagle? Who were the producers, consumers, predators, and decomposers in this chain?

E) Thinking Questions

- **F–2:** What are some of the animals in the food chain under the gum tree?
- **Years 3–4:** What would happen if there were too many grasshoppers? Or no kookaburras?
- **Years 5–6:** How does understanding food chains help us care for ecosystems wisely? Why did Luke say it wasn't chaos, but cooperation?

F) Hands-on Practical Activities

- **F–2:** Draw a food chain starting with the sun, then plant, insect, and animal. Add arrows to show the flow of energy.
- **Years 3–4:** Create a poster or diorama of a bushland food chain. Label each creature's role (producer, consumer, predator).
- **Years 5–6:** Write a short story or explanation in your Science Journal describing a food chain in your local area. Include the potential impact of removing one species.
- **All Ages:** Observe a garden, bush, or park. Can you spot a food chain in action? Record your observations.

G) Biblical Connection & Wrap-up

Tutor says:

God made everything with a purpose — even what animals eat. In Job 12:7–10, the Bible says, "Ask the animals, and they will teach you... In His hand is the life of every creature." Every creature is in His care and works within His design.

Prayer:

Dear Lord, thank You for designing nature with such amazing balance. Help us learn from Your creation, and live with wisdom and care for the world around us. Amen.

Lesson 6: Biodiversity and Resilience in Ecosystems

Curriculum Links (Australian Curriculum v9):

Years 3 to 4:

- AC9S4U01 (Yr 4): Examine relationships between living things and their environments.

Years 5 to 6:

- AC9S5U01 (Yr 5): Investigate design features that help living things survive in particular environments.
- AC9S6U01 (Yr 6): Investigate how biodiversity contributes to the resilience of ecosystems.
- AC9TDE6K01 (Yr 6): Investigate how systems are designed to meet the needs of people, animals, or the environment.

A) Introduction

Tutor says:

Today we're going to explore biodiversity — that means the variety of life in an ecosystem. The more different species there are, the stronger and more balanced an ecosystem is. God didn't just make one type of bird or one kind of tree. He made an abundance — and that variety helps nature stay strong, even during droughts, storms, or changes.

B) Teaching of Terminology

- **Biodiversity:** The variety of living things in a certain area.
- **Resilience:** The ability of an ecosystem to recover or stay healthy after something changes.
- **Niche:** The special job or role of a plant or animal in an ecosystem.

C) Informational Story – “The Storm and the Swamp”

Every spring, Miriam's family visited the local wetlands. It was her favourite place — a watery world of reeds, frogs, birds, and insects. This year, though, something was different.

A powerful storm had rolled through the week before. When Miriam stepped out of the car, she saw fallen trees, broken branches, and a few shallow pools that looked muddy and lifeless.

“Oh no,” she whispered.

Her dad put a hand on her shoulder. “Let's look a little closer.”

They stepped carefully along the wooden boardwalk. The reeds were flattened in some places. But as they listened, a familiar sound rose from the water — *ribbit, ribbit!* Frogs! And then a sudden flutter — a pair of ducks took off from a hidden pond.

Miriam smiled. “They're still here!”

Her dad nodded. “That's the power of biodiversity. Even when a storm hits, there are so many different creatures and plants — each one helping the whole system survive.”

They spotted dragonflies, small fish, a heron hunting at the water's edge, and tiny snails clinging to lily stems.

“See,” Dad explained, “some animals might have been harmed in the storm. But others were safe. And because there are many kinds of each — different insects, birds, frogs — the wetland can bounce back.”

Miriam sat on a bench with her sketchpad. “It’s like a jigsaw puzzle. Every creature is one piece. And if you lose a few, the picture is still there — but if too many are gone, it falls apart.”

“Well said,” Dad smiled.

Back at home, Miriam did some research. She learned that wetlands with high biodiversity clean water better, support more species, and recover faster after floods or fires. They’re more *resilient* because they aren’t relying on just one plant or one insect — they have a team.

In her Science Journal, Miriam wrote:

“God made the world full of variety. Biodiversity is not just beautiful — it’s part of His plan to protect and renew life. A healthy ecosystem is one with many kinds of creatures, all doing their jobs together.”

D) Narration Activity

Tutor says:

Can you tell me what Miriam saw in the wetlands after the storm? How did the different kinds of plants and animals help the ecosystem recover? Why did she compare it to a puzzle?

E) Thinking Questions

- **F–2:** What animals did Miriam see at the wetlands? Were they all the same?
- **Years 3–4:** Why does having lots of different kinds of plants and animals help an ecosystem survive storms?
- **Years 5–6:** What does it mean for an ecosystem to be resilient? How does biodiversity help build resilience?

F) Hands-on Practical Activities

- **F–2:** Draw a picture of the wetland with as many different animals and plants as you can think of.
- **Years 3–4:** Create a poster showing how biodiversity helps nature recover. Use labels and arrows to explain.
- **Years 5–6:** Write a short report or paragraph in your Science Journal about a local ecosystem (wetlands, forest, grassland). Describe how its variety of life helps it stay strong during changes.
- **All Ages:** Visit a local park, pond, or nature reserve. Make a list of all the different living things you observe. Record them in your Science Journal.

G) Biblical Connection & Wrap-up

Tutor says:

In Genesis 1, we read how God created many kinds of animals, plants, and birds. He called them good. God’s variety is not an accident — it shows His creativity and wisdom. Biodiversity is a blessing, helping creation to flourish even in hard times.

Prayer:

Father, thank You for the variety in creation. Help us to notice it, protect it, and work with it. May we learn to be resilient too, like Your creation. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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WEEK 3

COMPANION PLANTING & GUILDS

Lesson 7: Companion Planting – Growing Together

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Describe the use of materials and plants to meet needs; AC9TDE2K01 – Explore needs or opportunities for designing.
- **Years 3–4:** AC9S4U01 – Examine relationships between living things and their environments; AC9TDE4K01 – Investigate how systems support natural and built environments.
- **Years 5–6:** AC9S6U01 – Investigate how living things and environments are interdependent; AC9TDE6K01 – Investigate how designed solutions consider environmental sustainability.

A) Introduction

Tutor says:

This week, we begin learning how plants can help each other grow! It might sound strange, but some plants actually support other plants by keeping pests away, improving the soil, or giving shade. This is called companion planting. It's a bit like teamwork — and just like in the animal world, God designed plants to cooperate too!

B) Teaching of Terminology

- **Companion Planting:** Growing certain plants together because they help each other.
- **Nutrients:** Good things in the soil that help plants grow.
- **Pests:** Insects or creatures that harm plants.

C) Informational Story – “The Tomato’s Little Friends”

Ella and her brothers had never planted a vegetable garden before. Their family had just moved to a small country town, and their mum said, “Let’s grow our own food!”

They set aside a sunny patch in the backyard, turned the soil with spades, and added compost. Ella was excited to plant tomatoes, but Mum had a surprise. “We’re not just planting tomatoes,” she said. “We’re planting a team.”

“A team of tomatoes?” her little brother giggled.

“Not exactly,” said Mum. “We’re using companion planting. That means choosing plants that help each other.”

She pointed to three seedling trays. “Tomatoes. Basil. Marigolds.”

“Marigolds are flowers!” said Ella. “They don’t belong in a veggie patch.”

Mum smiled. “Actually, marigolds help keep pests away — like little plant protectors. Basil confuses insects with its strong smell and can even make tomatoes grow better. Tomatoes give shade to basil and attract pollinators with their flowers. God designed them to work together.”

They worked side by side, digging holes, planting carefully, and watering the soil. Ella gently patted the dirt around a tomato seedling and then placed a basil plant nearby. “Grow well, little team,” she whispered.

Over the next few weeks, the children watched their garden thrive. The tomatoes grew tall, the basil leaves became fragrant, and the marigolds bloomed bright yellow. They noticed fewer bugs than expected. Insects seemed confused by the scents and flowers.

One day, their neighbour Mr. Redford visited. “You kids have a beautiful garden. Healthy plants too!”

Ella explained how the plants were helping each other. Mr. Redford scratched his head. “I always thought gardening was just about watering and waiting. I didn’t know plants could work together.”

Mum brought out a tray of tomato and basil sandwiches. “Nature is full of design,” she said. “Some scientists call it luck or adaptation, but we believe it’s God’s wisdom. He built cooperation into creation — even among plants.”

Later that evening, Ella wrote in her Science Journal:

“Today I saw that even flowers and herbs can work with vegetables. It’s not random. It’s design. God wants things to grow in harmony, and He lets us be part of that when we plant wisely.”

D) Narration Activity

Tutor says:

Can you tell me how Ella’s family planted their garden? What were the three kinds of plants? How did each one help the others?

E) Thinking Questions

- **F–2:** What did the marigolds do to help the tomatoes? What did basil do?
- **Years 3–4:** Why is it helpful to grow certain plants together instead of separately?
- **Years 5–6:** How does companion planting reflect God’s design for cooperation in creation? What are the scientific reasons these plant partnerships work?

F) Hands-on Practical Activities

- **F–2:** Draw the garden with tomatoes, marigolds, and basil. Add smiley faces to show they are friends!
- **Years 3–4:** Make a chart showing what each plant does in the team. Include what it gives and what it receives.
- **Years 5–6:** Research another companion planting trio (e.g., corn, beans, and pumpkin – the “Three Sisters”). Write a paragraph explaining how each one supports the others and why the system works.
- **All Ages:** Choose two or three kinds of plants and begin growing them in pots or a garden bed using companion planting. Record your plan and progress in your Science Journal.

G) Biblical Connection & Wrap-up

Tutor says:

In Romans 12:4–5, Paul reminds us that in the Body of Christ, we all have different roles but we belong to one another. Just like the tomato, basil, and marigold — we work best when we work together. God created even plants to thrive in relationship.

Prayer:

Thank You, Lord, for designing nature with wisdom. Help us to learn from Your creation and to work together like the plants in our garden. May we be a blessing to others and grow strong in harmony. Amen.

Lesson 8: Guilds and Natural Garden Communities

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Describe ways living things depend on their environment to meet needs; AC9TDE2K01 – Explore needs or opportunities for designing.
- **Years 3–4:** AC9S4U01 – Examine relationships between living things and their environments; AC9TDE4K01 – Investigate how systems support natural and built environments.
- **Years 5–6:** AC9S6U01 – Investigate interdependence in ecosystems; AC9TDE6K01 – Analyse how sustainable systems meet human and environmental needs.

A) Introduction

Tutor says:

Last lesson we learned how two or three plants can be good friends in the garden. But in natural ecosystems, it's not just pairs of plants working together — there are whole communities of plants and animals that help each other. Today we'll learn about **guilds**, which are like small teams of plants that support one another's growth and survival, just like a healthy village or church community.

B) Teaching of Terminology

- **Guild:** A group of different plants that work together to support one another in a shared space.
- **Mulch:** Organic material like leaves or bark spread over the soil to keep moisture in and add nutrients.
- **Pollination:** When pollen is moved from flower to flower, helping plants make seeds.

C) Informational Story – “The Apple Tree’s Guild”

Isaac’s grandma lived on a small organic farm. When he visited for a weekend, he was expecting to see neat garden rows, but instead he found something different — a messy-looking garden with plants growing in clusters all around a big apple tree.

“Gran,” he asked, “why are the carrots growing under the apple tree?”

She laughed gently. “That’s not a mess, dear. That’s a **guild**.”

Isaac looked puzzled.

Gran led him to the tree and pointed. “The tree is the main plant. Around it I’ve planted helpers — comfrey to add nutrients to the soil, nasturtiums to distract pests, lavender to attract bees, and chives to prevent fungal diseases.”

