Gen AI: *Some* Implications for Learning & Assessing

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Where Are We?

- Generative AI tools can accurately create content (including written work, images, music, video, and the spoken word) and answer questions.
- AI tools can and do produce errors, but the technology is improving fast.
- AI detection relies on the user not knowing how to use it properly; detection can be circumvented by AI tools designed to do so or by tactics available widely on social media.
- Only some students can afford to pay for state-of-the-art AI tools, which can complete assessments and avoid detection.
- https://educational-innovation.sydney.edu.au/teaching@sydney/aligning-our-assessments-to-the-age-of-generative-ai/
- *We need to equip students for a world where AI is everywhere, while not disabling them as life-long learners*

Machine: Generative Artificial Intelligence

- Generative AI refers to systems that can create new content, such as text, images, music, or code, based on the data they have been trained on. These systems use machine learning models to generate outputs that mimic human-like creativity and innovation.
- *These models learn patterns and structures from the data, and then use this knowledge to generate new, similar content.*
- (Defined by CoPilot)

Human: Generative Learning

- Learners routinely generate their own novel understanding of the information they are accumulating and productively extend their knowledge by making logical connections between pieces of information.
- This capacity to generate novel understanding allows learners to use their knowledge to generalize, categorize, and solve problems.
- (National Academy of Science, 2018, p. 5)

Two *Separate* Processes

1 The **generation** of an output of some sort

2 A **judgement** about that output (against any number of criteria)

- *Whether the output is 'real' or makes sense is NOT given by the generative process (senses + brain or data + algorithm)*

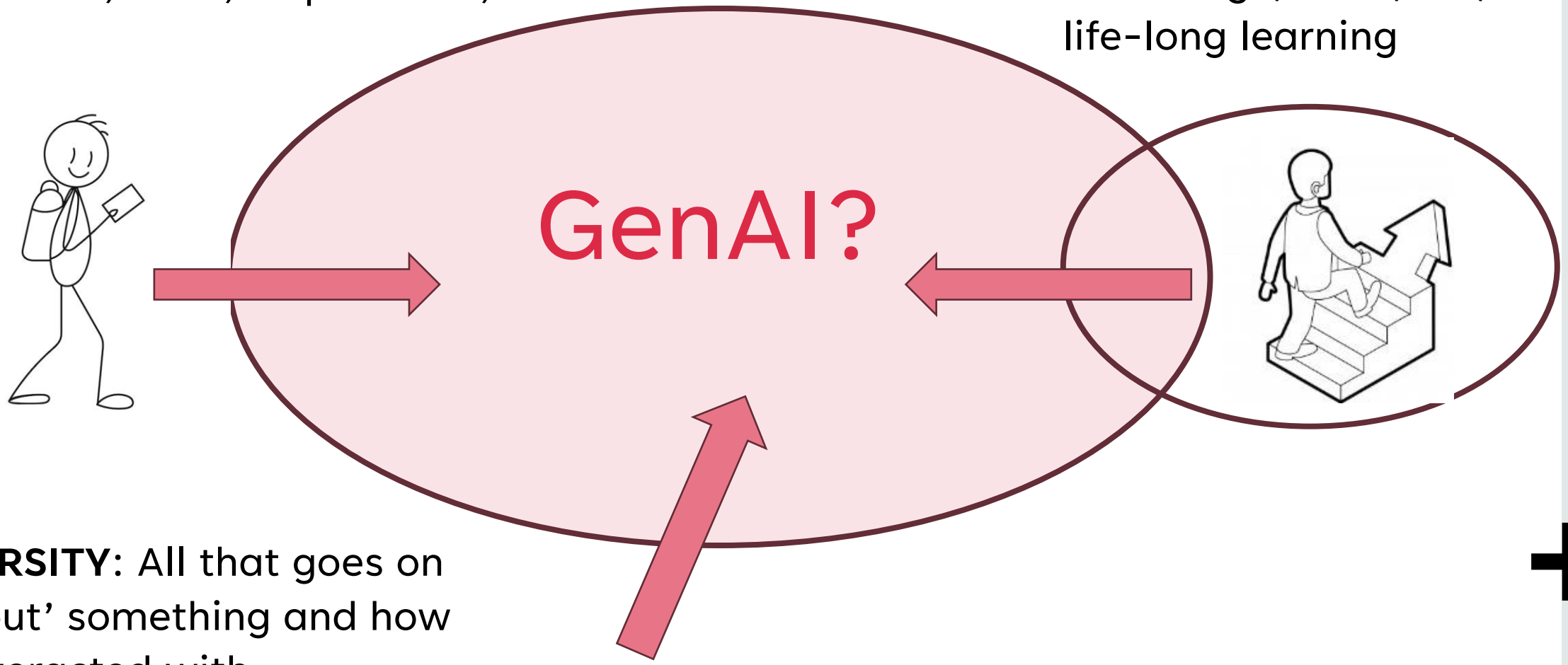
Generative Learning At University

We need to equip our students to be leaders in a world where AI is everywhere.

