Using Generative AI in Teaching Balancing Effectiveness and Legitimacy

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A Quick Question

- What is the first word that comes to mind when you think about Generative AI in teaching?

Join via Web: PollEv.com/anacanhoto365 or via QR code

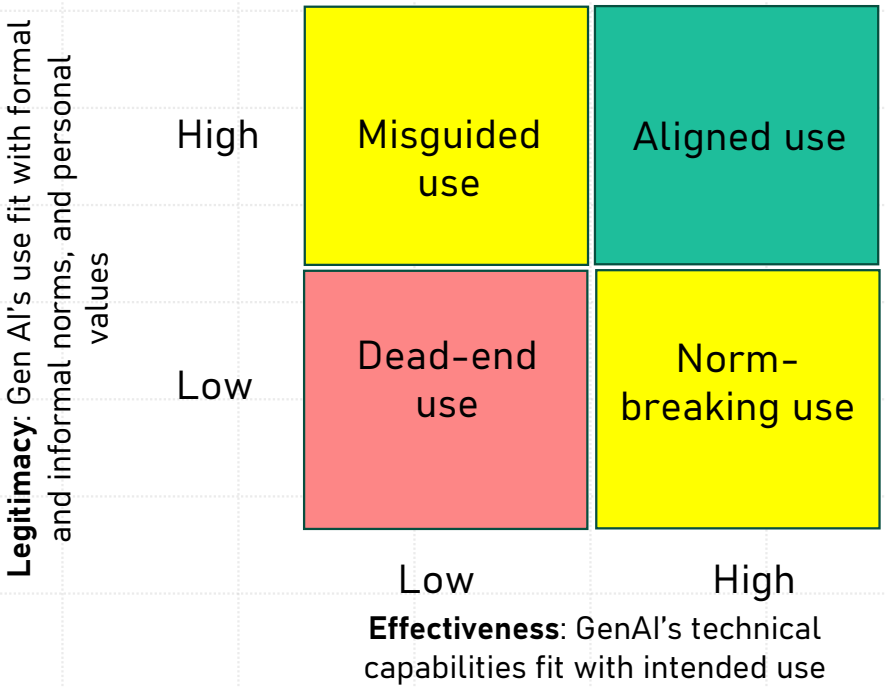
Beyond productivity

- Most discussions focus on what AI can / can not do
- Less attention is paid to:
  - When AI is genuinely useful or helpful
  - When it is pedagogically, ethically and institutionally legitimate to use it
- My Core Argument:
  - Generative AI should not be judged solely by productivity or ethics

