Ei ASSET
AI & Digital Thinking
Curricular Framework

What the assessment measures, how it scales across grade bands, and what students should be able to demonstrate at each level.

Classes 3–10 · Four grade bands · Three domains
March 2026

1. What This Document Is

Ei ASSET AI & Digital Thinking is a diagnostic assessment for Classes 3–10 that measures how well students reason about computational problems, understand how AI systems work and fail, and make sound decisions in digital environments. It is part of the Ei ASSET family of assessments, used by over 7,000 schools across India and internationally.

This document defines the *thinking abilities* that the assessment measures and describes how those abilities scale across four grade bands (Classes 3–10).

For each skill, it specifies what students should be able to **demonstrate** — not what they should be *taught*.

What this document provides

- **Skill definitions** — what each of the 9–11 assessed skills means, in precise terms
- **Learning outcomes by level** — what a student at each grade band should be able to do, described as observable reasoning behaviours
- **The types of thinking tasks** that appear at each level — described generically, not as specific test content
- **Framework alignment** — how the skill taxonomy maps to CBSE, AI4K12, ISTE, CSTA, and DigComp 3.0

What this document deliberately leaves out

- **Topics and chapters** — it does not prescribe a sequence of topics to teach, a textbook to follow, or a set of vocabulary to memorise
- **Tools and platforms** — it does not specify whether schools should use Scratch, Python, ChatGPT, or no technology at all
- **Classroom activities** — it does not describe lessons, worksheets, projects, or teaching methods
- **Hours or scheduling** — it does not require a specific time allocation, timetable slot, or number of periods per week
- **Test content** — it does not reveal specific questions, answer keys, or item-level detail from any administration

> **Why this matters:** A school using Scratch for coding, a school using Mindspark, a school using unplugged worksheets, and a school using no technology at all can *all* prepare students for this assessment — because it measures how students think, not what tools they have been exposed to. Every question on the test provides all the information needed to answer correctly. Prior knowledge of specific tools, platforms, or terminology is never required.

Who this document is for

This framework is intended for school leaders evaluating ASSET AI & DT, curriculum coordinators aligning their ICT programmes, teachers wanting to understand what the assessment expects at each grade level, and content designers building curricula that target these skills.

Multiple curricula can target the same framework. The framework defines the destination; the curriculum is the route. Different routes may suit different schools — what matters is that students arrive at the thinking abilities described here.

2. Assessment Architecture

2.1 Domains and Weightage

DOMAIN	SHARE	WHAT IT MEASURES
`CT` Computational Thinking	~45%	Can the student reason systematically — plan procedures, spot patterns, read data, and apply logic to arrive at a single correct answer?
`AI` Artificial Intelligence	~35%	Does the student understand how AI systems work, how to direct them, where they fail, and what responsible use looks like?
`DL` Digital Literacy	~20%	Can the student choose the right tool, judge information quality, and make sound decisions about privacy, security, and sharing?

2.2 Grade Bands and Paper Structure

BAND	CLASSES	QUESTIONS	DURATION	CT	AI	DL
Level 1	3–4	30 MCQs	60 min	13	11	6
Level 2	5–6	35 MCQs	60 min	16	12	7
Level 3	7–8	35 MCQs	60 min	16	12	7
Level 4	9–10	35 MCQs	60 min	16	12	7

Each grade band shares a common paper, but benchmarking is done separately for every grade within the band. Each skill that appears on a paper has at least 3 questions; exact count per skill may vary.

2.3 Skill Inventory

GRADES 3–4 · 9 SKILLS

AI	Pre-Prompt Engineering
AI	AI Foundations
AI	AI Limitations
DL	Using Digital Tools Effectively
DL	Information and Media Literacy
CT	Algorithmic Thinking
CT	Logical Thinking
CT	Data Analysis
CT	Pattern Recognition

GRADES 5–10 · UP TO 11 SKILLS

AI	Prompt Engineering
AI	AI Technologies
AI	AI Training and Learning
AI	AI Limitations and Ethics
DL	Using Digital Tools Effectively
DL	Information and Media Literacy
CT	Algorithmic Thinking
CT	Logical Thinking
CT	Data Analysis
CT	Pattern Recognition
CT	Spatial Reasoning *(some papers)*