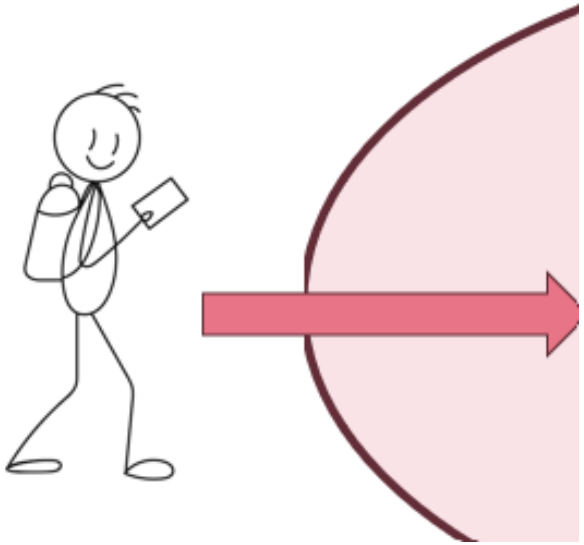
A Transfer Model

STUDENT: Incoming knowledge, experience, skills, dispositions, etc

FUTURE APPLICATIONS: Using knowledge, skills, etc; life-long learning



UNIVERSITY: All that goes on is 'about' something and how it is interacted with

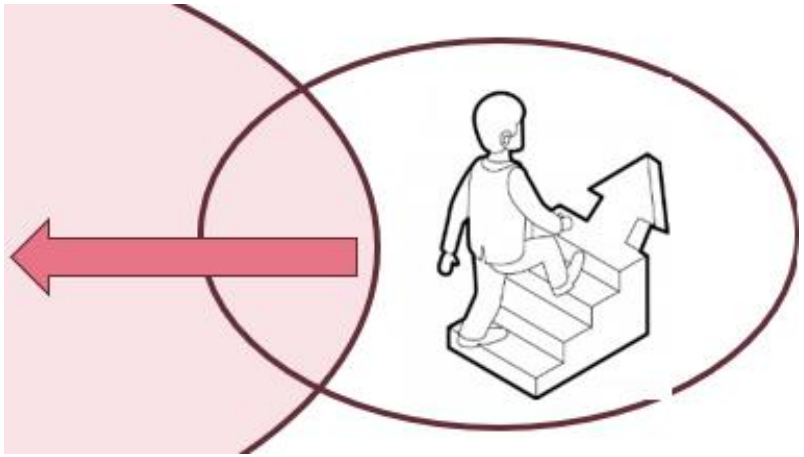


Motivating Learning

- Learning requires engagement, persistence, and performance
- We can:
  - Help learners to set **desired learning and performance goals;**
  - Create **learning experiences that they value**;
  - Support their **sense of control and autonomy**;
  - Develop their **sense of competency** by helping them to recognize, monitor, and strategize about their learning progress; and
  - Create a supportive and **non-threatening learning environment.** (NAS, 2018, p. 6)

AI Use In the University

- We will have failed our students if they pass but don't learn
- Curiosity, motivation, purpose and goals set the context in which Gen AI can assist and augment learning
- BCOM 1010 example: Introducing business subjects in a context of 'grand challenges'
  - "Grand challenges are associated with problems that – with the right expertise – are actionable. And with the right people working together on these, we can solve problems and address GCs"
- *Permitted/encouraged to use Gen AI*



But Who's Work?