The Effectiveness–Legitimacy Matrix

Example: Annotated bibliography

Example: Marking student work



Example: Coming up with alternative wordings

Example: Creating new text from scratch

*Source: Canhoto, Filippaios and Johnson (forthcoming)**

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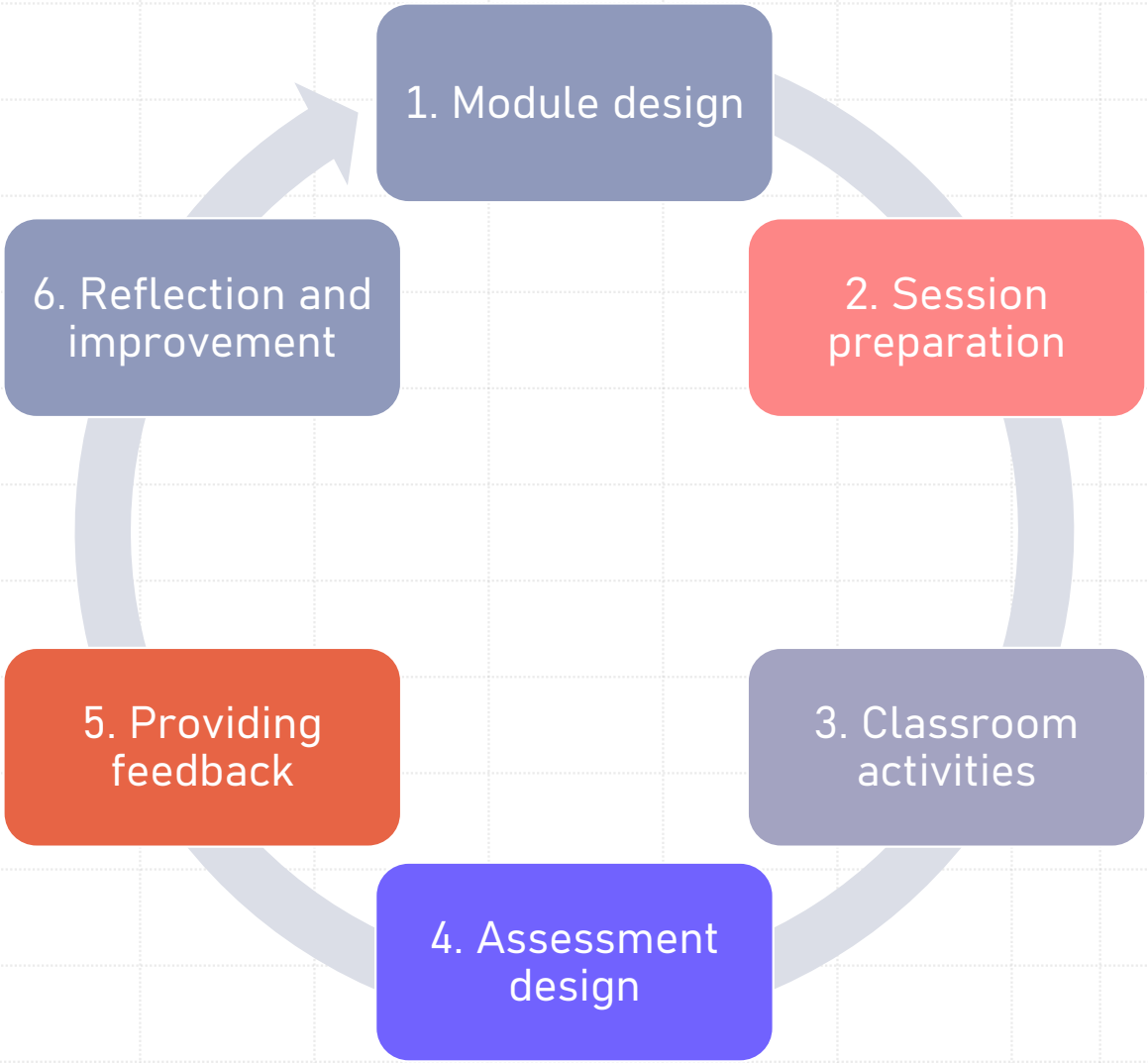
Applying the ELM across the teaching lifecycle



1. Module design

- Task: Create a new Marketing module for an MSc Management degree
- Context:
  - 20+ years experience of teaching marketing, but not in the last 3 years
  - Always in marketing degrees

Prompt: I am developing a **marketing module for a MSc Management degree**. This will be the **only marketing module on the programme**, and it will be **optional**. So, it **needs to** provide an overview of key marketing topics, including current topics such as AI, but without assuming prior knowledge.

We have 10 weeks with 3 hours per week. There should be **2 assessment points** – one midway through the semester, and another one at the end.

What worked well:

- Key topics covered, including AI (e.g., GenAI in Comms; Robots)
- Linked to module aims and objectives
- Once agreed, developed full module specification

Good for iteration and working with well-established formats; limited regarding detail

What did not work so well:

- Context awareness:
  - Overlap with other modules (e.g., Market research vs Applied Research Methods)
  - Ignored department's strengths & priorities (e.g., Operations, Analytics)
- Limited pedagogical expertise (e.g., sequencing)
- Unsuitable / Hallucinated cases and readings
- Traditional assessment

2. Session preparation

Feedback on my plans

Ask for examples

Suggestions for prep activities

Test activities

Debrief

E.g., Research philosophies' metaphors

Prompt: I am teaching research methods to **PhD students**. I need to teach them about **different research philosophies**, specifically positivism, realism, interpretivism and pragmatism. **I will characterise each in terms of ontology and epistemology, and objective vs subjective stance**. So, positivism sees both ontology and epistemology as subjective vs realism which sees ontology as objective but epistemology as subjective. I would like to **use different types of maps as analogy for the different research philosophies**. For instance, in my view, positivism is like say a sat nav because both reality and epistemology are objective. Realism would be more like a London Underground map because that epistemology is only valid for the specific context that is the underground network. **Does this analogy make sense? If not, which metaphor would be more helpful.**"

Prompt: Can you recommend **other types of metaphors** that would be more effective than maps?

Positivism: Photography
Realism: X-ray or MRI Scan
Interpretivism: Theatre Performance
Pragmatism: Toolbox or Swiss Army Knife

Positivism: Recipe
Realism: Blueprint
Interpretivism: Jazz Improvisation
Pragmatism: Navigation App with Multiple Routes

Prompt: **Could we try again**, using the metaphor of tools? You suggested that pragmatism is like a Swiss Army knife. If we were to extend this metaphor, what tools would represent positivism, realism and interpretivism?