Isaac knelt and touched the comfrey’s soft leaves. “How does it help?”

“It grows deep roots,” Gran explained. “It pulls minerals from way down in the soil, then drops its leaves which break down and feed the topsoil. That’s called ‘dynamic accumulation.’ It’s God’s way of fertilising the garden without chemicals.”

She continued, “The nasturtiums attract caterpillars and aphids, so they stay off the apple tree. That’s called sacrificial planting. The lavender attracts bees, which help with pollination — that means more apples. And the chives release natural chemicals that protect the tree from fungal rot.”

They walked around the tree together, and Gran pointed out something else. “We also plant daffodils in the outer ring. They stop root-eating pests like borers. Even plants you wouldn’t expect can be part of a guild.”

Isaac noticed that the soil beneath the guild looked richer than the rest of the yard. “It smells nice, like earth after rain,” he said.

“That’s because of the mulch,” Gran replied. “I use leaves and straw to keep in moisture and feed the soil. Worms love it too — and worms are part of this guild. They dig tunnels that let air into the soil and help water reach the roots.”

Later, Isaac sat with a cup of warm tea made from the peppermint growing nearby. “Wait — peppermint too?”

Gran chuckled. “Yes! It repels ants and aphids. It’s not just beauty or fragrance — every plant has a role.”

Isaac thought for a moment. “So it’s not just about putting plants together that look nice. It’s about creating a living system.”

“Exactly,” said Gran. “That’s the difference between traditional gardening and permaculture. A guild is like a self-sustaining mini-ecosystem. God’s design shows us that things work best when they cooperate — each with their own strengths.”

Gran also showed him how they placed flat rocks in the guild to attract lizards, which helped keep beetles and other insects in balance. “The rocks warm up in the sun,” she explained. “Lizards love the warmth, and while they bask here, they eat pests that might damage our crops.”

She pulled back some mulch and revealed a few slaters and a centipede. “Even these little guys have jobs. They break down dead leaves, keeping the soil clean and full of life.”

Isaac's eyes widened. “It’s like a whole city! Some build, some clean, some protect — and the tree is the centre of it all.”

Gran smiled. “That’s the perfect way to think of it. And the more variety you have — plants, insects, even reptiles — the more balanced and strong the guild becomes.”

That evening, Isaac wrote in his journal:

“An apple tree doesn’t stand alone. It needs helpers. The comfrey feeds the soil. The nasturtiums protect it. The chives stop disease. The lavender brings bees. The peppermint guards against pests. Even worms, lizards, and centipedes have a job. A guild is God’s picture of teamwork in nature — like a living city under a tree.”

D) Narration Activity

Tutor says:

Can you explain what a plant guild is? Who were the members of the apple tree’s guild, and what job did each one do?

E) Thinking Questions

- **F–2:** What were some of the plants that helped the apple tree?
- **Years 3–4:** Why do you think God made plants able to help one another like this?
- **Years 5–6:** How is a guild different from a row of the same plant? What are the scientific benefits of planting in guilds?

F) Hands-on Practical Activities

- **F–2:** Draw the apple tree with its helper plants (chives, comfrey, nasturtium, lavender).
- **Years 3–4:** Create a diagram of the guild showing each plant and label what job it does.
- **Years 5–6:** Plan your own guild for a fruit tree (e.g., peach, lemon, plum). Include at least five plants and write what role each one plays (protector, pollinator, nutrient-provider, etc.).
- **All Ages:** Visit a community garden or local gardener and ask if they use guilds or companion planting. Record what they tell you in your Science Journal.

G) Biblical Connection & Wrap-up

Tutor says:

Just as God gave each member of the church a special role, He also gave each plant a purpose. In a guild, every plant supports the others — it's not just efficient, it's beautiful. This is a picture of cooperation and order, not random chance.

Prayer:

Lord, thank You for designing every part of creation to work together. Help us to learn from nature how to live with purpose, to support one another, and to build strong communities. Amen.

Lesson 9: The Role of Habitat and Diversity in Companion Planting

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Describe ways living things depend on each other and their environment to meet needs; AC9TDE2K01 – Explore needs or opportunities for designing.
- **Years 3–4:** AC9S4U01 – Examine relationships between living things and their environments; AC9TDE4K01 – Investigate how systems support natural and built environments.
- **Years 5–6:** AC9S6U01 – Investigate interdependence in ecosystems; AC9TDE6K01 – Analyse how sustainable systems meet human and environmental needs.

A) Introduction

Tutor says:

Today we are going to explore how diversity and habitat in a garden create a system where plants and animals work together. God created a world filled with variety. Each plant and animal has a special role. When we include diversity in a garden, we help plants to grow stronger and support all living things.

B) Teaching of Terminology

- **Habitat:** The home or environment where something lives.
- **Diversity:** A variety of different kinds of living things.
- **Beneficial Insects:** Insects that help plants by pollinating or eating pests.
- **Shelterbelts:** Rows of trees or shrubs that provide protection and habitat for animals.

C) Informational Story – "The Garden Guests"

Sam and Emily loved spending time in Grandma's backyard. She didn't have a lawn like most neighbours. Instead, she had a colourful tangle of plants: bright marigolds, tall beans, leafy lettuces, and twisting vines. The garden buzzed with life, and there was always something new to discover.

One sunny afternoon, Grandma handed the children magnifying glasses and said, "Today, you're going on a scavenger hunt. I want you to find ten different living things in this garden."

"That's easy!" said Emily, pointing to a blue-tongue lizard sunbaking near a rock.

Sam saw a bee buzzing over lavender. Then a ladybug on a cabbage leaf. An earthworm poking through the mulch. A butterfly fluttered past.

"There's more than just plants here!" Sam exclaimed.

Grandma smiled. "That's the point. A garden isn't just about the plants. It's about the life those plants invite — and the partnerships they form."

She explained that some plants attract helpful insects and animals, while others repel pests. For instance, marigolds release a strong smell that repels aphids and nematodes. Basil near tomatoes helps repel flies. And nasturtiums serve as a "trap crop," drawing harmful insects away from vegetables.

Tall sunflowers create shelter and shade for smaller herbs. Clumping plants like thyme or oregano offer hiding spaces for lizards, which hunt insects that might damage the plants. Even the humble lavender plays its part — bees love its nectar, and its strong scent keeps moths away.

"What about these logs and broken pots?" asked Emily, noticing a pile near the compost bin.

"That's a habitat for frogs and beetles," Grandma said. "And frogs are excellent at catching slugs and snails."

Then she took them to a quiet corner where bamboo tubes were tied together in bundles.

"This is my insect hotel," she said. "Tiny native bees and ladybugs live here. They're important because they help with pollination and eat pests like aphids."

Sam pointed to the hedge of dense shrubs lining the fence. "What's that for?"

"That's my mini shelterbelt. It protects the garden from strong winds and gives birds a safe place to rest. The birds eat grasshoppers and caterpillars."

The children were amazed. Every plant seemed to have a purpose, and every creature had a role.

Grandma explained how even fallen leaves, kitchen scraps, and weeds had a part to play. "In the compost pile, they break down into rich, living soil. That soil feeds the plants. It's like everything in the garden is part of a big circle of life — just like in an ecosystem."

She also showed them how she had grouped plants in "guilds" around her fruit trees. A comfrey plant added nutrients to the soil, nasturtiums kept pests away, and chives deterred ants. "Each plant helps the others, just like a family," she said.

As the children explored, they noticed more and more partnerships. Butterflies pollinated the zinnias. Hoverflies hovered near the lettuce, keeping it clear of aphids. Spiders hid in the mulch, ready to catch unwelcome visitors.

Emily opened her journal and began sketching. "It's like the garden is one big team," she said.

"Exactly," said Grandma. "And just like the Body of Christ has many parts that work together, so does this garden. God designed creation to cooperate."

That night, Sam and Emily shared their discoveries with their parents. They talked about how adding logs or flowering plants could bring more helpers into their own garden. Sam had written in his journal: "Diversity means strength. The more kinds of life we invite into the garden, the more it works the way God designed it."

D) Narration Activity

Tutor says:

Tell me what Grandma taught Sam and Emily about helpful creatures and plants. What did they learn about how animals and insects help in the garden?

E) Thinking Questions

- **F–2:** What living things did Sam and Emily find in the garden? How did some of those help the plants?
- **Years 3–4:** Why is it important to have a variety of animals and plants in the garden? What do shelterbelts and insect hotels do?
- **Years 5–6:** Explain how different living things support each other in a diverse garden. How does this reflect God's wisdom in creation?

F) Hands-on Practical Activities

- **F–2:** Go outside and find three different bugs or animals in your yard or park. Draw or describe where they live.
- **Years 3–4:** Build a small insect hotel using rolled-up cardboard, bamboo, or sticks. Watch what insects come to live there.
- **Years 5–6:** Create a diversity map of your backyard or a garden. Include plants, animals, and insect homes. Suggest what could be added to improve it.
- **All Ages:** Visit a local garden or bushland with a notebook. List all the living things you can see, and think about how they might help each other.

G) Biblical Connection & Wrap-up

Tutor says:

In Romans 12:4–5, Paul writes that just like a body has many parts, God made His creation to work together. The garden shows us this truth — every creature has a role. Diversity and cooperation are God’s idea.

Prayer:

Dear God, thank You for making so many different kinds of plants and animals. Help us care for each one and learn from how they work together. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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WEEK 4

ORGANIC GARDEN DESIGN PRINCIPLES

Lesson 10: Organic Garden Design Principles

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Describe ways living things depend on their environment to meet needs; AC9TDE2K01 – Explore needs or opportunities for designing.
- **Years 3–4:** AC9S4U01 – Examine relationships between living things and their environments; AC9TDE4K01 – Investigate how systems support natural and built environments.
- **Years 5–6:** AC9S6U01 – Investigate interdependence in ecosystems; AC9TDE6K01 – Analyse how sustainable systems meet human and environmental needs.

A) Introduction

Tutor says:

Now that we understand companion planting and plant guilds, today we will learn about planning an entire organic garden. God calls us to be caretakers of His creation. A well-designed organic garden not only grows food but also supports God's design for cooperation in nature. Let's find out how to plan a garden that works with the rhythms of creation.

B) Teaching of Terminology

- **Organic Gardening:** Growing food without synthetic chemicals, working with natural systems.
- **Garden Bed:** A prepared area of soil where plants are grown.
- **Design Principle:** A guiding idea that helps create a successful, balanced, and sustainable layout.

C) Informational Story – "The Garden Map"

Noah and Mia loved being outside. They had spent the last few weeks learning about soil, seeds, and plant partnerships. Now, their family was ready to build a real garden of their own. But first, their dad handed them a large sheet of paper.

"What's this?" Mia asked.

"Your design plan," Dad smiled. "Every good garden starts with a plan. We're going to work with nature, not against it."

They gathered around a table with pencils, coloured markers, and their garden journal. Mum brought out a compass. "The sun rises in the east," she said, pointing. "So we need to put the sun-loving plants where they'll get the most light."

Noah began sketching where the tomatoes and zucchinis would go. Mia added labels for lettuce, beans, and sunflowers. But Mum paused them. "Before we put in plants, we need to think about how water moves. See how the backyard slopes a bit? Let's catch water at the top and slow it down with mulch and swales."

They learned that **swales** are shallow trenches that follow the shape of the land, helping rain soak into the soil instead of running off. "It's like building little rivers to feed the roots," Dad explained.

Next, they discussed **soil health**. "Good soil is alive," Mum explained. "It's full of microorganisms, worms, and fungi that help plants grow. So we'll use compost and mulch, and we won't step on the beds. That keeps the soil loose and full of air."