2.4 Skill Transitions Across Bands

Three AI skills at Level 1 (G3–4) evolve into more specific skills at Level 2 and beyond:

LEVEL 1 (G3–4)		LEVEL 2–4 (G5–10)
Pre-Prompt Engineering	→	Prompt Engineering
AI Foundations	→	AI Technologies + AI Training and Learning
AI Limitations	→	AI Limitations and Ethics

3. Skill Definitions and Learning Outcomes

For each skill: a definition, then the thinking abilities students should demonstrate at each level. The progression descriptions focus on *what students can do*, not on specific test content.

3.1 Computational Thinking

Algorithmic Thinking

Planning stepwise procedures that meet constraints; comparing plans to pick the shortest correct one; tracking state across steps.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L1 (G3–4)	Follow a set of rules applied sequentially to objects on a grid or structure. Execute a procedure mentally while tracking what changes at each step. Determine the outcome when rules interact (e.g., a colour rule that overrides another based on a number property). Identify the minimum number of operations needed to achieve a goal.
L2 (G5–6)	Trace multi-step operations where order matters — understanding that performing A then B gives a different result than B then A. Fill in missing steps in a procedure when the starting state and final output are both known. Apply a set of instructions repeatedly (loops) and predict the cumulative result. Identify which of several completed procedures violates a set of given rules.
L3 (G7–8)	Track state through long or repeated procedures where outputs from earlier steps affect inputs to later ones. Reason about near-code structures involving variable references and string operations. Determine which set of instructions produces the correct result regardless of the starting position — finding a universal solution rather than one that works for a single case. Combine quantitative data (time, probability, distance) with procedural constraints to reach a decision.
L4 (G9–10)	Trace pseudocode involving variable assignment, arithmetic, and multi-step execution. Modify a single step in a procedure to make an alternative approach work. Reason about systems where state has memory — the outcome of the current step depends on what previous steps changed. Reconstruct a starting state from a known end state by reversing a set of rules.

Logical Thinking

Multi-rule consistency, ordering, and elimination to arrive at exactly one viable outcome; spotting contradictions cleanly.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L1 (G3–4)	Use partial feedback across multiple rounds to deduce hidden information (e.g., guessing what's inside boxes when correct guesses are revealed each round). Apply 2–4 constraints about people, objects, and positions to determine a unique arrangement. Satisfy constraints that combine positional, property, and relational rules simultaneously.
L2 (G5–6)	Manage 3–4 simultaneous ordering constraints involving spatial directions (north-of, adjacent-to, between). Work through elimination systematically when multiple dimensions interact — such as who owns what pet when the clues reference species features, gender, and named exclusions. Evaluate whether a given arrangement satisfies all stated rules.
L3 (G7–8)	Determine which specific checks are necessary and sufficient to verify a rule (the Wason selection task). Reason about multi-variable systems where prices, positions, or outcomes depend on several interacting factors. Determine what MUST be true given a set of partial facts, distinguishing this from what COULD be true.
L4 (G9–10)	Evaluate multiple candidate procedures and determine which are logically valid — recognising when more than one approach works. Use hints about rows and columns to narrow a combinatorial space and determine the maximum number of attempts needed. Reason about constraints where some elements must be rearranged with no element remaining in its original position.

Data Analysis

Reading small tables or graphs; computing or comparing values; drawing warranted inferences to support a decision.

LEVEL	STUDENTS AT THIS LEVEL CAN...
L1 (G3–4)	Read structured tables and cross-reference rows and columns to find a missing value that satisfies a constraint (e.g., no repeated combination in a weekly schedule). Apply conditional rules to tabular data — if a value exceeds a threshold, a consequence follows. Count, compare, and compute simple operations from pictorial or tabular data.
L2 (G5–6)	Work with numerical constraints across a set of candidate solutions, testing each against multiple conditions to find the unique answer. Evaluate whether a given set of values satisfies two different mathematical conditions simultaneously (e.g., one side adds to N while another multiplies to N). Reason about what data tells you and what it doesn't — distinguishing warranted conclusions from speculation.
L3 (G7–8)	Interpret multi-variable data displays including proportional formats (pie charts, survey scatter plots). Evaluate competing claims made by different people about the same dataset and determine who is correct. Read quantitative data about an AI system's training and connect it to the system's observed behaviour — using the data as evidence for a causal explanation.
L4 (G9–10)	Connect multiple data features (frequency, duration, recency) to explain a system's recommendation or ranking. Apply different ranking criteria to the same dataset and predict how results change. Evaluate when a data-driven conclusion is honest vs. cherry-picked — distinguishing what the full data shows from what a selective presentation implies.