Etc...

AI supported creativity

Philosophical orientations in social science

	Positivism
Ontology	Objective
Epistemology	Objective
Objective of the research	Test or validate universal law about x
Role of theory in the research	Deductive
Research methods	

E.g., Test if effect of government spending on unemployment matches Keynes's theory

Image by Pexels from Pixabay

Philosophical orientations in social science

	Interpretivism
Ontology	Subjective
Epistemology	Subjective
Objective of the research	Understand the lived experience of x
Role of theory in the research	Inductive
Research methods	

E.g., How managers understand and craft their leadership roles

Image by Pexels from Pixabay

Philosophical orientations in social science

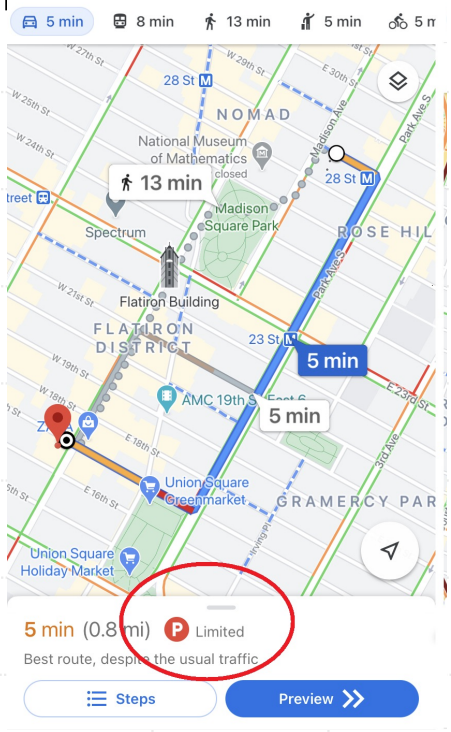
	Realism
Ontology	Objective
Epistemology	Subjective
Objective of the research	Apply contextually relevant version of the 'laws' about x
Role of theory in the research	Deductive or abductive
Research methods	

E.g., How organisational culture affects motivation, given different power dynamics and leadership styles

Philosophical orientations in social science

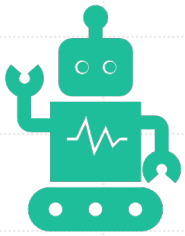
	Pragmatism
Ontology	Context-dependent
Epistemology	Context-dependent
Objective of the research	Consequences of experiences and ideas
Role of theory in the research	Flexible: Deductive and/or Inductive
Research methods	

E.g., How government spending impacts on unemployment



3. Learning activities

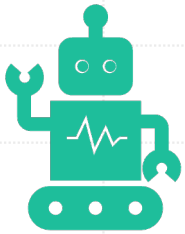
Level 1: Students use AI as an answer machine.



Level 2: Students use AI as a tutor.

Stage 3: Students use AI as a thinking partner

Level 1: Students use AI as an answer machine.



Level 2: Students use AI as a tutor.

Stage 3: Students use AI as a thinking partner

E.g., Qualitative data analysis

MSc level: Understanding limitations and inaccuracies

MBA level: Recognising missing perspectives and strategic blind spots.

PhD level: Understanding epistemology, bias and knowledge production.

Tailored examples and varying complexity

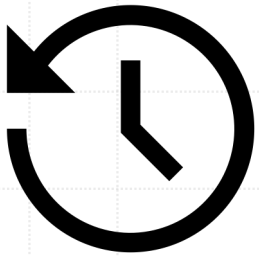
E.g., Quantitative data analysis

Prompt: In the last class, my students developed a survey (…) in the next class, we will do descriptive and inferential statistical analysis. **In previous years, I have used SPSS** for the analysis. But many will not have access to SPSS after they leave university, so **I want to use an alternative** that is more useful for them. I am also willing to integrate generative ai in the analysis, to help them develop Ai literacy, plus employability skills. **We have paid access to Co-pilot, but not the other popular generative Ai tools. Would excel or google sheets be suitable to do this analysis**? And how could I integrate generative Ai in a meaningful way?

Prompt: It looks like there is a lot of opportunity for technical problems and students to fall behind, if I try to use the integrated copilot on excel, particularly as some of my students have poor language skills. Let's stick with the free generative Ai versions

Prompt: how do I create a cross tab analysis for gender and ai use

Prompt: How do I conduct an independent two sample t-test in excel?