AI able to potentially complete *all* take-home or remotely supervised assessment at a passable level without detection

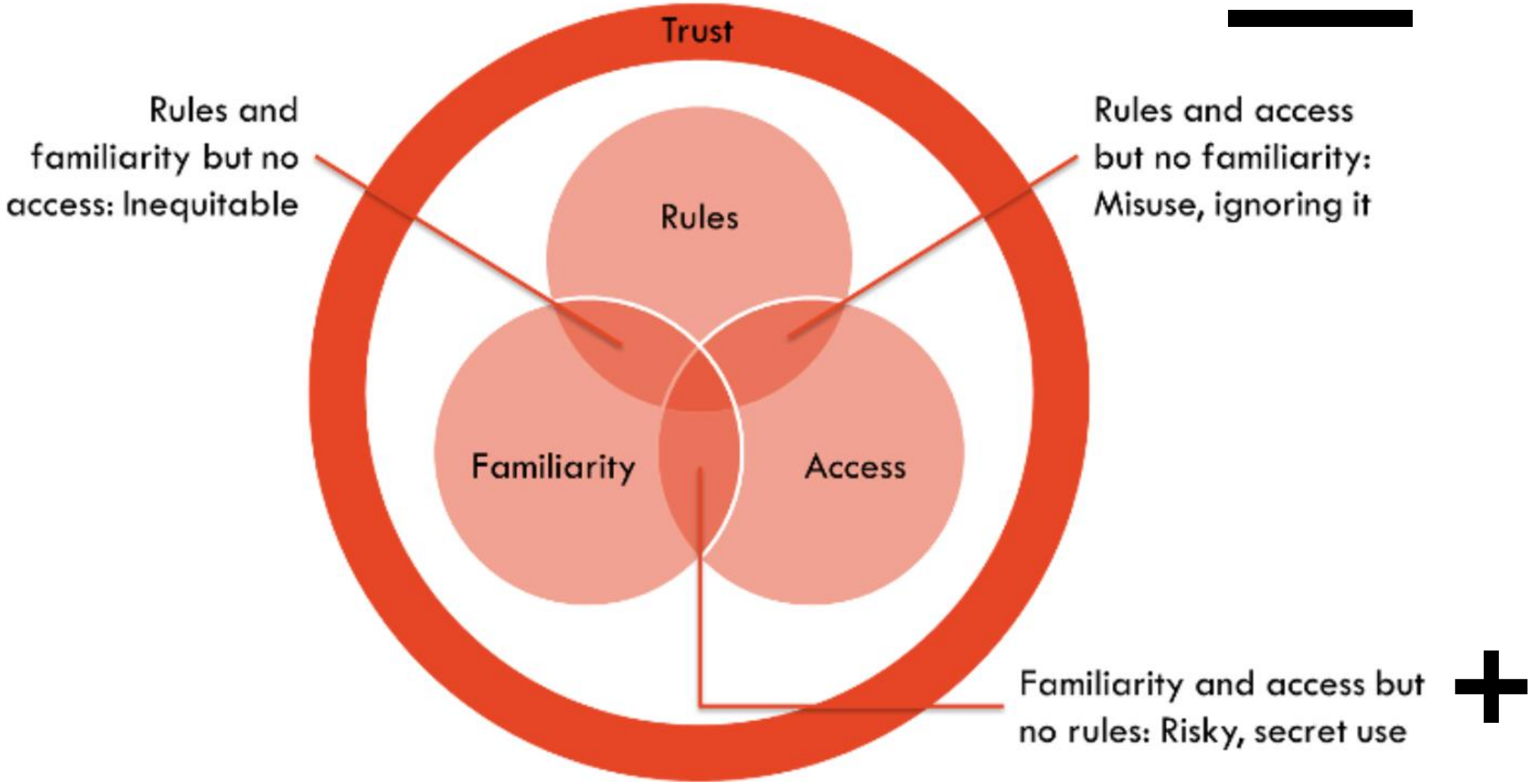
Revise	Refine writing	Perform Tasks	Create
Summarise complex readings	**Synthetise**	Test	Inspire
Define terms & foreign language ideas	Draft outline	Modify	**Produce presentations**
Generate formative “exam style” question to test oneself	Experiment with different writing styles	**Write example**	Generate ideas to overcome writer’s block
Summarise notes & identify key points for revisions	Identify errors & typos in originally produced text	Suggest a structure for a piece of writing	Generate graphics or visuals to support work & ideas
Simplify complex academic concepts	Brainstorm	**Analyse data/organize information**	**Produce music for presentations**
Explain solutions to problems in another way to aid understanding	Edit writing	Check the meaning of key terms	
Generate practice questions and summaries as part of revision and preparation for assessment	Provide feedback on writing	*Drawn from four NZ universities’ guidelines*	

AI *With* Students vs *For* Students

- Using AI to assist students to present their ideas, or to augment them
  - Vs
- Using AI to do the work (possible academic integrity violation)
  - Or
- Using AI to brainstorm ideas, but leaving production to student (potentially sub-par AI learning)

→ Ambiguous zones; no one ‘right’ approach

https://educational-innovation.sydney.edu.au/teaching@sydney/rules-access-familiarity-and-trust-a-practical-approach-to-addressing-generative-ai-in-education/



A Pause for a (Selective) Bit of History

Academic 'Dishonesty'

- Contract cheating dates back centuries
- Likely also for plagiarism
- 'Help' from mum, dad, siblings
- Selective data reporting
- Sneaking notes into a test
- Essay mills
- Claiming credentials or capability one lacks
- . . . .