Pattern Recognition

Detecting rules in strings, grids, or sequences and applying them reliably to classify or predict.

LEVEL	STUDENTS AT THIS LEVEL CAN...
L1 (G3–4)	Apply a learned code or cipher (a mapping from one symbol system to another) to encode or decode messages. Detect when such a code has been applied incorrectly and identify the specific error. Arrange objects in a sequence where each differs from the previous by exactly one feature, requiring tracking of multiple attributes simultaneously.
L2 (G5–6)	Abstract a transformation rule from a set of input-output examples (e.g., operations defined visually by before/after pairs) and apply that rule to a new input. Operate fluently in an unfamiliar number or symbol system that is taught within the question. Identify which objects fit into a two-dimensional classification table where row and column headers define independent properties.
L3 (G7–8)	Detect patterns in unfamiliar domains by decomposing compound structures (such as words or mathematical sequences) into components, identifying the meaning of each component, and recombining them to predict a new case. Determine how many elements in a sequence share a particular structural property.
L4 (G9–10)	Master a complex, unfamiliar notation system with multiple rules — taught entirely within the question — and apply it bidirectionally (reading the notation to produce a diagram AND reading a diagram to produce the notation). Handle compound and nested structures within such systems.

Spatial Reasoning appears on some papers. When it appears, it tests mental rotation, reflection, folding, and 3D reasoning. The demand scales from fitting 2D shapes (L1) through fold-cut-unfold predictions (L2), 3D view analysis (L3), to multi-step spatial transformations with measurement constraints (L4).

3.2 Artificial Intelligence

Pre-Prompt Engineering (G3–4) ➔ **Prompt Engineering** (G5–10)

Stating clear, specific instructions that achieve a goal; diagnosing ambiguity; evaluating and improving prompts under constraints.

LEVEL	STUDENTS AT THIS LEVEL CAN...
L1 (G3–4)	Recognise when an instruction is ambiguous — when the same word or phrase could lead a system to produce two entirely different outcomes. Choose the most specific and complete instruction from a set of alternatives. Write or select sentences that include the information a helper needs to act correctly (identity, location, constraints) and exclude irrelevant detail.
L2 (G5–6)	Evaluate multiple candidate prompts and identify which is most likely to produce the desired output, considering specificity, positioning, and disambiguation. Identify cases where an AI tool's output does not match what was asked for. Given a multi-step interaction where the output at each step is shown, reverse-engineer what the instructions at each step must have been.
L3 (G7–8)	Compose prompt sequences that manipulate structured data — filtering rows, sorting by a column, and selecting results — and understand the outcome of each step. Read a set of prompts and determine the user's goal from the sequence of operations. Evaluate the quality of different prompts for the same task, considering specificity, constraints, and likely AI interpretation.
L4 (G9–10)	Identify which steps in a prompt sequence are redundant — producing the same final result whether included or not. Reconstruct a multi-step prompt sequence from intermediate outputs at each stage. Reason about the relationship between prompt complexity and output quality.

