

THE LIVING BOOK OF
SCIENCE FOR YOUNG LEARNERS
AI COURSE LIST
Kindergarten through Grade 8

9

GRADE LEVELS

9

AI UNITS

63

AI LESSONS

Unit A: AI for Scientific Thinking

K-2: 18 lessons | Grades 3-5: 21 lessons | Grades 6-8: 24 lessons

AI Course List | Master Framework Edition v2.0

Prepared September 17, 2026

K-2 FOUNDATIONS

Kindergarten

Wonder and the World Around Us

AI unit architecture: 1 unit | 6 AI lessons | K-A01 through K-A06

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
K-A01	Meet and Build My AI Science Mentor	How can my AI Mentor help me wonder and learn safely?	With an adult, a child creates a simple AI Mentor profile that asks questions, encourages observation, and never replaces a trusted adult.
K-A02	Notice First, Ask Second	What should we notice before asking AI?	Careful looking, listening, counting, and describing give AI useful information and keep the child at the center of discovery.
K-A03	Ask One Clear Question	How can we turn wonder into a clear question?	A clear question names the object or event and asks one thing at a time.
K-A04	Show with Words and Pictures	How can words and pictures help AI understand?	Labels, simple drawings, photographs chosen with an adult, and descriptive words provide helpful context.
K-A05	Check AI with the Real World	How can we find out whether an AI answer fits what we see?	Children compare an AI answer with direct observation, a simple test, a book, or a trusted adult.
K-A06	AI Helps, People Decide	Who makes the final decision when we use AI?	AI can suggest ideas, but people choose what to believe and do, using evidence, kindness, safety, and adult guidance.

K-2 FOUNDATIONS

Grade 1

Patterns, Signals, and Living Structures

AI unit architecture: 1 unit | 6 AI lessons | 1-A01 through 1-A06

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
1-A01	Build My Grade 1 AI Science Mentor	What instructions will help my AI Mentor teach me well?	With adult supervision, students set a friendly role, age-appropriate language, question-first guidance, and a rule to check ideas with evidence.
1-A02	Describe Before You Prompt	Which details help AI respond to a science question?	Useful prompts include what was observed, where and when it happened, and what changed.
1-A03	Questions That Invite Discovery	Which questions help us investigate instead of merely receiving an answer?	How, what, and why questions can invite observation, comparison, prediction, and testing.
1-A04	Ask AI for More Than One Idea	Why should we request several possible explanations?	Multiple ideas prevent the first answer from becoming an automatic conclusion and create options to compare.
1-A05	Use Evidence to Check AI	What evidence can confirm or challenge an AI answer?	Students compare AI output with observations, measurements, books, demonstrations, and trusted people.
1-A06	Improve the Question Together	How can a follow-up question make learning clearer?	Students add missing details, define words, and ask AI to explain at an appropriate level.

K-2 FOUNDATIONS

Grade 2

Matter, Habitats, and a Changing Earth

AI unit architecture: 1 unit | 6 AI lessons | 2-A01 through 2-A06

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
2-A01	Build My Grade 2 AI Science Mentor	How can my AI Mentor guide me without doing my thinking?	Students configure an adult-supervised mentor to ask for their ideas first, offer hints, explain simply, and encourage evidence checks.
2-A02	Turn an Observation into a Prompt	How can an observation become a useful AI prompt?	A strong prompt separates what was directly observed from what the student wonders or predicts.
2-A03	Ask AI to Compare	How can AI help organize similarities and differences?	AI can help create comparison categories, but students supply and verify the observations.
2-A04	Prediction, Then AI	Why should we make our own prediction before asking AI?	A prior prediction preserves independent thinking and makes agreement or disagreement meaningful.
2-A05	Find the Part That Needs Checking	Which part of an AI answer should we verify first?	Specific factual claims, surprising statements, and statements affecting a test deserve priority checking.
2-A06	Revise an Explanation	How can evidence help us improve an AI-assisted explanation?	Students compare the explanation with evidence, correct errors, and rewrite the conclusion in their own words.