'Threatening' Technologies

- Slide ruler, Calculator
- Chalkboards, overhead projectors
- Instructional films and radio broadcasts
- Netscape Navigator
- Word processors, Excel
- Autocorrect, speech to text
- Google translate
- . . .

Little/ nothing conceptually new with AI

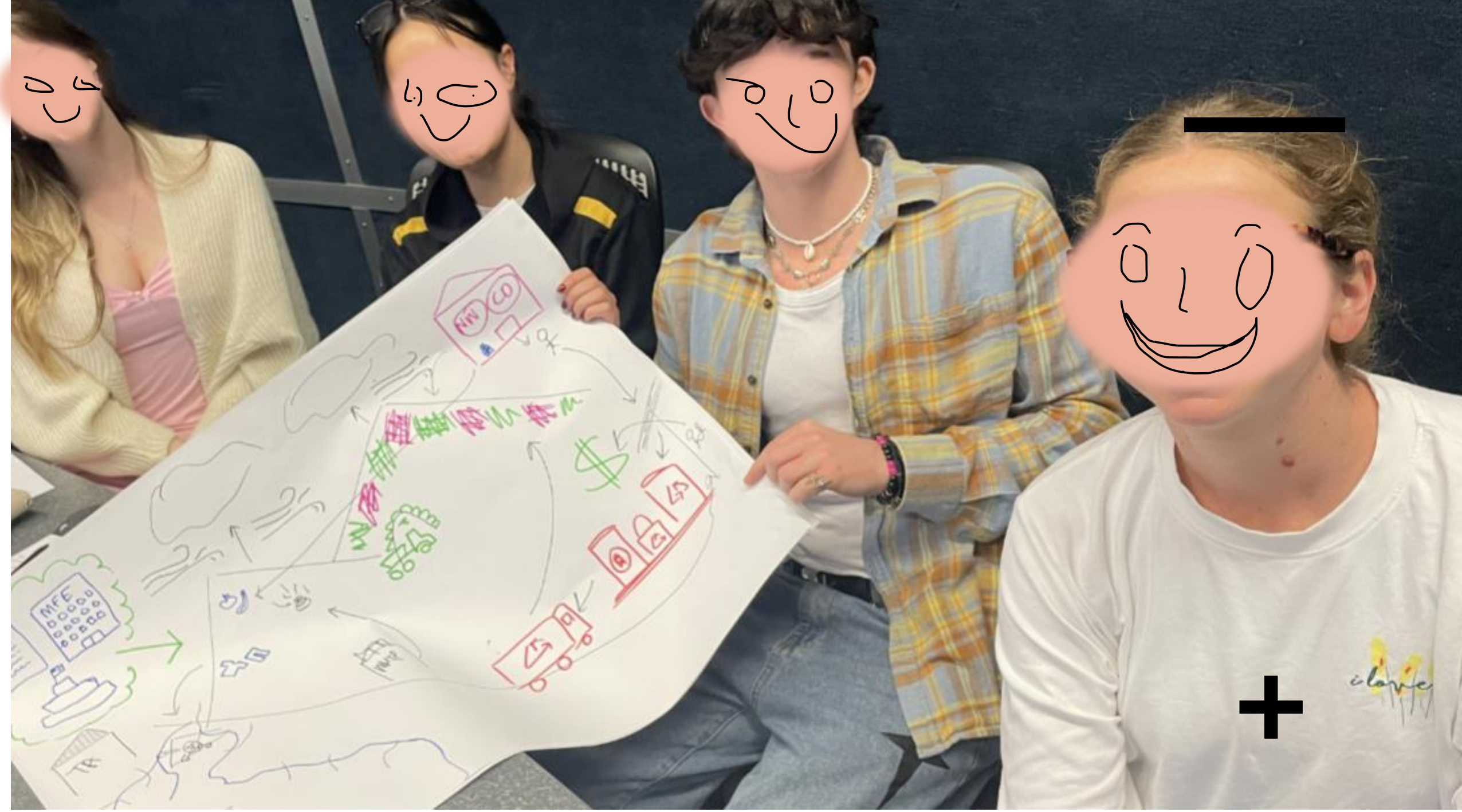
Addressing Inequity, Integrity, Learning