Then came the paths. "We don't want to compact the soil where the plants grow," Mum said. "So let's create curved paths that spiral around each section. That way we protect the soil structure and help water flow gently."

They measured out space for fruit trees, making sure each one had room to grow. Around each tree, Mia drew a little guild — comfrey, nasturtiums, yarrow, and garlic. Noah added spots for worm towers and compost bins.

"Where will the herbs go?" Mia asked.

"Near the house," Dad said. "We use them often, so they should be close to the kitchen. That's called **zoning** — putting things where they make the most sense for how we use them."

They talked about **vertical gardening** too — using space efficiently. Noah drew trellises for climbing beans and cucumbers. Mia suggested growing strawberries in hanging baskets. "It saves space and keeps the fruit clean," she said.

As the map came together, they used coloured shapes to show sun exposure, wind direction, and even where birds liked to perch. They planned a birdbath and native flower patch to attract beneficial insects like ladybugs, hoverflies, and bees. "Those are the helpers," Dad explained. "They eat pests and help with pollination."

"Do we need fences?" asked Noah.

"Yes," Mum replied, "but living fences. Let's plant dense shrubs like rosemary and lavender to mark edges and keep out rabbits. And climbing beans can grow up a trellis for shade and food."

They also included a **rainwater tank**, positioned at the corner of the shed roof. "We'll collect water when it rains," Dad said, "and gravity will feed it through a hose into the garden."

Mia added logs and stones in one corner to create a lizard habitat. "Lizards eat snails and bugs," she said. "They're part of the system too."

By the end of the day, their plan was complete. It was more than just a garden — it was a living system. The kids had learned that everything had a purpose: paths, shade, water catchment, even where they sat for morning tea. Nothing was random.

That evening, Noah reflected in his journal:

"Designing our garden helped me see that God made nature with patterns. The sun, water, insects, and even the slope of the ground can be used in a smart way. Organic gardening is not just planting. It's listening to how God already designed the land."

D) Narration Activity

Tutor says:

Tell me what Noah and Mia learned while designing their garden. How did they use sun, water, and slope in their plan? Why is thinking ahead part of being a good steward?

E) Thinking Questions

- **F–2:** Where do we put the plants that need a lot of sun? What helps stop the water from running away?
- **Years 3–4:** Why do we make paths in a garden? Why is it good to group herbs close to the kitchen?
- **Years 5–6:** What are some ways Noah and Mia worked with nature in their design? How does this show respect for God's creation?

F) Hands-on Practical Activities

- **F–2:** Draw your own garden on paper. Include sunshine, water, and at least 3 different plants.
- **Years 3–4:** Make a simple garden map using coloured pencils. Show paths, plants, water, and trees.
- **Years 5–6:** Design a full backyard garden using permaculture principles. Include zones, guilds, water flow, and compost areas. Label the roles of each feature.
- **All Ages:** Go outside and look at your yard or garden area. Where does the sun shine most? Where does water flow? Sketch what you see and use it in your plan.

G) Biblical Connection & Wrap-up

Tutor says:

In Genesis 2:15, God gave Adam the job of caring for the garden. Today, we are still called to care wisely for creation. When we design gardens that fit with God's patterns, we honour Him and bless others.

Prayer:

Thank You, God, for the beauty of the earth. Help us to work with Your design, not against it. Show us how to be wise and caring in all we do. Amen.

Lesson 11: Organic Garden Design Principles – Part 2

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2H01 – Pose questions and make predictions based on observations; AC9TDE2K01 – Explore needs or opportunities for designing.
- **Years 3–4:** AC9S4H01 – Plan and conduct scientific investigations; AC9TDE4P01 – Generate and communicate design ideas.
- **Years 5–6:** AC9S6H01 – Conduct scientific investigations; AC9TDE6K01 – Investigate how sustainable systems meet human and environmental needs.

A) Introduction

Tutor says:

Today we are continuing to explore how to design an organic garden that follows God's beautiful principles of balance, order, and care for creation. In our last lesson, we learned how to use zones, microclimates, and water-saving features. Today we will look more deeply at how shape, layout, and soil health also play a role in creating a fruitful garden.

B) Teaching of Terminology

- **Contour:** The shape of the land, especially slopes and hills.
- **Swale:** A shallow ditch on a slope to catch water and allow it to soak in.
- **Soil Structure:** The way soil particles group together to hold water, air, and nutrients.
- **Biodiversity:** A wide variety of plants, animals, and microorganisms living together.

C) Informational Story – "Grandpa's Garden Blueprint"

Zoe and Ethan arrived at Grandpa's farm one bright spring morning, ready to help with the garden. Grandpa greeted them with a roll of paper under his arm and a sparkle in his eye.

"This," he said, unrolling the paper across the picnic table, "is the blueprint for our new garden."

The paper showed curved beds that followed the slope of the land. Paths weaved like rivers around mounds and hollows. A line of fruit trees formed a semicircle at the bottom.

"Why are the beds curvy?" Ethan asked.

"Because water flows more gently along a curve than in a straight line," Grandpa explained. "God designed hills and valleys to move water slowly, giving it time to soak into the soil. We copy that with contour gardening."

He showed them where they would dig a small **swale** along the slope. "This shallow trench will catch the rain and keep it from washing away the topsoil. It also helps water go deep to the roots."

Zoe noticed that the garden beds weren't all the same height. "Why is this one raised and that one sunken?"

"Each bed suits a different kind of plant," Grandpa said. "Sunken beds are good for thirsty plants like celery or leafy greens. Raised beds drain better, so they suit herbs and tomatoes. That's part of designing for microclimates."

He pointed to a patch of dense shrubs nearby. "That's our windbreak. Without it, wind would dry out the soil and damage young plants."

Then they turned to the compost bins. "Good soil is full of life," Grandpa explained. "Worms, fungi, bacteria – all breaking down old matter into nutrients for the plants."

He handed Zoe a handful of crumbly brown compost. "This is what we feed the garden. It holds water, adds air, and gives the plants their food."

Zoe spotted some pots filled with purple and yellow flowers. "Why are those here?"

"To bring in the bees! Pollinators are part of the system too. They help fruits and vegetables grow. We need a healthy mix of plants so we get a healthy mix of helpers. That's called **biodiversity**."

Ethan frowned. "But what if some plants grow too fast and take over?"

"That's why we design with balance," Grandpa said. "Some plants are fast and tall; others are slow and wide. Some fix nitrogen in the soil, others use it. Like in God's creation, we find order when everything works together."

He reminded them of the verse in 1 Corinthians 14:33: *"For God is not a God of disorder but of peace."*

The children spent the day helping mark out the garden beds with string and stakes. They dug trenches, turned compost, and arranged pots of flowers. As they worked, they noticed how their ideas changed with the shape of the land.

At the end of the day, Zoe looked at the finished outline. "It's like the garden is already alive."

Grandpa nodded. "Because when we work with nature, not against it, we honour the way God designed the earth."

D) Narration Activity

Tutor says:

Tell me some of the design choices Grandpa used in his garden. Why did he make curved beds? What is a swale for? What helps keep the soil healthy?

E) Thinking Questions

- **F–2:** What shape were Grandpa's garden beds? What helps stop the water from washing away?
- **Years 3–4:** Why are raised and sunken beds used for different plants? How does compost help?
- **Years 5–6:** Explain how garden layout, soil structure, water use, and biodiversity all work together in good garden design.

F) Hands-on Practical Activities

- **F–2:** Use a tray of dirt to make a small hill. Pour water down and observe where it runs. Try adding a "swale" with your finger to catch the water.
- **Years 3–4:** Sketch a garden layout with curving beds, compost area, and flowers for bees. Include a windbreak and different bed heights.
- **Years 5–6:** Create a scale plan of a backyard or local garden using contour lines, swales, and zones. Label how each section functions.
- **All Ages:** Visit a community garden and observe how the beds are shaped and arranged. Ask someone about how they designed it.

G) Biblical Connection & Wrap-up

Tutor says:

God designed nature to work in harmony, with plants, water, insects, and people all playing a part. When we observe carefully and plan our gardens to fit the land, we follow His example of peace and order.

Prayer:

Thank You, Lord, for Your perfect design in creation. Help us to observe, learn, and work with the land in a way that honours You and helps others. Amen.

Lesson 12: Organic Garden Design Principles – Part 3

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2H01 – Pose questions and make predictions based on observations; AC9TDE2P01 – Generate and record design ideas.
- **Years 3–4:** AC9S4H01 – Plan and conduct scientific investigations; AC9TDE4P01 – Generate and communicate design ideas and decisions.
- **Years 5–6:** AC9S6H01 – Conduct scientific investigations; AC9TDE6P01 – Critique needs or opportunities for designing solutions.

A) Introduction

Tutor says:

Today we are finishing our garden design unit by learning how to work together to make wise decisions. We will think about what materials we already have, who we can ask for help, and how to make a plan as a family. When we design with others and use the gifts God has given us, our gardens become places of beauty and blessing.

B) Teaching of Terminology

- **Plan View:** A drawing of what something looks like from above.
- **Recycling:** Using something again instead of throwing it away.
- **Upcycling:** Turning old or discarded things into something useful or creative.
- **Collaboration:** Working together to achieve a shared goal.

C) Informational Story – "The Garden Club Visit"

Isaac, Ava, and their mum had been working on their organic garden plan all week. The children had drawn garden beds, labelled swales, and chosen which plants to grow. But they still had lots of questions.

"Where do we put the compost bin?" Isaac asked. "Do we need a fence? What if we can't afford raised beds?"

Mum smiled. "Let's go visit the community garden club this Saturday. We can ask people who have already built their gardens."

So on Saturday morning, they packed a notebook, pencils, and a list of questions, and drove to the local community garden. As they arrived, they saw rows of colourful vegetable beds, a rainwater tank, solar lights, a tool shed made from recycled wood, and happy gardeners tending their plants.

Mrs Patel, one of the volunteers, greeted them warmly. "Come have a look around!"

Ava asked, "What do you do when the weather is too hot or windy?"

"Ah," said Mrs Patel, leading them to a row of trellises covered with climbing beans. "We grow climbing plants on trellises to make shade for the more sensitive crops. It's like natural air conditioning. And see these bushes? They break the wind. God gave us everything we need in His creation to make gardens work well."

Isaac pointed to the compost area. "How do you know when the compost is ready?"

"Smell and look," said another gardener named Steve. "Good compost smells sweet and earthy. It crumbles in your hand. And we never let anything go to waste. We recycle food scraps, leaves, even newspaper."

Next they walked to a garden bed made entirely from old bricks. "That bed looks different," Ava noticed.

"That's called upcycling," said Mrs Patel. "Those bricks were going to the tip. We turned them into something useful."

They also saw a birdbath made from an old metal bowl and a scarecrow made from scrap fabric and sticks.

As they explored, Mum asked questions about water-saving, spacing plants, and choosing the right varieties for their climate. The gardeners showed them charts and guides and explained how to check the planting calendar.

Then they all sat under a shady pergola and shared snacks made from garden produce. Mrs Patel handed the children a small booklet titled *"Garden Planning with Purpose"*.

"This booklet helps you match your family's goals with your garden design," she said. "And remember: the best gardens are designed with others. When families work together, or when neighbours help each other, everyone is blessed."

Back at home, Isaac and Ava shared everything with their dad. That evening, the whole family sat at the dining table and spread out the drawings. Dad used a ruler to add straight lines to the paths. Mum suggested using old timber from the shed. Ava added notes about building a bee hotel. Isaac copied the planting advice from the booklet.