AI Foundations (G3–4) → **AI Technologies** (G5–10)

Understanding how AI systems work at a concept level — from device components to model parameters. All concepts are explained within the question; no terminology recall is required.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L1 (G3–4)	Understand that a device's capabilities depend on its components — a microphone allows hearing, a speaker allows talking, a camera allows seeing — and reason about what a device can and cannot do based on which components it has. Understand that computers represent images as grids of numbers, and convert between the two representations in both directions. Apply a rule-based classifier to new objects and predict the output, even when the classification is "wrong" in real-world terms (because the system follows rules, not common sense).
L2 (G5–6)	Predict how an AI system's outputs change as its inputs change (e.g., how a detection system's output varies with object size, distance, or composition). Distinguish between related but different AI capabilities — such as detecting whether something is present vs. identifying what specific thing it is. Recognise characteristics of AI-generated content that differ from human-created content.
L3 (G7–8)	Distinguish tasks that require a learning-based AI system from tasks that can be accomplished with fixed rules — understanding that personalisation, pattern learning, and adaptation require AI while threshold checks and lookups do not. Reason about numerical representations that AI systems use internally, including how errors in these representations (such as swapped or zeroed values) affect the output.
L4 (G9–10)	Reason about how a model parameter (explained within the question) controls the trade-off between predictability and creativity in AI outputs — and choose appropriate settings for different tasks. Understand that the same data can produce different rankings under different algorithms, and compare algorithm designs by tracing their behaviour on the same input. Infer how a system works by reasoning backwards from its observed behaviour and its known failure patterns.

AI Training and Learning (G5–10; covered under AI Foundations at G3–4)

Reasoning about how datasets, training processes, and feedback shape AI system behaviour — predicting errors, identifying bias sources, and choosing fixes.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L2 (G5–6)	Determine which features in a dataset are relevant vs. irrelevant for a given prediction task — understanding that some information helps a model learn while other information adds noise. Apply a rule-based system's logic to new inputs and identify edge cases where the rules produce incorrect or incomplete results.
L3 (G7–8)	Reason about how the composition of training data produces specific system behaviours — if the data over-represents one group or era, the system will reflect those patterns. Predict what a model trained on a specific time period or population would get right and what it would get wrong. Read quantitative data about a training set (such as proportional distributions) and match it to the system's observed outputs.
L4 (G9–10)	Connect multiple features in a dataset (frequency, duration, recency) to explain why a recommendation system made a specific suggestion. Understand that the same data can produce different results under different algorithms, and reason about how an algorithm's design criteria shape its outputs. Understand that AI systems have knowledge boundaries determined by when their training data ends, and predict which questions a system could and couldn't answer based on its training date.

AI Limitations (G3–4) → AI Limitations and Ethics (G5–10)

Identifying what AI cannot do, where it fails, and when it causes harm — from concrete boundaries to structural bias and proportional response.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L1 (G3–4)	Identify when a system lacks the information needed to help — particularly personal context that the user has but the system doesn't. Recognise that AI systems cannot perform physical actions in the real world — they can process information but cannot move, touch, or act. Choose safe alternatives when a system cannot help.
L2 (G5–6)	Distinguish between high-stakes and low-stakes contexts for AI errors — understanding that the same AI making a mistake in entertainment is very different from it making a mistake in health or safety. Recognise that some AI uses are unsafe even if the tool works correctly most of the time, because the cost of the occasional error is too high.
L3 (G7–8)	Infer structural bias from observed system behaviour — when a system consistently associates certain characteristics with certain groups, reason about why this happens (training data composition) rather than attributing it to the system's "beliefs." Understand that bias in training data becomes bias in system outputs. Evaluate claims about what a system "assumes" based on evidence of its behaviour.
L4 (G9–10)	Analyse real-world cases where AI systems perform differently across demographic groups, using accuracy data to evaluate specific claims. Infer what the training data likely looked like based on the system's performance gaps. Evaluate system design choices — understanding why a system produces false positives in specific contexts, identifying the root cause, and selecting a proportional fix that addresses the cause rather than the symptom.

3.3 Digital Literacy

Using Digital Tools Effectively

Choosing settings, storage, permissions, and workflows that satisfy constraints on access, cost, privacy, reliability, and time.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L1 (G3–4)	Understand common digital verification systems (such as visual tests that distinguish humans from automated systems). Identify when steps in a digital task are in the wrong order and determine the correct sequence.
L2 (G5–6)	Assign appropriate access levels (view, comment, edit) to different people based on their roles and needs. Diagnose why a password fails to meet stated security criteria and determine the minimum change needed to fix it.
L3 (G7–8)	Use digital search and filtering tools effectively to find specific information under time constraints. Understand multi-factor authentication and how it differs from single-factor login. Evaluate the trade-offs between cloud and local storage for different real-world scenarios.
L4 (G9–10)	Assign email recipients correctly across visibility levels (direct, visible copy, hidden copy) based on each person's need to know and need to be seen. Diagnose mistakes in multi-recipient communication using clues about who saw whom. Respond appropriately to a security breach — understanding that a compromised password on one service affects all services sharing that password.

