

YEAR 3 EARTH & SPACE SCIENCE UNIT PLAN

Year / Level	Year 3
Science Strand	Earth & Space Sciences
Unit Title	Rocks, Minerals & Soils — Earth Science Solutions
Duration	7 lessons × 50 minutes
Unit Overview	Students investigate observable properties of rocks, minerals and soils; compare and classify Earth materials; explore why rocks and minerals are important resources; investigate relationships between soil properties and conditions that support plant growth; and use evidence from several sources to recommend solutions to soil problems. Learning culminates in an Earth Science Solutions Expo.
Achievement Standard	Relevant Year 3 achievement standard: Students describe the observable properties of soils, rocks and minerals and describe their importance as resources. They identify solutions that use scientific explanations. Students pose questions to explore patterns and relationships and make predictions based on observations; use scaffolds to plan safe investigations and fair tests; use familiar classroom instruments to make measurements; organise data and information using provided scaffolds and identify patterns and relationships; compare findings with others, consider fairness, identify further questions and draw conclusions; and communicate ideas and findings for an identified purpose using scientific vocabulary when appropriate.
Unit Rationale	This inquiry-rich sequence moves from direct observation and classification to investigation, evidence-based explanation, problem solving and communication. Students repeatedly use the Science Journal to record concise evidence. Hands-on investigations, explicit modelling and visual supports make Earth science concepts concrete while building increasingly independent scientific thinking.
Key Concepts	• Rocks and minerals have observable properties. • Observable evidence can be used to compare and classify Earth materials. • Properties help explain why rocks and minerals are useful resources. • Soils have different properties and components that influence water holding, drainage and plant growth. • Scientific questions, fair investigations, measurements, patterns and evidence support conclusions. • Scientific knowledge and evidence can be used to propose and justify solutions to soil problems.
Australian Curriculum Science Content Descriptors	Science Understanding — Earth and Space Sciences: • AC9S3U02 – Compare the observable properties of soils, rocks and minerals and investigate why they are important Earth resources. Science as a Human Endeavour — Use and influence of science: • AC9S3H02 – Consider how people use scientific explanations to meet a need or solve a problem.
Science Inquiry Skills	• AC9S3I01 – Pose questions to explore observed patterns and relationships and make predictions based on observations. • AC9S3I02 – Use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests and considering the safe use of materials and equipment. • AC9S3I03 – Follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate. • AC9S3I04 – Construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information, show simple relationships and identify patterns. • AC9S3I05 – Compare findings with those of others, consider if investigations were fair, identify questions for further investigation and draw conclusions. • AC9S3I06 – Write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate.
General Capabilities	• Literacy – scientific vocabulary; oral, written and multimodal explanations. • Numeracy – measuring water and time; recording results; interpreting tables and a class column graph. • Critical and Creative Thinking – classifying, questioning, predicting, identifying patterns, evaluating evidence and developing solutions. • Personal and Social Capability – collaborative investigations, turn-taking, peer feedback and presentation.
Cross-curriculum Priorities	Aboriginal and Torres Strait Islander Histories and Cultures – Lesson 3 acknowledges Aboriginal and Torres Strait Islander Peoples' knowledge and uses of rocks and minerals, including ochre, grinding stones and stone tools. Use respectful, locally appropriate information and avoid presenting First Nations knowledge as a single uniform tradition.
Monitoring	Progress is monitored through teacher observation, questioning, student discussion, Science Journal entries, classification evidence, investigation results, class graph interpretation, peer evidence checks and students' use of scientific vocabulary across the sequence.

