YEAR 4 - SCIENCE

Teaching Methodology and Cross-Curriculum Integration — Year 4 Science

Whole-unit methodology and integration guide for teachers. Explains the pedagogical approach (explicit teaching via I do/We do/You do, inquiry and fair-testing, 5E-style learning, hands-on modelling), how differentiation is supported (ABLEWA-informed adjustments), and — importantly — how each General Capability and Cross-curriculum Priority (especially Aboriginal and Torres Strait Islander histories and cultures, Sustainability, Ethical and Intercultural Understanding, Numeracy, Literacy, Critical and Creative Thinking, Digital Literacy) is woven authentically through the unit rather than bolted on.

This guide explains how the unit is taught and how the General Capabilities and Cross-curriculum Priorities are woven through it. The design principle throughout is **authentic integration**: capabilities and priorities are developed inside meaningful science, not added on as separate activities.

Teaching approach

Every lesson follows a consistent, evidence-based structure that balances explicit teaching with hands-on inquiry:

- **Prerequisite recap** — a short activation of prior knowledge so new learning has something to attach to.
- **I do** — the teacher explicitly models the concept and the scientific thinking, including addressing known misconceptions out loud.
- **We do** — guided practice: shared demonstrations, class discussion and group work with teacher check-ins.
- **You do** — independent practice on a worksheet or investigation, with adjustments available.

This maps naturally onto the **5E** inquiry model (Engage, Explore, Explain, Elaborate, Evaluate): strands open with an engaging hook (a story, a game, a demonstration), students explore through hands-on activity, the teacher helps them explain using scientific vocabulary, they elaborate by applying ideas to new contexts, and they evaluate their own investigations and understanding.

Inquiry and fair-testing

Science Inquiry is not a separate strand taught once; it is a spine running through the whole unit. A single reusable *Fair Test Investigation Template* is introduced early and used in every investigation (absorbency, freeze–thaw, friction, and the waste-rock stockpile), so students internalise the same cycle — question, prediction, variables, risks, method, results, conclusion,

evaluation — and get better at it each time before it is formally assessed. Repeated use of one scaffold reduces cognitive load and makes the thinking, not the format, the focus.

Differentiation (ABLEWA-informed)

Each assessment lesson lists concrete adjustments consistent with the Abilities Based Learning and Education Support (ABLEWA) approach: sentence starters, partly-completed templates, sorting cards and word walls for access; scribing or oral responses where writing is a barrier; and extension through deeper reasoning prompts (the "what if…" and "how could you improve…" questions). Because most tasks include a drawing or diagram component, students can demonstrate understanding visually as well as in writing. Adjustments change the *access*, not the science being assessed.

General Capabilities — where they are developed

General Capability	Woven in through…
Literacy	Explicit scientific vocabulary in every lesson (48-term glossary linked to lesson vocab); explaining, describing and justifying in worksheets and every summative's communication criterion.
Numeracy	Measuring in mL and metres, recording in tables, and drawing labelled, scaled column graphs (L7, L14); representing size with scaled force arrows (L16, A4-PHYS).
Digital Literacy	Using digital tools to photograph and compare investigation results (L9 weathering hunt, L10 freeze–thaw before/after, L12); aerial map timelines (L9).
Critical and Creative Thinking	Generating, testing and improving designs (egg-drop, waste-rock stockpile); reasoning from a model to a prediction (force arrows); tracing flow-on effects in food webs.
Personal and Social Capability	Collaborative group investigations with shared roles; the string food-web activity; agreeing fair-test methods as a class.
Ethical Understanding	Weighing the benefits of mining against its environmental impact (L12 / A3-EARTH); caring responsibly for living things and Country.
Intercultural Understanding	Engaging respectfully with Aboriginal knowledge of Country and species (L3, L9), recognising First Peoples' long observation of the natural world.

Cross-curriculum Priorities — where they are developed

Priority	Woven in through...
Aboriginal and Torres Strait Islander histories and cultures	*The Rainbow Serpent* as the entry to landscape change (L9); First Peoples' knowledge of native species and food webs and caring for Country (L3); using local language names for species where possible. Handled as respected knowledge, not as "myth".
Sustainability	Interdependence and balance in ecosystems (L1–L4); recycling and saving raw materials (L6); protecting topsoil, soil and waterways (L11–L12).
Asia and Australia's engagement with Asia	Opportunistic links only (e.g. global sources of raw materials and manufacturing in L6); not a focus of this science content.

Learning-area connections beyond science

The unit makes authentic links to **Design and Technologies** (choosing materials for purpose and the design-and-evaluate process in the egg-drop and stockpile tasks; food and fibre production in L6), **HASS geography** (how natural processes and people change places, L9–L12), and **English** (a narrative text as a science hook, and explanation writing throughout).

> **In short.** The unit teaches science well — explicit modelling, repeated hands-on fair-testing, and inclusive adjustments — and, in doing so, develops every General Capability and the priorities of Aboriginal and Torres Strait Islander histories and cultures, Sustainability, and Ethical and Intercultural Understanding through the science itself, so students absorb them as part of thinking and working scientifically.