



GRADE 7 · AGES 12–13

Test it, question the *result*, explain the trade-off.

Project-Based Learning Designs: eight projects a year, each ending in something the child has made, tested and explained.

8

PROJECTS A YEAR
two per school term

20

SESSIONS PER PROJECT
four weeks, five sessions a week

6 of 8

END IN A PHYSICAL
BUILD
models, devices, instruments

1

COMPLETE LITERARY
PROJECT
narrative and original writing

WHAT GRADE 7 IS

A year of things made and tested

Grade 7 is where evidence gets messy: anomalies, uncertainty and trade-offs. A child builds a structure that must earn its materials, an insulated container with a cooling graph, a sundial calibrated to their own latitude and a red-cabbage indicator kit, then costs an enterprise, maps a real decision and writes a response to a local resource problem that they can defend. Maths, reading, writing, science and humanities are taught **inside the project that needs them**, with no standalone subject courses. PPL is an add-on that sits beside school and does not replace it.

THIS YEAR'S EMPHASIS

SCIENCE ENQUIRY

Anomalies, uncertainty and
trade-offs

MAPS

A data-based route or site
decision

WRITING

Technical briefs, proposals,
arguments and lab reports

MAKING

Calibrated instruments,
structures and a chemistry kit

HOW EVERY PROJECT IS BUILT

Observe 5 SESSIONS

The driving question and the thing to make. A “before you start” check. Two mini-lessons: the science or humanities idea, then the maths the project uses. The reading. The log begins.

Explore 5 SESSIONS

Two investigations: collect evidence, then change one thing and record fairly. Organise it. Draft the writing. Plan the build with criteria.

Build

10 SESSIONS

Build, test against the criteria, revise from the evidence, retest and finish. Rehearse, present to a family audience, complete the family record, and reflect on what changed and why.

Five sessions a week, designed around 30–40 minutes each. This is a planning figure, to be confirmed in pilot.

EVERY PROJECT DELIVERS

- **Something made**, a model, device, instrument, kit, publication, performance or map.
- **A real piece of writing**, such as a caption, instruction, report, recommendation or story.
- **A spoken presentation** to a family audience, with one question to answer.
- **A family record** in four domains. No tests, marks or rankings.

BUILT FOR ANY FAMILY, ANYWHERE

- **Your place is the subject**; South Africa is always the comparison.
- **Household or hardware-shop materials** available worldwide. No branded kits, no live animals.
- **Both hemispheres**: sky, season, shadow and weather tasks carry northern and southern versions.
- **A paper route and an online route** for every project.

Eight projects, eight driving questions

Each project is four weeks and 20 sessions. It starts with one driving question and ends with something the child has made, tested and explained. Every project also teaches the maths it genuinely uses, a reading, a real piece of writing and a spoken presentation.

A map for a real decision 1

How can reliable data help us choose the best route or location?

THE CHILD MAKES

A mapped recommendation (a route or a site) with a scale model of the site and a checked dataset.

MAP + SCALE MODEL

GEOGRAPHY

A structure that earns its materials 2

How can a structure carry a load while using materials wisely?

THE CHILD MAKES

A tested structural model (tower or bridge) with drawings, a load test record and a trade-off explanation.

STRUCTURAL MODEL

MATTER

GEOGRAPHY

An enterprise we can explain 3

Can an enterprise meet a real need and account for its choices?

THE CHILD MAKES

A prototype product or service, a costed plan and a simulated enterprise portfolio using a fictional transaction set.

PROTOTYPE + PORTFOLIO

ECONOMICS

Research into an original work 4

How can a researched literary question become an original written and spoken work?

THE CHILD MAKES

A literary portfolio (research notes, an original text, a commentary) published as a booklet and presented aloud.

LITERARY PORTFOLIO

Keep the heat where it helps 5

How can a design slow unwanted heat transfer?

THE CHILD MAKES

A tested insulation design (a container that keeps warm water warm, or cold water cold) with a cooling graph and a revision.