Formative Assessment	• Lesson 1: rock/mineral observations, scientific vocabulary and a scientific question. • Lesson 2: comparison, classification, pattern and relationship questions. • Lesson 3: three property–use resource examples and explanation of importance. • Lesson 4: soil observations, classification evidence and a soil/plant relationship question. • Lesson 5: evidence-based prediction, fair-test results, pattern/relationship and conclusion. • Lesson 6: evidence from multiple sources, scientific explanation and justified soil solution.
Summative Assessment (Final Task)	Earth Science Solutions Expo — students use evidence from Lessons 1–6 to create a poster, presentation or display. They communicate observable properties of rocks, minerals and soils; explain why rocks and minerals are important resources using a range of examples; classify soils using evidence; communicate their investigation question, prediction, results, pattern/relationship and conclusion; justify a detailed soil solution using evidence from different sources; and connect their learning in a clear scientific message.
Success Criteria	• I can describe observable properties of rocks, minerals and soils. • I can explain why rocks and minerals are important resources using a range of examples. • I can classify different soils using observable evidence. • I can pose questions about patterns and relationships and make an evidence-based prediction. • I can conduct and record a fair investigation using appropriate measurements. • I can identify a pattern or relationship and draw a conclusion from investigation evidence. • I can recommend and scientifically justify a detailed solution to a soil problem. • I can communicate connected scientific ideas using appropriate vocabulary.
Considerations for teaching and learning in this unit	• Prioritise hands-on observation before written recording. • Explicitly model scientific vocabulary, observation language and each Science Journal task. • Use oral rehearsal, sentence stems, word banks and pre-labelled tables where needed. • Use mixed-ability groups and purposeful roles during investigations. • Provide image/specimen alternatives where access to real samples is limited. • Extend students through stronger evidence, alternative classifications, more precise relationship questions, evaluation of fairness and comparison of possible solutions. • Use respectful, locally relevant approaches when teaching Aboriginal and Torres Strait Islander Peoples' knowledge.
Prior Knowledge Students Require	• Students can make simple observations using their senses. • Students can compare objects and identify similarities and differences. • Students can record information in simple tables with support. • Students have an emerging understanding of questions, predictions and evidence. • Helpful prior vocabulary: observe, compare, same, different, material, plant, water.
Investigating Safely	• Teacher checks rock/mineral samples for sharp edges and unsuitable fragments. • Use hand lenses, spray bottles, jars, water, measuring equipment and soil samples under direct supervision. • Do not taste rocks, minerals or soils; wash hands after handling soil. • Avoid inhaling dust; keep soil samples contained and dampen dusty soil if required. Do not use potting mix. • Clean spills promptly and use stable containers for drainage/water-holding investigations. • Follow school CARA/risk-management procedures and local allergy/hygiene requirements.
Key Vocabulary	rock • mineral • geologist • property • colour • texture • grain • crystal • lustre • hardness • compare • classify • pattern • relationship • resource • soil • sand • clay • silt • loam • humus • organic matter • prediction • investigation • evidence • fair test • result • drainage • nutrients • compost • mulch • solution • conclusion
Resources to support knowing and engaging your learners	• Year 3 Earth Science Journal 2026. • Unit visuals/posters: What is a Rock? / What is a Mineral? / What Does a Geologist Do?; Compare Rocks and Minerals; Classification Charts, Tables and Venn Diagrams; Why Rocks and Minerals are Important Resources; Soils Have Different Observable Properties; Healthy Soil, Strong Plants!; Earth Science Solutions Expo instructions and Evidence Check. • Rock/mineral and soil samples; specimen or image cards; hand lenses. • Soil jar-test materials and fair-test drainage/water-holding equipment. • Information cards/books and class graph display. • Poster, presentation or display materials for the Expo.