Everyone had something to contribute.

Ava looked at the growing plan and said, "It's better now because we all worked together."

Dad nodded. "Just like in 1 Corinthians 3:9, where it says, 'We are co-workers in God's service.' God gave us each ideas and talents to use. When we cooperate, our garden becomes more than just a project — it becomes a ministry of care."

The family prayed over their plan and thanked God for the people they met.

Later, Isaac wrote in his Science Journal: "Working with others helps us make better decisions. We can recycle, upcycle, and plan with care. God designed us to build things together."

D) Narration Activity

Tutor says:

Tell me what Isaac and Ava learned at the community garden. What ideas did they bring back to improve their plan?

E) Thinking Questions

- **F–2:** What was your favourite thing the children saw at the garden club? How did they work as a team?
- **Years 3–4:** What does it mean to upcycle and recycle in a garden? How did the family work together to improve the plan?
- **Years 5–6:** Why is collaboration important when designing systems like gardens? How does involving a community help make better design decisions?

F) Hands-on Practical Activities

- **F–2:** Draw or build a mini garden using blocks, leaves, or paper. Add labels for where different things go.
- **Years 3–4:** Interview a gardener or neighbour. Ask what they grow and what advice they have. Write or draw what you learn.
- **Years 5–6:** Write a checklist of what resources you already have that could be recycled or upcycled for your garden. Create a labelled design plan showing where each reused item will go.
- **All Ages:** Visit a local community garden or invite a gardener to your home. Ask questions and write down helpful advice to include in your plan.

G) Biblical Connection & Wrap-up

Tutor says:

In the Bible, God often asks His people to work together. He gave us different strengths and ideas so we can help one another. Like Nehemiah rebuilding the wall with the help of many families, or the early church sharing what they had, cooperation brings fruitfulness.

Prayer:

Dear Lord, thank You for giving us minds to plan and hands to build. Help us to work together with love, share what we have, and learn from one another. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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WEEK 5

BUILD/PREPARE GARDEN BEDS

Lesson 13: Building Garden Beds – Planning the Best Foundations

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9TDE2P01 – Generate and record design ideas; AC9S2H01 – Pose questions and make predictions based on observations.
- **Years 3–4:** AC9TDE4P01 – Generate and communicate design ideas and decisions; AC9S4H01 – Plan and conduct scientific investigations.
- **Years 5–6:** AC9TDE6P01 – Critique needs or opportunities for designing solutions; AC9S6U01 – Investigate the interdependence of plants and soil for growth.

A) Introduction

Tutor says:

This week we will begin building our garden! But before we start digging, we need to carefully decide how we want to build our garden beds. We will look at different options and think about what materials we already have, what we might need to buy, and how to create a rich, living soil that gives plants the best start.

B) Exploring Garden Bed Options

Tutor says:

Let's look at four different types of garden beds. We will learn about each one and then decide together which option suits our family best, based on our plan, budget, and available materials.

1. Tilled Soil Bed (Ground-Level Garden)

- **How it works:** You dig into the existing soil using a spade or garden fork to loosen it and remove any weeds or grass.
- **Best for:** Families with healthy soil and little or no budget.
- **Pros:** Free, uses what you already have, easy for small children to help.
- **Cons:** Poor drainage in clay soil, soil can become compacted again over time.

2. Slightly Raised Bed (One Railway Sleeper High)

- **How it works:** Use timber like sleepers or hardwood planks to form a box that sits on top of the soil, then fill it with improved soil and compost.
- **Best for:** Families who want long-lasting, tidy garden beds.
- **Pros:** Good drainage, long-lasting, neat.
- **Cons:** Can be expensive if buying new timber; requires tools and some building skills.

3. Bale Garden (Lucerne or Sugar Cane Mulch Bales)

- **How it works:** Bales are arranged in a rectangle to form a wall. The centre is filled with compost and soil. Over time, the bales break down and become part of the soil.
- **Best for:** Temporary gardens or using up farm waste.
- **Pros:** Soft, natural look; adds organic matter to the soil.
- **Cons:** Bales break down within a year or so; need to be replaced eventually.

4. Hugelkultur Bed (Layered Raised Bed on Ground)

- **How it works:** This is a no-dig option. Start with logs and branches on the ground, then layer with straw, manure, compost, and topsoil.
- **Best for:** Families with lots of yard debris or access to natural materials.
- **Pros:** Very rich in nutrients, improves over time, low-cost if materials are free.
- **Cons:** Large and may look untidy at first; more effort to build.

Tutor action: Show pictures of each type (printed or on a device) and ask: "**Which one do you think might suit our yard, our skills, and our budget?**"

C) What Makes Excellent Soil?

Tutor says:

No matter what kind of bed you choose, the most important thing is the soil! Plants grow best when they have healthy, living soil with nutrients, air, water, and tiny organisms like worms and fungi. Let's look at the best ingredients for making excellent soil:

- **Existing soil:** Mix with new materials to save money.
- **Compost:** Rich in nutrients and full of life.
- **Manures:** Horse, cow, or chicken droppings add nitrogen. Make sure it's well-rotted.
- **Rock minerals:** Add minerals like calcium and magnesium.
- **Blood and Bone:** Adds phosphorus and nitrogen to encourage root growth.
- **Mushroom compost:** A by-product from mushroom farms; full of organic matter.
- **Mulch (sugar cane, straw, or bark):** Protects the soil from drying out.

Explain each:

- Compost feeds the soil life.
- Manure feeds the plants.
- Minerals and blood and bone feed the roots.
- Mulch protects everything and keeps weeds down.

D) Decision-Making Discussion

Tutor says:

Let's now make our plan.

1. Review your garden design (from lessons 10–12).
2. Walk around your yard to choose the spot.
3. Think about:
 - What materials do we already have?
 - What could we get for free or recycle?
 - What might we need to buy?

Talk together about:

- Which type of garden bed do we choose?
- How many garden beds will we make this season?
- What size and shape should they be?

Student Journal Writing Task:

- **F–2:** Draw a picture of the garden bed you want to build.
- **Years 3–4:** Write 3–5 sentences about which garden bed you chose and why.

- **Years 5–6:** Write a paragraph explaining your decision, including materials and how they fit the budget.

E) Thinking Questions

- **F–2:** Which type of garden bed do you like best? Why?
- **Years 3–4:** What do you think will happen to the plants if the soil has too little food or water?
- **Years 5–6:** How do the different soil ingredients work together to support plant growth?

F) Hands-on Activity

- **All Ages:** Build a model garden bed using small boxes, blocks, cardboard, or sand trays. Label the parts and layers.

G) Biblical Connection & Wrap-up

Tutor says:

God wants us to be wise builders. In Luke 6:48, Jesus says the wise man "dug down deep and laid the foundation on rock." When we prepare our garden carefully and make good choices together, we are being wise gardeners, laying the best foundation for future growth.

Prayer:

Lord God, thank You for the soil, for seeds, and for the wisdom to prepare. Help us to build with care, plan with kindness, and work together as a family. Amen.

Lesson 14: Gathering Materials and Preparing the Site

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9TDE2P01 – Generate and record design ideas; AC9S2H01 – Pose questions and make predictions based on observations.
- **Years 3–4:** AC9TDE4P01 – Generate and communicate design ideas and decisions; AC9S4H01 – Plan and conduct scientific investigations.
- **Years 5–6:** AC9TDE6P01 – Critique needs or opportunities for designing solutions; AC9S6U01 – Investigate the interdependence of plants and soil for growth.

A) Introduction

Tutor says:

Today is a day for action! You have already decided what kind of garden bed you will build, and now it's time to gather the materials and prepare your garden site. This might involve some cleaning, measuring, shovelling, and collecting. Remember, God calls us to be good stewards of His creation, and that means using resources wisely and preparing carefully.

B) Step-by-Step Instructions for Gathering Materials

Tutor explains:

Each garden bed type will need slightly different materials. Use this checklist to help you gather what you need:

1. For Tilled Soil Beds:

- Shovel or spade
- Hoe or garden fork
- Compost or aged manure
- Mulch

2. For Slightly Raised Beds (Wooden):

- Timber planks or sleepers
- Saw and hammer/nails or drill and screws
- Optional: weed barrier fabric or cardboard
- Compost, soil, manures, blood-&-bone, rock minerals; mushroom compost
- Top with soil then mulch,

3. For Bale Gardens:

- Lucerne, pea-straw, or sugar cane mulch bales (6 per bed depending on desired length eg. 2 bales wide = 2X45cm = 90 cm wide garden bed; and 3 bales long = 2.7 metres long)
- Compost and soil and mushroom compost to fill the middle
- Blood-&-bone, rock minerals
- Optional: manure or worm castings to add nutrients
- Top with soil then a layer of mulch

4. For Hugelkultur Beds:

- Logs, branches, sticks
- Straw, dried leaves
- Layers of compost, manures; mushroom compost; blood-&-bone, rock minerals
- Soil to cover the top, then mulch

Tutor action:

Work with your children to:

- Write a list of what you already have
- Identify what needs to be bought, borrowed, or sourced locally (e.g. ask a neighbour or garden club)

Optional real-world activity: Visit a local nursery or garden supply store. Ask the staff:

- What compost or soil mix do they recommend?
- Do they have second-hand or discounted materials?

C) Site Preparation Tasks

Tutor says:

Once you have your materials, the next step is to get the garden site ready.

Tasks to complete today might include:

- **Clearing the area:** Remove grass, weeds, or rubbish.
- **Measuring and marking:** Use string and pegs to outline the garden bed.
- **Laying base material:** If using cardboard or newspaper, lay it down now.
- **Organising materials:** Stack wood, bales, soil, and tools nearby for easy access next lesson.

D) Thinking Questions

- **F–2:** What tools did we use today? What did you enjoy doing?
- **Years 3–4:** What do you think is the hardest part of preparing a garden site? Why?
- **Years 5–6:** What could go wrong if we didn't prepare the garden site properly? How can we avoid these problems?

E) Student Journal Writing Task

- **F–2:** Draw a picture of your family getting the garden site ready.
- **Years 3–4:** Write a list of 5 things you gathered or did today.
- **Years 5–6:** Write a paragraph describing how you sourced your materials and how you prepared your garden site. Include what went well and what was difficult.

F) Hands-on Practical Activity

- **All Ages:** Take part in collecting, cleaning, and preparing the site. Work together as a team. Allow younger children to help with simple tasks like gathering small sticks or spreading mulch.
- **Optional Extension:** Make garden signs using painted sticks or old timber. Label the garden bed area with the chosen name or type (e.g. "Hugelkultur Bed").

G) Biblical Connection & Wrap-up

Tutor says:

When Nehemiah rebuilt the wall of Jerusalem, he gathered the people, organised the materials, and planned the work carefully (Nehemiah 2:17-18). Like Nehemiah, we are preparing something meaningful. As we collect what we need and get the space ready, we are being faithful stewards and builders.

Prayer:

Lord, thank You for the joy of working with our hands. Help us to be wise as we use what we have, careful as we prepare the ground, and joyful as we work together as a family. Amen.

Lesson 15: Building the Garden Bed

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9TDE2P01 – Generate and record design ideas; AC9S2H01 – Pose questions and make predictions based on observations.
 - **Years 3–4:** AC9TDE4P01 – Generate and communicate design ideas and decisions; AC9S4H01 – Plan and conduct scientific investigations.
 - **Years 5–6:** AC9TDE6P01 – Critique needs or opportunities for designing solutions; AC9S6U01 – Investigate the interdependence of plants and soil for growth.
-

A) Introduction

Tutor says:

Today is the big day! We are finally going to build our garden bed. This will be a physical, practical day, so make sure everyone is dressed in old clothes and ready to work together. Remember, building a garden bed is about more than just soil and wood – it's about preparing a space for life to flourish. Let's do this with hearts of joy and hands ready to serve.