Prompt: Draft instructions for students so that they can prepare adequately for the class, and we do not waste time setting up things that they can do ahead of the lesson. Points to consider: (…)

Install and enable the Data Analysis ToolPak (before class)

- You must enable the Data Analysis ToolPak in Excel before coming to class.
- If this is not enabled, you will not be able to run the statistical tests we need, and we will not have time to fix this during the session.
- How to check: (…)
- If you can see “Data Analysis”, you are ready
- If you cannot see it: (…)

AI as a professional partner

4. Assessment design

- Generate realistic datasets for students to analyse
- Test brief for clarity and difficulty level
  - E.g., limited language skills, MSc vs MBA student…
- Answer the assignment brief with different LLMs to identify patterns and limitations
  - E.g., recommendations for manager

Work in progress…

5. Assessment feedback

Effectiveness: Low
- Hallucinations
- Excessive positivity

Legitimacy: Low
- Intellectual property
- Accountability
- Commoditisation of HEI

Effectiveness: Low
- Mistakes due to tiredness
- Inconsistencies – e.g., long feedback at the start vs short at the end

Legitimacy: High
- Tradition
- Social-contract

My approach

- Decide mark
- Feedback in bullet point format

- Compare mark + feedback with marking criteria
- Write 3 paragraphs of constructive feedback based on bullet points

✓ Human marking
✓ Hybrid feedback

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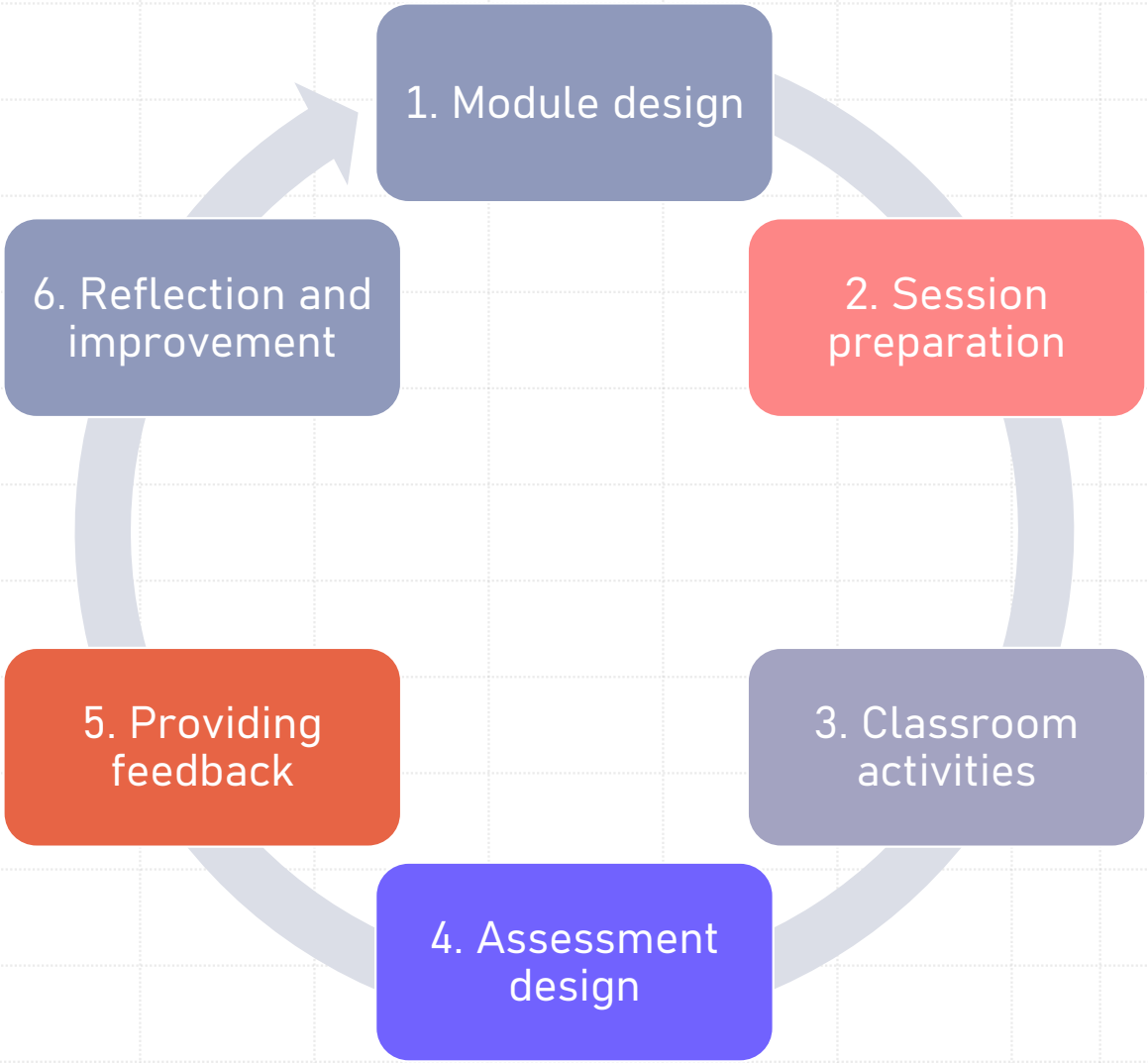