Information and Media Literacy

Judging source credibility, recognising manipulation, and deciding when verification is needed — using only the evidence provided.

LEVEL	STUDENTS AT THIS LEVEL CAN…
L1 (G3–4)	Identify which personal information is unsafe to share with strangers online, distinguishing between questions that reveal location or identity and those that don't. Recognise when a headline or title is designed to provoke a click without telling you what the content is about.
L2 (G5–6)	Evaluate the quality of a digital verification system — understanding that a good system produces consistent responses across many users while a bad system produces inconsistent ones. Recognise characteristics that suggest content may be AI-generated rather than human-created.
L3 (G7–8)	Identify headlines or claims that are statistically implausible by reasoning about the numbers involved. Recognise when online behaviour crosses from disagreement into bullying. Understand why personalised advertisements appear — reasoning about how browsing data is shared between services.
L4 (G9–10)	Identify when a media report cherry-picks from a research study — selecting the most dramatic finding while ignoring the study's overall conclusions. Choose an honest summary of a study's findings from a set of alternatives that range from accurate to misleading. Recognise that sharing personal information with a website may result in that information being passed to other companies.

4. How Skills Progress Across Levels

The skills follow a consistent progression from concrete to abstract across the four grade bands.

SKILL	L1 (G3–4) *CONCRETE RULES*	L2 (G5–6) *SYSTEM BEHAVIOUR*	L3 (G7–8) *TRAINING & BIAS*	L4 (G9–10) *DESIGN & PARAMETERS*
Prompt Eng.	Recognise ambiguity in instructions to a helper	Evaluate, compare, and reverse-engineer multi-step prompt sequences	Compose data-manipulation prompts; evaluate prompt quality for complex tasks	Identify redundant prompt steps; optimise prompt sequences
AI Tech.	Device components → capabilities; images as number grids; rule-based classifiers	Predict changing outputs; distinguish detection vs identification	AI vs rules distinction; numerical representations with errors	Model parameters controlling output; algorithm comparison on same data
AI Training	*(in AI Foundations)*	Feature selection; rule-based edge cases	Training data composition → system behaviour and bias	Data features → recommendations; algorithm evolution; knowledge cutoffs
AI Limits	Knowledge boundaries; physical boundaries	High-stakes vs low-stakes error contexts	Structural bias from data; inferring assumptions from behaviour	Demographic performance gaps; false positive causes + proportional fixes
Digital Tools	Verification systems; correct task sequences	File permissions; password security	Search filters; authentication; storage trade-offs	Multi-recipient communication; breach response
Media Lit.	Unsafe sharing; clickbait recognition	Verification system quality; AI-generated content	Statistical implausibility; cyberbullying; tracking	Research cherry-picking; honest vs misleading reporting

> **The scaling principle:** At Level 1, AI is about **concrete rules and visible boundaries** — systems follow rules exactly, can't do physical tasks, don't know personal context. At Level 2, students begin **predicting system behaviour** — how outputs change with inputs. At Level 3, the pivot is to **training data as the source of behaviour** — why systems are biased, why performance varies, how data shapes output. At Level 4, students reach **system design and parameter reasoning** — model settings that control creativity, algorithms that rank the same data differently, real-world deployment consequences.

5. Assessment Design Principles

REASONING OVER RECALL

Questions never ask students to define a term or remember a fact. If a concept is needed, it is explained within the question itself.

SCENARIO-BASED ITEMS

Every question is set in a concrete, age–appropriate context. Abstract reasoning is tested through tangible situations — not through theoretical descriptions.

DIAGNOSTIC DISTRACTORS

Every wrong answer reveals a specific misconception, enabling skill–level diagnostic reporting for students and teachers.

DIFFICULTY BY DESIGN

Each paper spans a wide difficulty range. Easy items give every student evidence of capability. Hard items discriminate at the top. Most items fall in the middle range where measurement happens.