GRADES 3-5 DEVELOPMENT

Grade 3

Forces, Life Cycles, and Environmental Change

AI unit architecture: 1 unit | 7 AI lessons | 3-A01 through 3-A07

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
3-A01	Build My Grade 3 AI Investigation Mentor	What rules help an AI Mentor strengthen scientific thinking?	Students configure a supervised mentor to ask probing questions, distinguish observation from inference, suggest checks, and leave decisions to the learner.
3-A02	From Wonder to a Testable Question	How can AI help refine a question without choosing it for us?	AI can identify variables and vague terms, while the student chooses a measurable, feasible question.
3-A03	Give Context, Constraints, and a Goal	What makes a science prompt precise?	A precise prompt states relevant observations, the desired task, available materials, grade level, and important limits.
3-A04	Separate Observation from Inference	Which statements describe evidence and which interpret it?	Students and AI sort direct observations from interpretations, then connect claims to supporting evidence.
3-A05	Ask for Competing Explanations	Why compare more than one explanation?	Alternative explanations reveal assumptions and help students design observations that distinguish among ideas.
3-A06	Check AI with Sources and Tests	How can we verify an AI-generated claim?	Verification uses reliable references, repeated observations, fair tests, and agreement among independent evidence.
3-A07	Keep an AI Science Notebook	How should we record AI help and our own thinking?	A notebook records the prompt, useful AI ideas, evidence checks, changes made, and the student's final reasoning.

GRADES 3-5 DEVELOPMENT

Grade 4

Energy, Information, and a Dynamic Earth

AI unit architecture: 1 unit | 7 AI lessons | 4-A01 through 4-A07

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
4-A01	Build My Grade 4 AI Evidence Mentor	How should an AI Mentor challenge my claims?	Students configure the mentor to request evidence, ask for alternatives, identify uncertainty, and avoid supplying final conclusions too early.
4-A02	Prompt for a Model, Not Just an Answer	How can AI help us represent a system or process?	Prompts can request components, relationships, inputs, outputs, and limits for a model that students then evaluate.
4-A03	Ask AI to Reveal Assumptions	What hidden assumptions may shape an explanation?	AI can list assumptions, but students judge whether each is supported, testable, and relevant.
4-A04	Compare Answer, Evidence, and Source	Why are a confident answer and a reliable answer different?	Reliability depends on evidence quality and source agreement, not fluent wording or confident tone.
4-A05	Detect an AI Mistake	What clues suggest that an AI response may be wrong?	Contradictions, impossible claims, missing units, invented details, and disagreement with strong evidence signal a need to check.
4-A06	Use AI to Improve a Fair Test	How can AI critique an investigation plan?	AI can flag uncontrolled variables and unclear measurements; students decide which revisions are scientifically sound and feasible.
4-A07	Explain What AI Contributed	How can we communicate AI use honestly?	Students identify which ideas came from AI, which evidence they checked, what they changed, and what conclusion remains their own.

GRADES 3-5 DEVELOPMENT

Grade 5

Matter, Ecosystems, Earth Systems, and Space

AI unit architecture: 1 unit | 7 AI lessons | 5-A01 through 5-A07

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
5-A01	Build My Grade 5 AI Systems Mentor	How can an AI Mentor help me think across connected systems?	Students configure a mentor to trace components, interactions, matter, energy, feedback, evidence, and model limitations.
5-A02	Break a Complex Question into Parts	How can AI help organize a difficult science problem?	AI can suggest subquestions, while students select a logical sequence and preserve the original scientific goal.
5-A03	Prompt with Variables and Units	Why do variables, units, and conditions matter in an AI prompt?	Explicit variables, units, ranges, and conditions reduce ambiguity and make outputs easier to evaluate.
5-A04	Ask for Evidence and Source Types	What kinds of evidence would support a claim?	AI can suggest observations, measurements, datasets, experiments, and reference types, but students verify actual sources.
5-A05	Fact, Inference, or Prediction?	How can we classify statements in an AI response?	Facts require evidence, inferences interpret evidence, and predictions extend patterns; each needs a different check.
5-A06	Revise a Model with Feedback	How can AI feedback improve a model without replacing it?	Students compare feedback with criteria, revise selected features, and explain why the revised model is stronger.
5-A07	Defend the Human Decision	Why must the learner remain responsible for the conclusion?	Students weigh evidence, uncertainty, ethics, and consequences and can explain why they accepted, changed, or rejected AI advice.

GRADES 6-8 INTEGRATION

Grade 6

Matter, Cells, Energy, and Earth Systems

AI unit architecture: 1 unit | 8 AI lessons | 6-A01 through 6-A08

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
6-A01	Configure My Grade 6 AI Research Mentor	What instructions make AI a rigorous research partner?	Students require testable questions, transparent assumptions, source suggestions, uncertainty statements, counterarguments, and human verification.
6-A02	Define a Testable Systems Question	How can iterative prompting clarify a complex system?	Students refine boundaries, variables, inputs, outputs, scale, and measurable outcomes through successive prompts.
6-A03	Prompt, Critique, and Reprompt	Why is one prompt rarely enough?	Iterative prompting treats AI output as a draft to critique for relevance, evidence, clarity, and omissions.
6-A04	Evaluate Sources AI Suggests	How can we judge whether a suggested source is credible?	Students check authorship, publication, date, methods, evidence, conflicts of interest, and agreement with independent sources.
6-A05	Distinguish Fact, Model, and Inference	What kind of claim is AI making?	Scientific facts, models, and inferences have different evidentiary roles and should not be presented as interchangeable certainty.
6-A06	Find Hallucination, Bias, and Missing Data	How can an AI response mislead even when it sounds plausible?	Invented citations, biased framing, omitted variables, false precision, and missing uncertainty require deliberate checking.
6-A07	Use AI to Analyze Data Carefully	How can AI support data analysis without distorting evidence?	Students verify units and calculations, inspect raw data, choose appropriate displays, and reproduce important results.
6-A08	Document AI Use and Human Judgment	What record makes AI-assisted work transparent?	A transparent record preserves prompts, outputs used, sources checked, corrections, limitations, and the student's final reasoning.