B) Step-by-Step Building Instructions

Tutor explains:

Depending on the type of garden bed your family has chosen, the steps for building will look slightly different. Follow the instructions for your chosen style below:

1. Tilled Soil Bed (Ground-Level Garden)

- Use a spade or garden fork to loosen and aerate the soil. This is hard work; but it will allow the roots of your plants to go deep and strong.
- Remove weeds, roots, and large stones.
- Spread a layer of compost and aged manure over the area.
- Use a rake to level the soil.
- Top with mulch (e.g. sugar cane or straw).

2. Slightly Raised Bed (One Sleeper High)

- Build a rectangle or square frame using timber.
- Place the frame in the planned location.
- Line the bottom with cardboard or newspaper to suppress weeds.
- Fill the bed in layers:
 - Base layer: coarse sticks or twigs for drainage
 - Middle layer: compost, manure, mushroom compost
 - Top layer: good quality garden soil
- Water well and cover with mulch.

3. Bale Garden

- Note: There are two ways of doing this. Bales can be the bed and then sprinkle rock minerals and 'blood & bone' into the bales; or the bales could form the boundary walls of the garden with soil in the middle of the bed.

- For a boundary bale structure - Arrange bales in a rectangle with the hollow centre left for filling.
- Water the bales deeply to begin decomposition.
- Fill the centre with compost, soil, and manure.
- Top with mulch to retain moisture.

4. Hugelkultur Bed

- Lay down large logs and branches as the base.
- Add layers of smaller sticks, straw, manure, compost, and soil.
- Create a mound shape.
- Finish with mulch on top to protect the soil.

Tutor tip:

Take photos throughout the process so you can look back on your work later!

C) Thinking Questions

- **F-2:** What did you enjoy building today? What was hard?
 - **Years 3-4:** How do you think the layers we added help the plants grow?
 - **Years 5-6:** Why is it important to build the garden bed properly? What might happen if we skipped a step?
-

D) Student Journal Writing Task

- **F-2:** Draw a picture of you helping build the garden bed.
 - **Years 3-4:** Write 3-5 sentences about what you did today and what you learned.
 - **Years 5-6:** Write a short report describing the process of building your garden bed. Include what worked well, what was challenging, and how your team cooperated.
-

E) Hands-on Practical Activity

- **All Ages:** Build your family garden bed using teamwork. Assign age-appropriate tasks:
 - Young children: gather small sticks, carry mulch, spread soil
 - Older children: assist with building frames, shovelling soil, layering components
 - **Optional Extension:** Create a garden bed sign with the name of your garden (e.g. "Kingdom Garden," "The Eden Patch") using scrap wood, paint, or markers.
-

F) Biblical Connection & Wrap-up

Tutor says:

Ecclesiastes 3:2 says there is "a time to plant." Today we have prepared that time. Our teamwork is a picture of God's people working together, each doing their part. In 1 Corinthians 3:6, Paul says, "I planted the seed, Apollos watered it, but God has been making it grow." We can build, we can water, but it is God who brings life.

Prayer:

Thank You, Lord, for strong arms, wise minds, and willing hearts. Bless our garden bed. Let it be a place where we learn to care, to wait, and to rejoice in what You grow. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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Lesson 16: Planting the Garden Bed (Part 1)

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Explore how living things grow, change and have offspring; AC9TDE2P01 – Generate and record design ideas.
- **Years 3–4:** AC9S4U01 – Investigate the life cycle of plants; AC9TDE4P01 – Generate and communicate design ideas and decisions.
- **Years 5–6:** AC9S6U01 – Investigate the interdependence of plants and soil for growth; AC9TDE6P02 – Use materials, tools and equipment to safely make designed solutions.

A) Introduction

Tutor says:

Well done for all the hard work so far! You’ve designed, prepared, and built your garden bed. Now it’s finally time to begin planting. Over the next few lessons, we’ll explore how to properly place your plants and seeds so that they cooperate well together. Today, we’ll start by learning about seedlings, spacings, and how to give your garden the best start.

B) Teaching Knowledge & Practical Concepts

Tutor explains:

There are two main ways to start plants:

1. **Seeds:** These are planted directly into the soil. Some grow quickly (like radishes), others take longer (like carrots). Carrots and radishes are best grown from seed as they don’t like being transplanted as seedlings.
2. **Seedlings:** These are young plants started in punnets or trays and transplanted into the garden.

Today we will focus on planting **seedlings** into your prepared garden bed.

Important Principles to Teach:

- **Spacing:** Each plant needs room for roots, leaves, and air. Too close, and they will compete instead of cooperate. Also, if they are too closely planted it provides hiding places for snails which eat your plants.
- **Depth:** Most seedlings should be planted so that the soil reaches the same level as it did in the punnet.
- **Watering:** Water the hole before and after planting.
- **Mulching:** After planting, cover soil with mulch to keep it moist. This stops the soil from drying out.
- **Sunlight:** Most vegetables need full sun (6+ hours a day).

Tutor action:

Walk through the garden bed and:

- Identify where each plant will go.
 - Use string or sticks to mark straight rows or clusters.
 - Gently press seedlings out of punnets and loosen the roots.
 - Place into the soil, fill in the hole, water, and mulch.
 - If possible put some seaweed solution (Seasol) into the water.
-

C) Thinking Questions

- **F–2:** What are some things a plant needs to grow? Where did you put your seedling?
 - **Years 3–4:** Why do you think we leave space between plants? What would happen if we didn't?
 - **Years 5–6:** How does planting in the right way (depth, spacing, mulching) affect the future growth of our garden?
-

D) Student Journal Writing Task

- **F–2:** Draw a picture of the seedlings you planted today.
 - **Years 3–4:** Write a few sentences about how you planted your seedlings.
 - **Years 5–6:** Write a short explanation about how you chose where to plant each seedling and how you helped prepare the spot for it to grow well.
-

E) Hands-on Practical Activity

- **All Ages:** As a family, plant at least one type of seedling into your garden bed.
 - Younger children can water and help press the soil gently.
 - Middle-aged children can help measure spacings and dig holes.
 - Older children can help plan layout and supervise proper depth and placement.
 - **Optional Extension:** Label each plant using homemade markers from painted rocks, wooden spoons, or ice cream sticks.
-

F) Biblical Connection & Wrap-up**Tutor says:**

In 1 Corinthians 3:6, Paul reminds us that while we may plant and water, it is God who makes things grow. As we begin planting today, we trust God with the life and fruit that will come from this work.

Prayer:

Dear God, thank You for the beauty of plants and the wonder of watching things grow. Help us to plant carefully, to work joyfully, and to trust You for the increase. Amen.

Lesson 17: Planting the Garden Bed (Part 2 - Seeds and Watering)

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Explore how living things grow, change and have offspring; AC9S2I01 – Participate in guided investigations, including making observations.
 - **Years 3–4:** AC9S4U01 – Investigate the life cycle of plants; AC9S4I01 – Plan and conduct investigations and make observations.
 - **Years 5–6:** AC9S6U01 – Investigate the interdependence of plants and soil for growth; AC9S6I01 – Plan and conduct investigations to answer questions.
-

A) Introduction

Tutor says:

Yesterday we planted our seedlings. Today we're going to plant some seeds and explore how to care for our growing garden. Each type of seed has different needs. Some need light; some need darkness. Some need to be planted deep; others just under the surface. We'll also learn how to water our garden the right way, so our plants can thrive and cooperate with one another as they grow.

B) Teaching Knowledge & Practical Concepts

Tutor explains:

Seed Planting Tips:

- **Read the packet:** It tells you how deep and how far apart to plant.
- **Mark your rows:** Use string, a stick, or your finger.
- **Cover gently:** Use fine soil or compost.
- **Label:** It helps you remember what you planted where.

Watering Tips:

- **Gentle watering:** Use a watering can or hose with a fine spray.
- **Morning is best:** Less water is lost to evaporation.
- **Water the soil, not leaves:** Some plants (especially tomatoes & cucumber) get mildew on their leaves if the leaves are watered, so best to water around the plants if possible.
- **Don't overwater:** Wet roots can rot; dry roots can't grow.

Demonstration:

- Show students how to:
 - Draw a shallow line with their finger or a stick.
 - Drop in seeds at correct spacing.
 - Cover lightly with soil.
 - Water carefully so seeds are not disturbed.
-

C) Thinking Questions

- **F–2:** What kind of seeds did you plant? How did you water them?
 - **Years 3–4:** Why do we need to plant seeds at the right depth and spacing?
 - **Years 5–6:** How does proper watering help prevent disease or damage in young plants?
-

D) Student Journal Writing Task

- **F–2:** Draw a picture of you planting and watering your seeds.
 - **Years 3–4:** Write a few sentences about how you planted your seeds and why watering is important.
 - **Years 5–6:** Write a step-by-step description of how to plant seeds and explain how water affects seed germination and root growth.
-

E) Hands-on Practical Activity

- **All Ages:** Choose at least two kinds of seeds to plant today (e.g., carrots, beans, peas, lettuce, or flowers).
 - Follow the instructions on the packet.
 - Help younger children press the seeds into the soil.
 - Let middle and older children read the seed packet and measure spacing.
 - After planting, water the garden gently and label your seed rows.
 - **Optional Extension:** Create a "watering schedule" and assign family members to check moisture levels daily.
-

F) Biblical Connection & Wrap-up

Tutor says:

Jesus often used seeds in His parables. In Mark 4:26-27, He says, "This is what the kingdom of God is like. A man scatters seed on the ground. Night and day, whether he sleeps or gets up, the seed sprouts and grows, though he does not know how." We plant, we water, but God causes the growth. Just like faith grows in our hearts with God's help, so too will our garden grow.

Prayer:

Lord, thank You for tiny seeds that hold big promise. Help us to water faithfully, wait patiently, and trust You with the harvest. Amen.

Lesson 18: Observing Growth and Garden Maintenance

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2I01 – Participate in guided investigations; AC9S2H01 – Use informal measurements and observations to record data.
 - **Years 3–4:** AC9S4I01 – Plan and conduct investigations; AC9S4H01 – Use tools to collect and record observations and measurements.
 - **Years 5–6:** AC9S6I01 – Plan and conduct investigations; AC9S6H01 – Identify variables to be changed, measured and controlled; use equipment to observe and collect data.
-

A) Introduction

Tutor says:

Now that we've planted our seedlings and seeds, it's time to begin observing how our garden grows! Today, we'll learn how to check on our plants, record their growth, and do some basic maintenance tasks like weeding and checking soil moisture. These steps help ensure our plants stay healthy and grow strong.

B) Teaching Knowledge & Practical Concepts

Tutor explains:

Observation is an important part of science. Scientists take notes, measure changes, and compare their data over time. You are now a garden scientist!

What to Observe:

- Which plants are growing fastest?
- Are any seeds sprouting?
- What colour are the leaves?
- Is the soil moist?
- Are there any bugs?

Maintenance Tasks:

- **Weeding:** Gently pull small weeds to reduce competition.
- **Watering:** Check moisture each day and water if the soil is dry.
- **Mulching:** If needed, add mulch to exposed soil.
- **Protecting plants:** Remove pests gently and cover with netting if needed.