Teaching and Learning Sequence

Lesson	Focus / Big Idea	Pedagogy	Curriculum Links	Learning Intentions	Success Criteria	Differentiation	Hands-On & Adventure Tasks	Science Journal Evidence (Portfolio)	Assessment Links / Evidence Collected	Materials & Resources
Lesson 1 Rock Detectives	Rocks and minerals have observable properties that scientists use to describe and distinguish them.	Explicit modelling → guided observation → hands-on stations → evidence discussion.	AC9S3U02 AC9S3I01 AC9S3I03 AC9S3I06	We are learning to identify and describe the observable properties of rocks and minerals.	I can observe carefully. I can describe properties using scientific vocabulary. I can ask a scientific question.	Support: word bank, modelled sample. Extension: justify distinctions between samples. Adjustments: fewer samples and/or oral scribing.	Observe 3 samples using hand lenses and water spray; compare colour, texture, grain/crystal size, lustre and hardness.	Observation table; best-example description; scientific question.	Formative: accurate observations, vocabulary and a question based on evidence.	Journal L1; Rock/Mineral/Geologist visual; samples; hand lenses; spray bottles; pencils.
Lesson 2 Sorting Scientists	Observable properties can be used to compare, classify and identify patterns in rocks and minerals.	Compare → classify → identify pattern → pose pattern/relationship questions.	AC9S3U02 AC9S3I01 AC9S3I04 AC9S3I06	We are learning to compare and classify rocks and minerals and explore patterns and relationships.	I can compare properties. I can classify using evidence. I can pose pattern/relationship questions.	Support: sorting-rule prompts and vocabulary. Extension: create multiple valid classifications. Adjustments: use specimen images/pairs.	Investigate granite, sandstone, marble, quartz, pumice and mica; classify using observable evidence.	Key-property table; identified pattern; one pattern question and one relationship question.	Formative: classification reasoning, pattern identification and inquiry questions.	Journal L2; comparison visual; classification visual; samples/images; hand lenses; pencils.
Lesson 3 Earth's Hidden Treasures	Rock and mineral properties help explain why Earth resources suit particular uses.	Mystery-object hook → property-use modelling → resource matching → discussion.	AC9S3U02 AC9S3H02 AC9S3I06	We are learning why rocks and minerals are important resources and how their properties relate to their uses.	I can identify uses. I can link a useful property to a use. I can explain importance using examples.	Support: matched cards and sentence stems. Extension: compare two materials for the same purpose. Adjustments: oral response options.	Investigate mystery objects/cards; connect material → property → use; explore examples including ochre, grinding stones and stone tools.	Three resource examples; explanation of importance; one First Nations knowledge/use example.	Formative: range of examples and clear property-use explanations.	Journal L3; Important Resources visual; mystery objects/cards; samples; books; pencils.
Lesson 4 Soil Scientists	Soils differ in observable properties and components and can be classified using evidence.	Model observation → soil stations/jar test → classify → develop relationship question.	AC9S3U02 AC9S3I01 AC9S3I03 AC9S3I04	We are learning that different soils have different observable properties and can be classified using evidence.	I can describe and compare soil properties. I can classify using evidence. I can develop a soil/plant relationship question.	Support: vocabulary cards and pre-labelled groups. Extension: alternative classifications with justification. Adjustments: tactile/visual access as appropriate.	Observe sand, clay, loam and garden soil; magnifier investigation; soil jar test; classify soils.	Soil observation table; classification evidence; soil/plant investigation question.	Formative: observation quality, evidence-based classification and an investigable question.	Journal L4; Soil Properties visual; soils; hand lenses; jars; water; trays/spoons; pencils.
Lesson 5 Which Soil Works Best?	Fair investigations reveal patterns and relationships between soil type and water behaviour relevant to plant growth.	Revisit question → fair-test modelling → evidence-based prediction → investigate → graph/analyse.	AC9S3U02 AC9S3I01 AC9S3I02 AC9S3I03 AC9S3I04 AC9S3I05	We are learning to investigate relationships between soil properties and conditions that support plant growth.	I can make an evidence-based prediction. I can collect and record results fairly. I can explain a pattern/relationship using evidence.	Support: shared class question and scaffolded prediction. Extension: explain anomalies or limitations. Adjustments: group roles and supported measurement.	Compare soils for drainage/water holding using equal quantities and conditions; measure results; contribute to a class column graph.	Question; prediction using 3 sources; results; pattern; relationship; conclusion.	Formative/assessment evidence: prediction, fair-test behaviours, recorded results, pattern/relationship and evidence-based conclusion.	Journal L5; Which Soil Works Best? visual; soils; equal containers; water/measures; timer; class graph display.
Lesson 6 Soil Problem Solvers	Scientific knowledge and evidence from several sources can justify practical solutions to soil problems.	Problem scenario → solution modelling → integrate sources → explain/justify → peer challenge.	AC9S3H02 AC9S3I05 AC9S3I06	We are learning to use scientific evidence from different sources to explain and solve a soil problem.	I can identify a soil problem. I can combine evidence from different sources. I can explain and justify a detailed solution scientifically.	Support: choose from defined problems/solutions. Extension: compare alternative solutions. Adjustments: sentence frames and oral rehearsal.	Choose a dry/sandy/clayey/low-nutrient problem; use previous results + new information + current knowledge to recommend compost, mulch, worms, organic matter, water or mixing soils.	Evidence from 3 sources; scientific explanation; recommended solution; justification.	Assessment evidence: integration of evidence, scientific explanation and a detailed justified solution.	Journal L6; Healthy Soil, Strong Plants! visual; L4/L5 evidence; information cards/books; pencils.
Lesson 7 Earth Science Solutions Expo	Scientific communication connects properties, classifications, investigation evidence, explanations and solutions for an audience.	Model each assessment section → students complete → evidence check → create/rehearse → communicate.	AC9S3U02 AC9S3H02 AC9S3I04 AC9S3I05 AC9S3I06	We are learning to communicate connected scientific ideas and solutions using evidence.	I can explain properties and resource uses. I can communicate findings and a conclusion. I can justify a soil solution. I can connect ideas using scientific vocabulary.	Support: instructions poster, completed Journal and sentence stems. Extension: respond to audience questions with evidence. Adjustments: poster, oral or digital presentation options.	Use Journal evidence from Lessons 1–6 to complete Sections A–E, then create or rehearse a poster, presentation or display for the Expo.	L7 planning: rocks/minerals/resources; soils; investigation; soil solution; connected science message.	Summative: connected communication of science understanding, inquiry evidence and a justified solution.	Journal L7; Expo Instructions/Evidence Check; unit visuals; poster/presentation/display materials.