UNFAMILIAR SYSTEMS

A signature question type: the question teaches a new representation or system from scratch, then tests the student's fluency in operating within it. This directly tests the ability to learn and apply — the essence of computational thinking.

REVERSE ENGINEERING

At every level, students must work backwards — from outputs to inputs, from end states to starting conditions, from results to missing steps. This tests deeper understanding than forward execution alone.

CROSS-DOMAIN REASONING

The strongest items test multiple skills simultaneously — combining data analysis with AI training concepts, or prompt engineering with data manipulation. This reflects how these skills work in the real world.

ALL INFORMATION GIVEN

Students never need external knowledge. This measures reasoning ability, not prior exposure or socioeconomic advantage.

6. Framework Alignment

The skill taxonomy maps to widely used frameworks, ensuring portability across boards while staying reasoning–first.

ASSET SKILL	CBSE AI	AI4K12	ISTE	CSTA	DIGCOMP 3.0
Algorithmic Thinking	CT: algorithms	—	Comp. Thinker 5c	Algorithms & Prog.	5.1 Problem solving
Logical Thinking	CT: logic	—	Comp. Thinker 5a	Algorithms & Prog.	5.3 Creative digital use
Data Analysis	Data handling	Big Idea 3	Knowledge Constr. 3d	Data & Analysis	1.2 Evaluating data
Pattern Recognition	CT: patterns	Big Idea 3	Comp. Thinker 5b	Data & Analysis	5.1 Problem solving
Prompt Engineering	AI project cycle	Big Idea 4	Empowered Learner 1c	—	5.2 Identifying needs
AI Technologies	AI applications	Big Ideas 1, 2	Knowledge Constr. 3a	—	—
AI Training & Learning	Model training	Big Idea 3	Knowledge Constr. 3b	Data & Analysis	1.2 Evaluating data
AI Limitations & Ethics	Ethics; bias	Big Idea 5	Digital Citizen 2b, 2c	Impacts of Comp.	4.2 Protecting data
Using Digital Tools	—	—	Empowered Learner 1a	Networks & Internet	2.3 Managing identity
Info & Media Literacy	—	Big Idea 5	Digital Citizen 2b	Impacts of Comp.	1.2 Evaluating data

ISTE's Creative Communicator and Innovative Designer are not directly assessed by this test — these are better served by creative curricula than by a diagnostic assessment. CSTA's Computing Systems strand appears indirectly through tool–use and digital literacy items.

REFERENCED FRAMEWORKS

CBSE AI Curriculum

ISTE Standards

CSTA K–12 Standards

AI4K12 Five Big Ideas

DigComp 3.0

7. How Curricula Connect to This Framework

This framework defines the thinking abilities that the assessment measures. It does not prescribe how those abilities should be developed. Multiple teaching approaches can target the same framework:

APPROACH	HOW IT MIGHT DEVELOP THESE SKILLS	FRAMEWORK SKILLS ADDRESSED
Interactive platform (e.g., Ei Mindspark AI & DT)	Self-paced modules across coding, data, AI, and critical thinking strands. Scaffolded interactions with immediate feedback.	All 11 skills across all levels
Block coding + unplugged activities	Visual programming for algorithmic thinking; offline worksheets for logic puzzles and pattern recognition.	Algorithmic Thinking, Logical Thinking, Pattern Recognition
AI literacy workshops	Discussions and activities around how AI works, where it fails, and how to use it responsibly.	AI Technologies, AI Training, AI Limitations & Ethics
Digital citizenship programme	Lessons on online safety, media literacy, privacy, and responsible technology use.	Using Digital Tools, Information & Media Literacy
Cross-curricular integration	Using data analysis in science, logical reasoning in maths, media literacy in social studies.	Data Analysis, Logical Thinking, Information & Media Literacy

The framework defines the destination. The curriculum is the route. Different routes suit different schools — what matters is that students develop the thinking abilities described in this document. Schools can use ASSET AI & Digital Thinking as a standalone diagnostic to benchmark where their students stand, or as a pre/post measure alongside any curriculum to track whether instruction is producing growth in the specific skills that matter.