Measuring Tips:

- Use a ruler or stick to measure plant height.
 - Draw pictures of how the garden changes.
-

C) Thinking Questions

- **F-2:** What changes can you see in your garden today? Are there any weeds?
 - **Years 3-4:** How can you tell if a plant is healthy or unhealthy?
 - **Years 5-6:** How could regular observation help you identify problems early in the garden?
-

D) Student Journal Writing Task

- **F-2:** Draw a picture of the garden today. Show any changes you noticed.
 - **Years 3-4:** Record what you observed today (growth, bugs, weeds, colours).
 - **Years 5-6:** Write a paragraph describing the changes since planting and any maintenance you did today.
-

E) Hands-on Practical Activity

- **All Ages:**
 - Visit the garden and look at each plant.
 - Pull any small weeds.
 - Measure at least one plant.
 - Water if needed.
 - **Extension Option:**
 - Create a simple observation chart to track changes over the next two weeks (height, number of leaves, flowering, etc.).
-

F) Biblical Connection & Wrap-up

Tutor says:

In Galatians 6:9 we read, "Let us not grow weary in doing good, for at the proper time we will reap a harvest if we do not give up." Gardening takes patience and care. As we tend our garden, we're reminded that growth happens little by little. God uses our faithful efforts to bring about fruit in due season.

Prayer:

Lord, thank You for helping things grow. Help us to watch with wonder, care with love, and trust You to bring a good harvest. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
-

Lesson 19: The Digestive System – Working Together to Break Down Food

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Explore how humans use their senses and body parts for survival and function.
- **Years 3–4:** AC9S4U01 – Investigate the function of major organs and systems in the human body.
- **Years 5–6:** AC9S6U01 – Describe how systems in the human body work together to perform a function and how organs of body systems support survival.

A) Introduction

Tutor says:

This week we begin learning about the amazing systems inside our bodies. Today we'll focus on the **digestive system** and how it works like a team to help break down the food we eat so our body can use it for energy. Just like in our gardens, different parts must work together in cooperation to achieve the goal of feeding and growing.

B) Teaching of Terminology

Teach the following terms using drawings, simple models, or a labelled diagram:

- **Mouth** – where digestion begins
- **Saliva** – liquid that helps soften food
- **Oesophagus** – the tube that takes food from the mouth to the stomach
- **Stomach** – a stretchy bag that breaks food down further with acids
- **Small Intestine** – where most nutrients are absorbed into the body
- **Large Intestine** – where water is absorbed and waste is formed
- **Digestion** – the process of breaking food into smaller parts for the body to use
- **Peristalsis** – wave-like muscle movement that pushes food through the digestive tract
- **Nutrients** – substances from food that our body uses for energy, growth, and repair
- **Enzymes** – special proteins that speed up chemical reactions to break down food

C) Informational Story

"Tommy's Tummy Team"

Tommy had just finished a delicious sandwich filled with egg, lettuce, and tomato, when he flopped onto the

picnic blanket. "That was so good!" he said, rubbing his stomach. "I wonder what happens to all that food once it goes into my belly."

Suddenly, he imagined he could shrink down and go on a journey inside his own body. Zip! He was tiny and standing right inside his **mouth**.

"Welcome to the Tummy Team!" said a friendly voice. It was **Molly the Molar**, a tooth in the back of Tommy's mouth. "Here in the mouth, our job is to grind and mash up the food. That's the first step of digestion."

Beside her, **Sid the Saliva** wiggled excitedly. "And I help by softening the food and beginning to break down starchy things like bread. I contain enzymes that start digestion before the food even leaves the mouth!"

Tommy watched the chewing and squishing with interest. He saw how the teeth chopped food into smaller pieces and how the saliva made it easier to swallow.

The chewed-up food was now rolled into a squishy ball called a **bolus**, then sent sliding down a long, pink tunnel.

"That's the **oesophagus**," explained Sid as they slid together. "It squeezes and pushes the food down to the stomach. We call that **peristalsis** – a wave-like movement of muscles."

When Tommy arrived in the **stomach**, he couldn't believe the sight. A stretchy, muscular sack was churning and squishing the food with strong acids and enzymes.

Stella the Stomach spoke over the gurgling sounds. "I break down the food into a thick soup called **chyme**. My acids kill most germs and help proteins begin to break down. Enzymes here also help break food into its smaller building blocks."

Tommy asked, "Doesn't the acid hurt the stomach?"

Stella replied, "Not usually! The stomach has a thick lining to protect it. God designed it to hold up against these strong digestive juices."

Tommy nodded. Everything worked together like a well-run kitchen.

Next stop: the **small intestine**. It was long, winding, and lined with tiny finger-like shapes called **villi**. These villi helped absorb all the good parts of the food.

Iggy the Intestine welcomed him. "We do the big job here. We absorb nutrients – things like vitamins, minerals, sugars, fats, and amino acids. These nutrients go into the blood through the villi."

Tommy saw little blood vessels soaking up the nutrients like sponges. He even noticed that the **pancreas**, **liver**, and **gallbladder** were nearby, helping by adding extra enzymes and bile to break down fats.

"Wow," Tommy said, "I didn't know so many organs had to work together!"

Just when Tommy thought it was over, Iggy guided him into the **large intestine**.

Lucy the Large Intestine gave a proud nod. "My job is to take back water and make the leftover waste solid, ready to leave the body when it's time. Bacteria here also help break down what's left."

Tommy learned that every part of the digestive system had a purpose. Each one depended on the other. If one part didn't do its job, the whole system could slow down or stop.

He thought of how his garden needed soil, sunlight, water, and care. Just like the garden, his body needed many parts working together to produce energy and growth.

Before he returned to normal size, Tommy said, "Thank you for your hard work! I'll try to make your job easier by eating slowly, chewing well, and choosing healthy foods."

With a whoosh, he was back on the picnic rug.

Tommy sat up, smiling. "Thanks, Tummy Team!"

D) Narration Activity

Tutor says:

Let's see how well you remember the journey of Tommy's food. Can you retell the story from the moment he took a bite to when the food became useful nutrients? If you can, include the names of the organs involved!

E) Thinking Questions

- **F-2:** What does your tummy do after you eat food? What part do your teeth and tongue play?
 - **Years 3-4:** Why do you think God made our body with different parts that each have a job in digestion?
 - **Years 5-6:** How is the digestive system an example of cooperation between systems and organs? Why is it important to eat slowly and chew well?
-

F) Hands-on Practical Activities

- **F-2:** Use a zipper bag with bread and water to model a stomach. Mash it gently to show how food breaks down.
 - **Years 3-4:** Draw and label the digestive system. Add arrows to show food flow.
 - **Years 5-6:** Create a diagram showing how nutrients move from the small intestine into the bloodstream. Write a paragraph about how digestion supports energy and growth.
 - **All ages:** Try chewing a small piece of bread slowly and notice how saliva starts to break it down in your mouth.
-

G) Biblical Connection & Wrap-up

Tutor says:

In Psalm 139:14, David says, "I praise You because I am fearfully and wonderfully made; Your works are wonderful, I know that full well."

God designed our bodies to work in unity. Just like the parts of the body cooperate to digest food, God wants us to live in harmony with others. Cooperation brings life, energy, and strength – in our bodies, gardens, families, and communities.

Prayer:

Thank You, God, for the amazing design of our bodies. Help us take care of our health, be grateful for food, and work together in love and harmony. Amen.

Lesson 20: The Circulatory and Respiratory Systems – Working Together to Bring Life

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Explore how humans use body parts and systems for survival and function.
 - **Years 3–4:** AC9S4U01 – Investigate how major systems in the body work to keep humans alive and functioning.
 - **Years 5–6:** AC9S6U01 – Describe how systems in the human body work together to perform a function and how body organs support survival.
-

A) Introduction

Tutor says:

Today we will learn how your **circulatory system** (your heart, blood, and vessels) works together with your **respiratory system** (your lungs and breathing passages). These two systems cooperate every second of your life to keep your body alive by delivering **oxygen** to every cell and carrying away **carbon dioxide**. You'll discover how these systems show the wonder of God's design.

B) Teaching of Terminology

Introduce these words using diagrams or physical models:

- **Heart** – the pump that moves blood through the body
 - **Blood Vessels** – tubes that carry blood (arteries, veins, capillaries)
 - **Blood** – carries oxygen, nutrients, and waste
 - **Oxygen** – the gas we breathe in that our body uses for energy
 - **Carbon Dioxide** – the gas we breathe out, a waste product
 - **Lungs** – two large organs that bring oxygen into the body
 - **Alveoli** – tiny air sacs in the lungs where gas exchange happens
 - **Circulatory System** – heart and blood vessels working together
 - **Respiratory System** – lungs, nose, trachea, and airways
 - **Gas Exchange** – oxygen enters the blood; carbon dioxide exits
-

C) Informational Story

"Zara's Zoom Through the Body"

Zara had always been curious about her body. She could feel her heartbeat when she ran and noticed how her breathing changed when she climbed stairs. One quiet afternoon, while sitting in her reading nook, something strange happened. With a whoosh and a sparkle, Zara was suddenly the size of a red blood cell—riding inside her own bloodstream!

"Welcome aboard!" said a friendly voice. It came from **Captain Cardio**, the heart. "We're in the **left ventricle**, ready to start a journey through the **circulatory system**."

With a thump, Zara was launched through the **aorta**, the biggest artery in the body. She zoomed past **red blood cells** carrying **oxygen** picked up from the lungs. "Where are we going?" she asked.

"To the body's cells!" said a red blood cell. "We deliver oxygen so the cells can make energy!"

Zara watched as they passed through **arteries**, which got smaller and smaller until they reached **capillaries**. There, the red blood cells dropped off oxygen and picked up **carbon dioxide**, a waste gas. "Time to head back to the lungs," said the cell.

As they flowed into **veins**, Zara noticed the blood looked darker. "That's because it's carrying waste," explained the blood cell. "We'll drop it off in the lungs and get fresh oxygen."

Soon, they arrived at the **right side of the heart**, which pumped them toward the **lungs**.

In the lungs, Zara saw millions of **alveoli** – tiny air sacs like balloons. Oxygen from the air Zara had recently breathed in flowed through the thin walls into the blood, while carbon dioxide flowed the other way, to be breathed out.

Zara couldn't believe her eyes. "This is where the **respiratory system** and the **circulatory system** meet!"

A wise old alveolus spoke up. "Exactly. We are like a handshake between two systems—each depends on the other. The lungs bring in the air, the heart moves it around."

Zara saw that this cooperation was constant. Her **heart beat** around 100,000 times a day, and her **lungs** breathed in and out more than 20,000 times! "No wonder I get puffed when I run," she said.

Just then, she heard a loud laugh. It came from **Billy the Brain**, who had joined in. "Don't forget me! I control your breathing and heart rate depending on what you're doing. It's all about teamwork."

Zara nodded. She saw how cells depended on oxygen to function, how the lungs needed blood to carry gases, and how the heart needed lungs to give the blood a reason to pump.

As she zoomed through the bloodstream again, she thought about how her garden also needed **sunlight, water, soil, and care**—each thing doing its job. Just like the body, God's world was full of cooperation.

With one final deep breath, Zara popped back to her normal size, sitting in her reading nook.

She whispered, "Thank You, Lord, for designing me so wonderfully."

D) Narration Activity

Tutor says:

Can you tell the story of Zara's journey through her body? What happened in the circulatory system? How did the respiratory system work together with it?

E) Thinking Questions

- **F–2:** What does your heart do? What do your lungs do?
- **Years 3–4:** How do the circulatory and respiratory systems work together? Why do you breathe faster when you run?

- **Years 5–6:** Why is oxygen important for your cells? How is the cooperation between these two systems a sign of God’s amazing design?