BCOM 101 In-Class

- **Description:** a photo of yourself (a "selfie") documenting your group work in this group learning activity
- **Objective:** demonstrate satisfactory participation in the group learning activity
- Learning together, through process & context-motivation

Follow-up

- Produce a rich picture (or equivalent) with accompanying (brief) explanatory notes.
- Your notes should explain why you chose to represent it in this way. Why is the representation meaningful to you (from your personal perspective)?
- If you have used an AI tool to assist you, please acknowledge this through an “AI statement of use”.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Deciding About AI Use in Assessment

- What are the tasks students may be called on to do in their careers, in which contexts?
  - What will they need to ‘have’ and what can they find out at the time?
- Which components AI should/can be used for?
- Emphasis on tasks/contexts that tend to ‘authentic’ assessment?
- Emphasis on the ‘doing’ that tends to process assessment?

Image: CoPilot; text: Liu, U of Sydney

Lane 1	Lane 2
Assessment of Learning	Assessment for/as learning
Secure/in-person	Open-book; assume AI use; high-trust
Trustworthy judgements of learning	Prepare students for work in an AI world
AI may be allowed	AI scaffolded and supported as needed
High-stakes/programme level	Course or unit level

Mulder & French, 2023

High-Stakes Exams: Evidence & Myths

Advantages

- Encourage memory recall and knowledge retention
- Motivation
- Performance under pressure
- Prevent cheating
- Efficient to administer and grade

Disadvantages

- Limited assessment of deep learning
- Unreliable assessment of achievement
- Lack authenticity/relevance
- Elevate stress/reduce wellbeing
- Promote academic inequity

‘Authentic’ Assessment…

- Inherently valuable
  - For employment and employability
  - Increasing motivation through ‘real-world’ challenges
  - May extend beyond work-specific tasks to social-change, future-readiness purposes
  - Counteract threats to academic integrity
  - Promote equity

. . . But Can Be Ambiguous

- Individuals judge authenticity based on their context, background, environment, self-perception and values
- Authenticity is entangled with social and material relations, and is often in tension with learning tasks due to its ambiguity
- Assessments therefore need to be framed to support learners to explore their understandings, identities and the uncertainties and ambiguities of practice

Ideas for Assessments with AI

- Process focus; e.g., critique and improve AI outputs; ‘show workings’
- Personal reflection
- Incorporate collaboration
- Peer assessment
- Incorporate creativity
- Make comparisons; assess trade-offs; e.g., ‘why this and not that?’
- Weigh up/evaluative judgement
- Make recommendations
- Video recorded ‘abstracts’
- Poster sessions
- Update an earlier assessment

Assessing AI-Aided Work

- Rubrics/ distinct criteria to direct students' attention to, for example:
  - Quality of prompts, including use of key concepts
  - Transparent and critical selection/modification of AI-generated content
  - Integration with non-AI material, with discussion
  - Clear and ethical articulation of reasoning
  - Deep insight into the role of AI in the co-creation process
  - Consideration of reliability and bias

Implications

- We can help students ‘see’ the machine as machine
- The processes of content generation and sense-making are distinct, and only humans do sense-making
- Need to be explicit in supporting motivated learning
- AI does not pose *conceptual*challenges for facilitating learning
- We can’t ‘outrun’ AI

- We may be moving to an environment with fewer tests, only where it matters
- We must use more process and ‘authentic’ assessment, but not restricted to simple scenarios
- We must renew attention to trust/integrity, equity, balanced assessment, transition to independence. . .

Additional References

- Ajjawi, R., Tai, J., Dollinger, M., Dawson, P., Boud, D., & Bearman, M. (2024). From authentic assessment to authenticity in assessment: broadening perspectives. *Assessment and Evaluation in Higher Education*, *49*(4), 499–510. https://doi.org/10.1080/02602938.2023.2271193
- Liu, D. (2024). Where are we with generative AI as semester 1 starts?https://educational-innovation.sydney.edu.au/teaching@sydney/where-are-we-with-generative-ai-as-semester-1-starts/ [And other materials on the University of Sydney site.]
- Mulder, R., & French, S. (2023). Reconsidering the role of high-stakes examinations in higher education. Melbourne Centre for the Study of Higher Education.
- National Academies of Sciences, Engineering, and Medicine. 2018. How People Learn II: Learners, Contexts, and Cultures. Washington, DC: The National Academies Press. https://doi.org/10.17226/24783.

Thank You!