GRADES 6-8 INTEGRATION

Grade 7

Chemical Change, Ecosystems, Heredity, and Earth History

AI unit architecture: 1 unit | 8 AI lessons | 7-A01 through 7-A08

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
7-A01	Configure My Grade 7 AI Scientific Argument Mentor	How can AI strengthen rather than replace scientific argument?	Students require claims, evidence, reasoning, alternatives, uncertainty, source checks, and space for their independent judgment.
7-A02	Frame a Question with Competing Hypotheses	How can AI help generate hypotheses that can be distinguished by evidence?	Students turn broad explanations into alternatives that make different measurable predictions.
7-A03	Design Prompts That Expose Mechanisms	How can a prompt move beyond description to causal explanation?	Mechanistic prompts ask what components interact, through what process, under which conditions, and with what evidence.
7-A04	Audit Evidence Quality	Which evidence is strong enough to support a scientific claim?	Students evaluate relevance, controls, sample, measurement, reproducibility, uncertainty, and consistency across sources.
7-A05	Challenge AI with Counterevidence	What happens when we give AI evidence that conflicts with its first answer?	A reliable reasoning process revises claims, explains conflicts, and identifies what additional evidence is needed.
7-A06	Recognize Bias in Data and Language	How can selection and wording shape an AI conclusion?	Sampling, labels, missing groups, historical data, and prompt framing can introduce bias into output.
7-A07	Use AI for Models and Simulations	What must we check before trusting an AI-assisted model?	Students inspect assumptions, equations, parameters, boundary conditions, sensitivity, validation data, and limits.
7-A08	Cite, Disclose, and Defend	How should AI-assisted scientific work be presented?	Students cite verified sources, disclose meaningful AI use, retain prompt records, and defend conclusions with their own reasoning.

GRADES 6-8 INTEGRATION

Grade 8

Forces, Waves, Space, and Integrated Engineering

AI unit architecture: 1 unit | 8 AI lessons | 8-A01 through 8-A08

Unit A: AI for Scientific Thinking

Big Idea: AI can strengthen curiosity, evidence use, modeling, and reflection when students remain responsible for observation, verification, judgment, and safe use.

Primary Standards Anchors: *Science and Engineering Practices; Digital and AI Literacy; Human-Centered Decision Making*

Code	Title	Driving Question	Core Knowledge
8-A01	Configure My Grade 8 AI Capstone Mentor	How can AI support a complex project while human judgment remains in control?	Students define the mentor's role, evidence rules, source standards, uncertainty language, ethical boundaries, and decision authority.
8-A02	Frame a Complex, Solvable Problem	How can AI help turn a broad concern into a researchable problem?	Students define stakeholders, system boundary, causes, variables, criteria, constraints, and evidence needs.
8-A03	Build an Iterative Prompt Strategy	How can a sequence of prompts improve reasoning?	A planned sequence explores the problem, critiques assumptions, tests alternatives, requests evidence, and synthesizes only after verification.
8-A04	Verify Evidence Across Independent Sources	When should sources be considered mutually confirming?	Independent methods, transparent data, credible authorship, and consistent findings provide stronger confirmation than repeated copies of one claim.
8-A05	Quantify Uncertainty and Limitations	How can AI help express what is not known?	Students distinguish measurement uncertainty, model limits, missing data, probability, and genuine scientific disagreement.
8-A06	Red-Team an AI-Assisted Conclusion	How can we deliberately search for weaknesses in a conclusion?	Students test counterexamples, alternative causes, edge cases, bias, hidden assumptions, and consequences before accepting a claim.
8-A07	Optimize without Losing Human Values	How can AI compare solutions while people retain ethical responsibility?	AI can organize weighted evidence and tradeoffs, but humans choose values, fairness priorities, acceptable risk, and final action.
8-A08	Create an AI Use and Evidence Record	What makes a capstone project transparent and reproducible?	The record includes prompts, model versions, datasets, verified sources, calculations, corrections, disclosures, and the student's defended decision.