WORKING MODEL

ENERGY

GEOGRAPHY

A community response worth defending 6

How can we recommend a fair and workable response to a resource problem?

THE CHILD MAKES

An evidence-based response brief and a small prototype for a local resource problem.

PROTOTYPE + BRIEF

EARTH & SPACE

GEOGRAPHY

A sundial for your latitude 7

Why does the Sun's path change through the day and the year, and how can we build a clock from it?

THE CHILD MAKES

A working sundial calibrated for the child's latitude and hemisphere, with a three-week shadow record and a set of instructions for another latitude.

WORKING INSTRUMENT

EARTH & SPACE

HISTORY

Kitchen chemistry 8

How can we test whether a substance is an acid or a base using an indicator we made ourselves?

THE CHILD MAKES

A red-cabbage indicator kit (paper strips), a tested colour scale, a lab report classifying at least eight household substances, and one separation demonstration (evaporating salt water).

EXPERIMENT KIT + REPORT

MATTER

Sequence. A map for a real decision (Project 1) builds on Grade 5 map making and carries a short refresher for new joiners. A sundial for your latitude needs three weeks of shadow records, so start it in a week the family will be at home. The literary project sits best in Term 2 or 3.

THE SCAFFOLDING

The same 20-session spine, every project

Every session has one job. Each project follows the same shape, so a child always knows where they are and what comes next, while the content changes completely.

WEEK 1	1 Hook: the driving question and the thing to make	2 Mini-lesson 1: the science or humanities idea	3 Mini-lesson 2: the maths the project uses	4 First observation; the project log begins	5 Reading session and a short written response
WEEK 2	6 Investigation 1: collect first evidence	7 Investigation 2: change one thing, record fairly	8 Organise the evidence: table, graph, timeline or map	9 Writing session: first draft	10 Plan the build; a parent check-in
WEEK 3	11 Build session 1	12 Build session 2	13 First test against the criteria	14 Revise the build from the evidence	15 Second test; compare with the first
WEEK 4	16 Revise the writing; add the evidence	17 Finish the made object	18 Rehearse the presentation	19 Present to a family audience	20 Reflect: what changed, why, what next

Observe
Explore
Build

A short fluency slot keeps number facts and spelling patterns warm inside sessions. Nothing is homework on top.

Teach, then apply

Every idea comes with a worked example before the child uses it. A ten-minute “before you start” check covers the one skill the project needs, and the maths is taught before the build calls for it.

Evidence before claims

Every claim must stay within the evidence the child collected. Each project names the evidence that must exist before it is finished, and adult help is recorded.

Test, revise, retest

Criteria are set before building. The child tests, revises from the evidence, tests again and compares the two results. Improving the work is the ordinary process.

A real audience

Every project ends with a presentation to a family audience, one question to answer, and a reflection: what changed, why, and what to ask next.

ONE PROJECT OPENED UP · GRADE 7, PROJECT 7

A sundial for your latitude

Why does the Sun's path change through the day and the year, and how can we build a clock from it?

EVIDENCE REQUIRED	Shadow-length and direction records; the gnomon angle explained as the latitude; seasons explained using Earth's tilt; the sundial checked against a clock with the error stated.
MATHS INSIDE	Angles; constructions with a protractor; straight-line angle relationships; data tables; time against shadow length as an informal function.
SCIENCE INSIDE	The Sun–Earth relationship: rotation, tilt, seasons, day length; a brief history of astronomy.
GEOGRAPHY / HISTORY	How societies kept time (short reading).
READING AND WRITING	A diagram-led explanation. Precise instructions someone at another latitude could follow.
DIGITAL THREAD	Model against measurement; validate the data.
ANYWHERE IN THE WORLD	Hemisphere-specific: the gnomon points to the celestial pole (south in the southern hemisphere, north in the northern). Instructions for both hemispheres and an equatorial note are supplied; the child uses their own latitude.
SAFETY	Never look directly at the Sun.

