

Scaffold or Substitute?

Generative AI, pedagogical design, and what it means
for learners across sectors

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The question has changed

Learners are already using AI. The educational challenge is how learning is designed around it.

92%

of surveyed UK HE students
used AI in some form

88%

had used generative AI for
assessment-related tasks

2026

Ofqual: AI tools are part of
daily life for most young people

"The issue is not only academic integrity; it is learning integrity."

Sources: HEPI/Kortext Student Generative AI Survey 2025; Ofqual AI in coursework resources, 2026.

This is no longer only a computing conversation

AI is changing the relationship between education, curriculum, assessment and work.

Primary

Curiosity, language, questioning,
early digital judgement

Secondary

Subject knowledge, exam
technique, ethical use, learner
agency

FE / Vocational

Applied problem-solving,
occupational judgement,
industry briefs

HE / Industry

Knowledge construction,
assessment design, productivity
and verification

Northern Ireland needs digitally competent learners — but also learners who can judge, question and create.
Source: Northern Ireland Digital Skills Action Plan 2024–2034.

Scaffold or substitute?

The same tool can support thinking — or quietly remove it.

AI AS SCAFFOLD

Learner thinks

Support that strengthens the learner's ability to access, organise, question, practise, refine or reflect.

AI AS SUBSTITUTE

Learner bypasses

Completion without construction: the answer, structure, judgement or evaluation arrives before the learner has engaged.

The risk is not that AI gives learners support. The risk is that it gives them completion without construction.

Where AI sits in the task changes what learners do

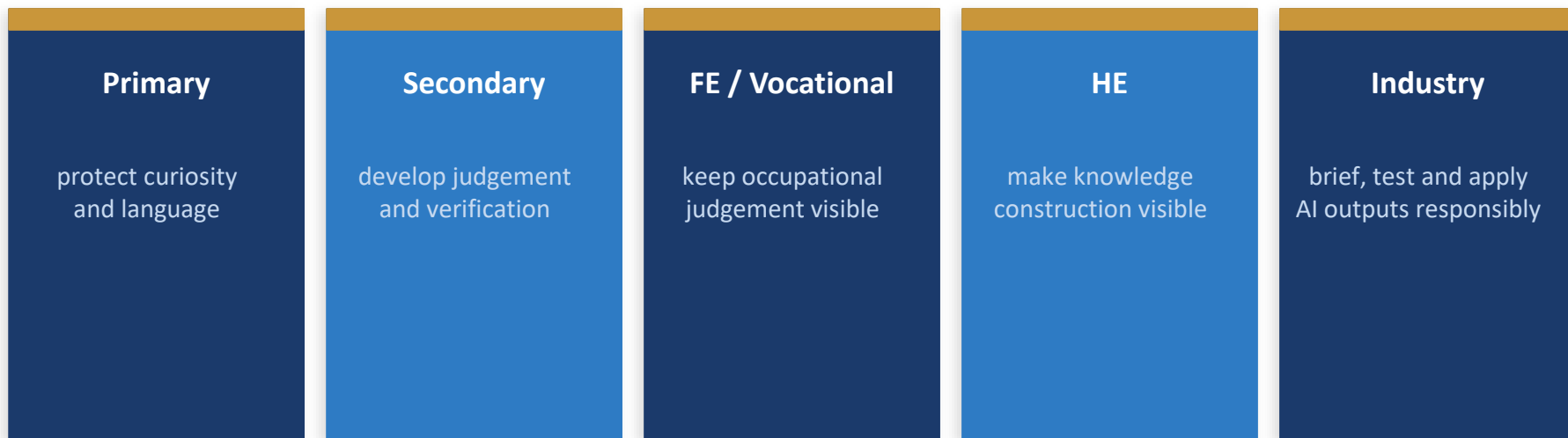
A practical contrast for teachers, lecturers and trainers.

AI as scaffold	Learner still does	AI as substitute	What gets lost
Explains a difficult concept	Checks and applies	Writes the whole answer	Original voice
Gives feedback on a draft	Decides what to improve	Solves the problem immediately	Problem-solving process
Generates alternatives	Compares and justifies	Summarises instead of reading	Comprehension
Creates retrieval questions	Identifies gaps	Generates evaluation	Judgement
Acts as questioning partner	Develops reasoning	Designs without critique	Iteration and ownership

Prompt engineering is not enough. We need pedagogy engineering.

What this looks like in practice

The priority changes by sector, but the principle is the same: protect the thinking.



Computing education must include judgement, ethics, systems thinking and human agency — not only tools.

The Scaffold Test

Five questions before designing AI into a task.

1

What thinking do I want the learner to practise?

2

Where is productive struggle useful?

3

What AI support helps without removing the struggle?

4

What evidence shows understanding?

5

When should the support fade?

If we cannot answer these questions, AI use risks becoming activity rather than pedagogy.

Are we designing AI to support thinking — or replace it?

- What AI use should we actively scaffold?
- What thinking must we protect?
- Where could we collaborate across sectors?