Encourage students to write in their Science Journal or draw a labelled diagram.

F) Hands-on Practical Activities

- **F–2:** Use straws and a balloon to build a model lung. Let them breathe through it and see how lungs expand and contract.
 - **Years 3–4:** Use string and cardboard to model the path of blood through the heart, lungs, and body.
 - **Years 5–6:** Measure your pulse and breathing rate before and after running or jumping for 1 minute. Record the changes. Graph the results.
 - **All Ages:** Use red and blue beads to represent oxygenated and deoxygenated blood. Create a necklace showing the blood flow path.
-

G) Biblical Connection & Wrap-up

Tutor says:

In Acts 17:25 we are told, *“He Himself gives all men life and breath and everything else.”* God not only created us but sustains us with every breath and heartbeat.

Just as our body systems work together, we are called to **cooperate** with others—to serve one another in love and bring life to our families, schools, and communities.

Prayer:

Lord, thank You for giving us breath, and for creating our bodies to work in such amazing unity. Help us to look after our health, and work together with others in kindness. Amen.

Lesson 21: The Nervous and Muscular Systems – Sending and Receiving Messages

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:**
 - AC9S2U01 – Explore how humans use body parts and systems for survival and function.
 - AC9HPFP05 – Identify body parts and explore how the body reacts to movement.
 - **Years 3–4:**
 - AC9S4U01 – Investigate how major systems in the body work to keep humans alive and functioning.
 - AC9HP4P02 – Examine how body systems respond to movement.
 - **Years 5–6:**
 - AC9S6U01 – Describe how systems in the human body work together to perform a function and how body organs support survival.
 - AC9HP6P06 – Investigate the impact of physical activity on body systems and health.
-

A) Introduction

Tutor says:

Today we are going to explore two more amazing systems in your body—the **nervous system** and the **muscular system**. These systems work together every time you move, touch something, balance, or even think! We'll see how your brain, nerves, and muscles send messages and respond, and how this shows the genius of God's design.

B) Teaching of Terminology

Use diagrams or body-part pointing games to introduce these terms:

- **Brain** – the control centre of the body
 - **Spinal Cord** – the main pathway of messages between brain and body
 - **Nerves** – tiny wires that carry messages
 - **Reflex** – a fast automatic response to danger
 - **Voluntary Muscle** – muscles you can control (e.g. arm, leg muscles)
 - **Involuntary Muscle** – muscles you don't control (e.g. heart, stomach)
 - **Neurons** – tiny cells that carry signals
 - **Motor Neuron** – sends message from brain to muscles
 - **Sensory Neuron** – brings messages from body to brain
 - **Muscular System** – all the muscles that move your body
 - **Nervous System** – brain, spinal cord, and nerves
-

C) Informational Story

“Eli's Electric Race”

Eli was at homeschool co-op for the science activity day. He loved sports, so when Miss Joy told the group they were doing an experiment about **reaction time**, his ears perked up.

“You’ll learn how your body sends and receives messages—just like an electric race!” she said. “It’s all thanks to the **nervous** and **muscular systems** working together.”

Eli thought for a moment. “Messages? Like letters?”

“Sort of,” said Miss Joy. “But much, much faster. Imagine your brain is the boss. It sends electrical messages through special cells called **neurons**—tiny messengers—to your muscles. And your body sends messages back through your nerves when something touches your skin, or when you balance or see danger.”

Eli’s friend Hannah raised her hand. “So when I burn my finger on toast, my hand moves away really fast?”

“Exactly! That’s called a **reflex**. Your spinal cord actually tells your muscles to pull away before your brain even thinks about it.”

Miss Joy passed around a big diagram showing the brain, spinal cord, and nerves branching out like tree roots to every part of the body. “This is the **nervous system**,” she said.

“Now let’s meet its partner—the **muscular system**,” she continued. “Muscles are what do the work. They contract and relax to move bones. You’ve got **over 600 muscles** in your body!”

“Whoa!” said Eli, flexing his bicep.

“But you don’t control them all,” Miss Joy explained. “Some muscles are **voluntary**—like the ones in your arms, legs, and face. But others are **involuntary**, like your **heart**, your **lungs**, and your **gut**. They keep working even when you’re asleep.”

She gave Eli a small ruler. “Let’s test your **reaction time**. Hold the ruler in the air, and Hannah, you try to catch it as fast as you can when I let it go.”

Miss Joy dropped it. Hannah caught it quickly.

“That’s your brain seeing the movement, sending a signal down the spinal cord, through the nerves, and telling your hand muscles to move. It’s an electric race—faster than blinking!”

Later that night, Eli was in bed reading his science book. He smiled as he thought about his **nervous system**—wiring every part of his body, sending messages back and forth like lightning bolts. And he imagined his **muscles**—his arms, legs, heart, even his eyelids—all doing their job like a team.

He thought about how amazing it was that God had made such systems. The Bible said, “I praise You because I am fearfully and wonderfully made.” (Psalm 139:14)

“Thank You, Lord,” Eli whispered, “for giving me a body that works so well—even when I don’t notice it.”

He stretched his arm and felt the muscles flex. He smiled. Another electric race, and another reason to praise his Creator.

D) Narration Activity

Tutor says:

Can you tell me what happened in Eli’s story? What did he learn about the nervous and muscular systems? How did the systems work together when he caught the ruler?

E) Thinking Questions

- **F–2:** What does your brain do? What do your muscles help you do?
- **Years 3–4:** How do your nerves send messages from your brain to your body? Can you name some muscles you control and some you don't?
- **Years 5–6:** Why are quick reactions important for survival? How do the nervous and muscular systems work together when you play sport or touch something hot?

Encourage students to write or draw their answers in their Science Journal.

F) Hands-on Practical Activities

- **F–2:** Draw a simple body map and label parts of the nervous and muscular systems.
 - **Years 3–4:** Test reaction time using a ruler. Drop it from shoulder height and measure how far it falls before it's caught. Try several times and record results.
 - **Years 5–6:** Create a diagram showing how a signal travels from the brain to a muscle. Include sensory neurons, spinal cord, motor neurons, and muscles.
 - **All Ages:** Do a movement obstacle course (crawl, balance, jump, hop). Afterward, discuss which muscles and nerves were used.
-

G) Biblical Connection & Wrap-up

Tutor says:

Your nervous and muscular systems show just how wisely God designed you. Your brain thinks, feels, and plans. Your nerves and muscles carry out the commands without you even needing to think about it most of the time.

In 1 Corinthians 12:12, Paul reminds us, *“Just as a body, though one, has many parts, but all its many parts form one body, so it is with Christ.”* Just like our body parts cooperate, God wants His people to work together in love.

Prayer:

Lord, thank You for the gift of a body that moves, responds, and obeys. Help us to use our bodies to serve You and to work in harmony with others. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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Lesson 22: The Immune System – God’s Defence Plan

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:** AC9S2U01 – Explore how humans use body parts and systems for survival and function.
 - **Years 3–4:** AC9S4U01 – Investigate how major systems in the body work to keep humans alive and functioning.
 - **Years 5–6:** AC9S6U01 – Describe how systems in the human body work together to perform a function and how body organs support survival.
-

A) Introduction

Tutor says:

"Today we are going to learn about an amazing part of the human body that God designed to keep us safe. It's called the **immune system**. It acts like the body's army, always watching and protecting us from harmful germs like bacteria and viruses. You'll learn how this system works, how different parts of the body cooperate to fight off sickness, and how good health habits help your immune system work well."

B) Teaching of Terminology

Introduce these terms:

- **Immune system** – The body's defence system that fights off sickness.
 - **Germs** – Tiny living things that can make us sick (like bacteria and viruses).
 - **White blood cells** – Special cells in the blood that fight germs.
 - **Lymph nodes** – Small glands that help fight infection.
 - **Antibodies** – Tiny proteins made by the immune system to target and destroy germs.
 - **Vaccine** – A medicine that helps the immune system learn to fight specific germs.
 - **Fever** – A rise in body temperature that helps the body fight infection.
-

C) Informational Story – "Eli and the Tiny Invaders"

Eli loved playing soccer with his siblings in the backyard. But one afternoon, after kicking the ball barefoot, he stepped on a sharp stick. It didn't seem too bad at first, just a little scratch. He washed it quickly and went on playing.

That night, however, Eli felt tired and had a sore throat. He had a small fever, and his leg was a bit swollen. "Mum," he whispered, "I feel kind of sick."

Mum tucked him in, gave him some water, and said gently, "It sounds like your body is fighting something. Let's talk in the morning."

As Eli drifted off to sleep, something extraordinary happened. He found himself miniaturised—shrunk down and standing inside a glowing red tunnel.

"Where am I?" he whispered.

"You're inside your bloodstream," said a voice behind him.

Eli turned and saw a glowing white figure walking toward him.

"I'm Mac," the white figure said. "I'm a **white blood cell**, part of the **immune system**. Right now, we're on high alert. A few **bacteria** snuck in through that cut on your foot. They're trying to cause trouble."

Just then, a loud alarm echoed through the tunnel. Red warning lights flashed. "This way!" Mac shouted, running towards a branching path in the blood vessel.

Eli followed closely as they arrived at what looked like a command centre full of cells with glowing screens.

"This is the Immune Response Hub," Mac explained. "Look there."

On the screens, tiny spiky germs were moving through tissues, trying to invade Eli's body. "Those are the **invaders**. Our job is to stop them."

Just then, a new cell floated in. "Antibody team reporting! We've identified the enemy and marked them!"

Eli watched as the **antibodies**—tiny Y-shaped proteins—attached themselves to the germs, like tagging them with glowing paint.

"Perfect!" said Mac. "That helps us find and destroy them faster."

Mac called over a team of **killer T-cells** and **phagocytes**. "These are the warriors. They eat or destroy anything that's been tagged."

As the immune army fought the germs, Eli noticed a nearby screen flashing: "**Fever activated.**"

"That's another smart trick," Mac said. "The body raises its temperature slightly. That slows down the germs and speeds up our work."

Eli was amazed. "So all this is happening while I'm just lying in bed?"

"That's right," said Mac. "The immune system is always working. Even when you sleep."

Mac took Eli on a tour through the **lymph nodes**—tiny filtering stations where the body gathers and trains its immune cells. There, Eli met a group of **memory cells** who could remember the invaders from last time. "If they ever come back," one cell explained, "we'll stop them even faster."

"That's what a **vaccine** does too," Mac added. "It teaches your immune system to recognise germs before they attack. It's like a practice battle."

Eli's eyes widened. "So the immune system is like a whole army, with scouts, fighters, and even teachers?"

"Exactly!" Mac smiled. "And like all armies, we work best when we have the support of our environment."

"What do you mean?"

"Eating good food, getting enough sleep, drinking water, and staying clean—these things help us function. If you eat too much junk food or don't rest, our job gets harder."

Eli nodded. It made sense. Just like he couldn't play soccer well without sleep or healthy food, his body needed support to fight illness.

Suddenly, the glowing tunnel began to fade. Mac saluted. "Thanks for visiting, Eli. Keep taking care of your body, and we'll keep defending it."

Eli awoke in his bed. The fever was gone, his throat felt better, and the swelling on his foot had reduced. He sat up, smiling.

"Thanks, Lord," he whispered, "for designing such an amazing defence plan."

D) Narration Activity

Tutor says:

"Tell me the story of what happened when Eli went inside his body. What did he see? What job does the immune system do?"

E) Thinking Questions

- **F-2:** What helps your body fight off sickness? How can we stay healthy?
- **Years 3-4:** What are white blood cells, and what do they do? How does a fever help the immune system?
- **Years 5-6:** How do memory cells and vaccines help the body respond better the next time? What habits support a strong immune system?