Prompting principles

1. Give context – e.g., new marketing module
2. Clarify constraints – e.g., use only free LLMs
3. Ask for alternatives – e.g., other metaphors
4. Specify output format – e.g., module outline
5. Ask for criticism – e.g., what might a foreign student misunderstand?

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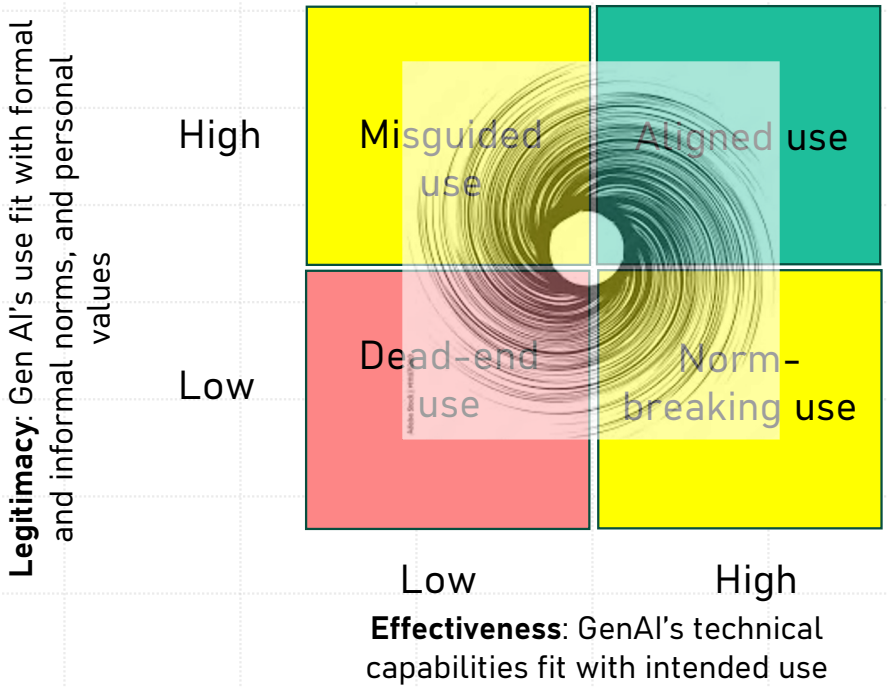

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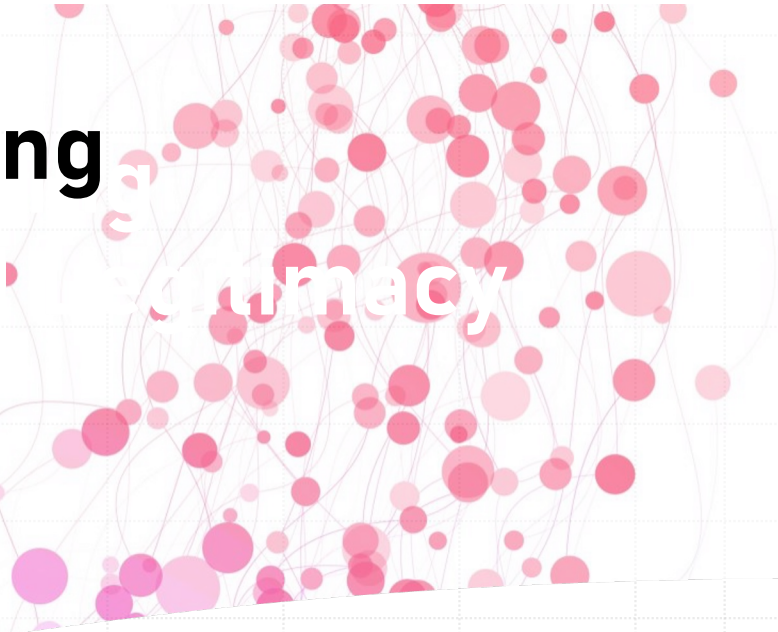

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