WHAT IS INSIDE, AND WHAT IS NOT

What Grade 7 teaches, and what it leaves to school

SUBJECT	TAUGHT INSIDE THE EIGHT PROJECTS	LEFT TO SCHOOL
Mathematics	Ratio, rate and percentages; scale; decimals; integers on a number line; constructions and angles; area, surface area, volume; formula substitution; averages and spread; misleading displays; probability as risk; informal functions.	Algebraic expressions and equations; exponents in depth; transformations; formal probability; the full geometry programme.
Science	Properties and testing of materials; acids, bases and indicators; separating mixtures; heat transfer and insulation; energy sources; renewable and non-renewable resources; Sun–Earth and seasons; the periodic table (reading).	Biosphere and biodiversity; sexual reproduction and variation (left to school by decision); Moon–Earth and tides; the national electricity supply in depth.
Geography, history, EMS, Technology	Map skills and a data-based decision; natural hazards; resources and conservation; enterprise, budgets and saving; structures.	Transatlantic slave trade; colonisation of the Cape; co-operation and conflict; population growth in depth; full EMS accounting; Technology processing and electrical-systems mini-PATs.
English	One complete narrative, poetry, drama; recommendations, technical explanations, proposals, arguments, lab reports; a literary portfolio and presentation.	Standalone grammar and spelling sequences; full text-type inventory; formal comprehension tests.

Where it comes from

CAPS-rooted. Every project names the CAPS topics it draws on across English Home Language, Mathematics, Natural Sciences, Technology, Social Sciences, and Economic and Management Sciences. PPL is CAPS-rooted; it is not a CAPS-coverage programme, which is why the table above lists what stays with school.

Globally influenced. Nine contributions from five education jurisdictions shape the method. They are selected influences, not adopted curricula, and no source organisation endorses PPL.

How it was built

- Source research: 31 CAPS and Department of Basic Education documents for Grades 4–7, plus official documents from five jurisdictions, each recorded and fingerprinted.
- Four grade frameworks were drafted, then put through two independent critical reviews of workload, progression, English planning and scientific accuracy.
- Unsupported time claims were withdrawn, and the frameworks were rebuilt as an add-on where every project ends in something made.

Selected international influences

England	Literary breadth; maths reasoning; working scientifically; interpreting historical sources
Australia	Algorithms, data checking and privacy; design criteria and the consequences of choices
Sweden	Systems and the consequences of technological choices
British Columbia	Understand a need, prototype, test and use feedback
Scotland	Resource use and sustainable technology decisions

The family record

Once per project the parent or older learner completes a short checklist in four domains (understanding, making and testing, communicating, reflection and revision) at four levels: needs support, developing, secure, extending. “Secure” means the child showed the idea independently and explained it in their own words. Adult help is never awarded to the child.

WHERE GRADE 7 SITS IN THE FOUR-YEAR PROGRESSION

	GRADE 4	GRADE 5	GRADE 6	GRADE 7
SCIENCE ENQUIRY	One fair comparison	Consistent measurement and a short data record	Repeated trials, means and controlled comparison	Anomalies, uncertainty and trade-offs
MAPS	Read a plan and a key	Make a scale map with a grid	World maps, scale and grid references	A data-based route or site decision
WRITING	Captions and instructions	Guides, bulletins and reports	Explanations, recommendations and recipes	Technical briefs, proposals, arguments and lab reports
MAKING	Display models and simple devices	Living models, instruments and a first circuit	Tested systems and a cooked outcome	Calibrated instruments, structures and a chemistry kit

Circuits: one complete low-voltage circuit for a purpose (Grade 5), then multiple switched circuits, conductors and mains safety as knowledge (Grade 6). No other circuit project repeats.

Figures describe the programme design, not measured learner outcomes. Session length is a planning figure. PPL is an independent studio and an add-on to school: it does not replace school and makes no claim of full CAPS coverage.