Encourage drawing and writing in their Science Journal.

F) Hands-on Practical Activities

- **F-2:** Draw a picture of the body as a castle and label the immune system as guards, gates, and helpers.
 - **Years 3-4:** Make a comic strip of Eli's adventure inside his immune system.
 - **Years 5-6:** Create a chart of ways to strengthen the immune system (e.g. nutrition, sleep, hygiene). Research one immune organ (e.g. lymph node, spleen).
 - **All Ages:** Make a simple model using coloured paper or clay showing how antibodies stick to germs.
-

G) Biblical Connection & Wrap-up

Tutor says:

"God created our bodies with the ability to protect themselves. In Psalm 139:14, we read, *'I praise You because I am fearfully and wonderfully made.'* The immune system shows us God's care and wisdom. Let's thank Him for giving our bodies the tools to fight sickness."

Prayer:

Dear God, thank You for designing our bodies with systems that protect us. Help us make wise choices that keep our bodies strong and healthy. Amen.

Lesson 23: Healthy Choices – Caring for the Body God Gave Us

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:**
 - AC9HPFP05 – Recognise situations and opportunities to develop personal and social skills.
 - AC9HPFP06 – Identify and describe protective behaviours and help-seeking strategies.
 - **Years 3–4:**
 - AC9HP4P02 – Describe and apply protective behaviours and help-seeking strategies.
 - AC9HP4P07 – Identify behaviours that promote health, safety, and wellbeing.
 - AC9HP4P08 – Investigate how connection to culture and identity influence wellbeing.
 - AC9HP4P09 – Investigate how food and lifestyle choices affect wellbeing.
 - **Years 5–6:**
 - AC9HP6P02 – Plan and practise strategies to promote health, safety, and wellbeing.
 - AC9HP6P03 – Explore how personal identity is influenced by interactions with others and the environment.
 - AC9HP6P06 – Investigate how preventative health measures contribute to good health and wellbeing.
 - AC9HP6P07 – Investigate the impact of health messages and media on healthy choices.
 - AC9HP6P08 – Describe strategies for managing change and transitions.
 - AC9TDE6K04 – Investigate how people design products, services, and environments that meet community needs.
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A) Introduction

Tutor says:

"God has given us incredible bodies that need to be looked after with love and care. Today's lesson is about how we can make good choices each day—what we eat, how we move, how we rest, and how we care for our emotions and others. These choices don't just help us stay well; they also help the systems in our body work better and bring honour to God."

B) Teaching of Terminology

Introduce and explain:

- **Healthy habits** – Things we do regularly to keep our body, mind, and heart strong.
 - **Hygiene** – Keeping ourselves clean to avoid sickness.
 - **Sleep** – A time when the body rests and repairs.
 - **Nutrition** – The goodness in food that gives energy and health.
 - **Exercise** – Movement that strengthens our muscles, bones, and heart.
 - **Emotional health** – Feeling safe, cared for, and knowing how to handle feelings.
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C) Health Habits Teaching Story – “The Strong Body Team”

Imagine your body is like a village. Each part of the village has a job to do. There's the Heart Hall that pumps clean water to every house, the Lung Trees that blow fresh air, the Muscle Mills that do all the hard

lifting, the Brain Library that stores all the information, and the Immune Barracks that guard the gates. But all of them depend on one thing—**you**—the Mayor of the village, who decides what kind of help each part gets.

Some days, the Mayor wakes up early, eats a breakfast with fruit, yoghurt, and oats, does some stretches and runs around the block. On those days, the village is full of energy. The workers cheer, “We’re ready to go!”

Other times, the Mayor skips breakfast, watches too much TV, and stays up too late. On those days, the Heart Hall complains, “We’re running on empty!” The Muscle Mills groan. The Brain Library can’t focus. The village slows down.

A strong body village needs a wise Mayor who supports it with **healthy habits**. Here are the five best decisions a wise Mayor can make:

1. Feed the Village with Nutrients

The village needs good food, not just quick snacks. Fresh fruits, vegetables, whole grains, and proteins give energy and help each worker function well. Lollies and processed snacks can make the Brain Library foggy and make the Immune Barracks sleepy. Think of food as fuel.

2. Get Moving

The Muscle Mills get stiff without work. Exercise—like walking, running, jumping, or riding a bike—keeps the mills in shape and makes the Heart Hall strong. Even fun games, gardening, or dancing count as good movement.

3. Keep Everything Clean

When rubbish is left in the streets, germs spread. Good hygiene—like washing hands, brushing teeth, bathing regularly, and keeping nails clean—protects the village from sickness. The Mayor needs to set rules about washing after going to the toilet, before eating, and after playing outside.

4. Give the Village Time to Rest

Just like any town, your body needs nighttime to repair. While you sleep, the Immune Barracks train, the Brain Library organises thoughts, and the Heart Hall slows its pace. Children need more sleep than adults. If you don’t sleep enough, your village falls apart.

5. Be Kind to Your Feelings

The Mayor must care not just for the buildings but for the hearts of the villagers. When you feel sad, angry, or anxious, it helps to talk to someone—your mum, dad, tutor, or a trusted adult. Having good relationships and learning to calm down keeps your village strong.

Your body is not only a gift—it’s **God’s temple**. That’s why making good decisions is a way of worship.

D) Narration Activity

Tutor says:

"Retell the story of the body village and the Mayor. What were some good and bad choices the Mayor made? What happens when we make healthy choices?"

E) Thinking Questions

- **F–2:** What helps you stay clean and healthy each day? Why is sleep important?
- **Years 3–4:** How does food affect the way your body feels? What are two ways to protect your health?
- **Years 5–6:** Why is emotional health just as important as physical health? What habits do you need to improve or keep doing?

Encourage journaling or drawing.

F) Hands-on Practical Activities

- **F–2:** Create a “Healthy Habits” poster showing things like brushing teeth, eating fruit, and sleeping.
 - **Years 3–4:** Keep a one-day health journal—what you eat, how much you move, rest, and feel.
 - **Years 5–6:** Create a “Body Systems Support Plan”—list or chart your weekly plan to support nutrition, sleep, hygiene, and movement. Include an emotional health section.
 - **All Ages:** Have a “Healthy Habits” day—plan meals, play games for exercise, practice hygiene, and take time to rest and reflect.
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G) Biblical Connection & Wrap-up

Tutor says:

"1 Corinthians 6:19 says, '*Do you not know that your bodies are temples of the Holy Spirit?*' God lives in us, and that makes our bodies precious. When we eat well, sleep well, clean ourselves, and stay calm, we are caring for the gift God gave us."

Prayer:

Dear God, thank You for our bodies and for teaching us how to take care of them. Help us make good choices every day, for our health and for Your glory. Amen.

Lesson 24: Designing a Healthy Lifestyle – Your Personal Wellbeing Plan

Curriculum Links (Australian Curriculum v9):

- **Foundation–Year 2:**
 - AC9HPFP05 – Recognise situations and opportunities to develop personal and social skills.
 - AC9HPFP06 – Identify and describe protective behaviours and help-seeking strategies.
 - **Years 3–4:**
 - AC9HP4P02 – Describe and apply protective behaviours and help-seeking strategies.
 - AC9HP4P07 – Identify behaviours that promote health, safety and wellbeing.
 - AC9HP4P08 – Investigate how connection to culture and identity influence wellbeing.
 - AC9HP4P09 – Investigate how food and lifestyle choices affect wellbeing.
 - **Years 5–6:**
 - AC9HP6P02 – Plan and practise strategies to promote health, safety and wellbeing.
 - AC9HP6P03 – Explore how personal identity is influenced by interactions with others and the environment.
 - AC9HP6P06 – Investigate how preventative health measures contribute to good health and wellbeing.
 - AC9HP6P07 – Investigate the impact of health messages and media on healthy choices.
 - AC9HP6P08 – Describe strategies for managing change and transitions.
 - AC9TDE6K04 – Investigate how people design products, services, and environments that meet community needs.
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A) Introduction

Tutor says:

"In our final lesson, we're going to take everything we've learned about the body and healthy living and design a wellbeing plan that suits *you*. God gave you one body—and He asks us to care for it wisely, with honour and gratitude. Today you'll reflect on your habits and design a plan that helps your body systems work well together."

B) Teaching & Review

Tutor explains:

Start by reviewing what contributes to good health:

- Healthy eating (nutrients, water)
- Physical activity
- Hygiene and cleanliness
- Sleep and rest
- Emotional care
- Avoiding harmful choices (junk food, too much screen time, unsafe behaviour)

Discuss: How do these support different body systems we've learned about (e.g. respiratory, circulatory, digestive, immune)?

C) Guided Planning Task – “My Healthy Life Plan”

Tutor says:

“Let’s plan out your own Healthy Life Plan. You will think about each part of your life and how you can make good choices in each area.”

Give students a structured page (or make one together) with the following headings:

1. **Food Choices**
 - What healthy foods will I try to eat more often?
 - What will I drink instead of sugary or fizzy drinks?
2. **Exercise and Play**
 - What kinds of fun exercise or movement will I do each day?
 - What outdoor games or sports do I enjoy?
3. **Hygiene Habits**
 - When and how will I wash hands, clean teeth, and shower?
 - What will I do to avoid spreading germs?
4. **Sleep Routine**
 - What time will I go to bed to get enough rest?
 - How will I wind down before bed (e.g. no screens)?
5. **Emotional Health**
 - What can I do when I feel sad or worried?
 - Who can I talk to for help?
6. **Spiritual Health**
 - When will I read the Bible or pray each day?
 - What verses remind me that God loves and cares for me?

Encourage students to write or draw answers based on their age level.

D) Narration Activity

Tutor says:

"Tell me about one or two parts of your Healthy Life Plan. What will you try to do each day to care for the body God gave you?"

E) Thinking Questions

- **F–2:** What is one healthy habit you want to practise more often? Who helps you stay healthy?
 - **Years 3–4:** What makes you feel strong and happy inside and out? Why is sleep and hygiene so important?
 - **Years 5–6:** How can you create a routine that supports your body systems? What habits are hardest for you to keep?
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F) Creative Activities

- **F–2:** Decorate your Healthy Life Plan with stickers, drawings, or colours. Share it with your family.
- **Years 3–4:** Turn your Healthy Life Plan into a colourful wall chart and place it where you’ll see it daily.

- **Years 5–6:** Write a “Health Goals Contract” and display it. Include short goals (daily) and longer goals (weekly/monthly).
 - **All Ages:** Make a “Healthy Body Systems Board Game” where players practise hygiene, exercise, and eating well to advance spaces.
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G) Biblical Connection & Wrap-up

Tutor says:

"Romans 12:1 says, '*Offer your bodies as a living sacrifice, holy and pleasing to God.*' Our bodies are not our own—they belong to the Lord. When we care for our bodies, we honour Him."

Prayer:

Lord, thank You for teaching us how to care for the body You made. Help us to make good choices and grow in strength, kindness, and wisdom. Help our bodies and hearts to be strong for Your work. Amen.

Extra Lesson: Optional Extension Activities

Excursions, Co-ops or Further Study ✨

This lesson is set aside for either...

- i) attending a homeschool co-op or support group; or
 - ii) to do field-work excursions (ie., learning activities) that require going outside the home (eg. Nature Walks; Interviewing people for research purposes; or Visiting the Science Centre or Art Gallery or Museum or Library, etc)... or...
 - iii) to do some of the further research activities at the end of each lesson during the last week.
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WEEK 9	CULMINATING PROJECT OR ASSESSMENT
