VU VRIJE UNIVERSITEIT AMSTERDAM | CENTRE FOR TEACHING & LEARNING

What are best practices for using AI to teach critical thinking to students?

- VU AI in Education Show & Share
- 5 December 2024

Program

1. Good practice Mohammad Rezazade Mehrizi
2. Good practice Thibault Schrepel
3. How to do this yourself?
4. Where to go from here?

Speakers

Mohammad Rezazade Mehrizi
associate professor SBE/KIN centre for digital innovation

&

Thibault Schrepel
Associate Professor, Law & Technology

Contact:
m.rezazademehrizi@vu.nl
t.schrepel@vu.nl

From teaching to co-learning around AI in education

A design ethnography journey

AI Show and Share
Vrije Universiteit Amsterdam
Dec. 05, 2024

Mohammad H. Rezazade Mehrizi
Associate Professor in workplace learning

Katharina Cepa
Assistant Professor in Collaboration for Digital Innovation

VU | KIN Center for Digital Innovation

Once upon a time

Dec. 2022

Original concern

How can we redesign our educational activities in such a way that students engage in “learning” than “performing”?

Refocusing from “output” to “themselves”

Back to the learning objectives

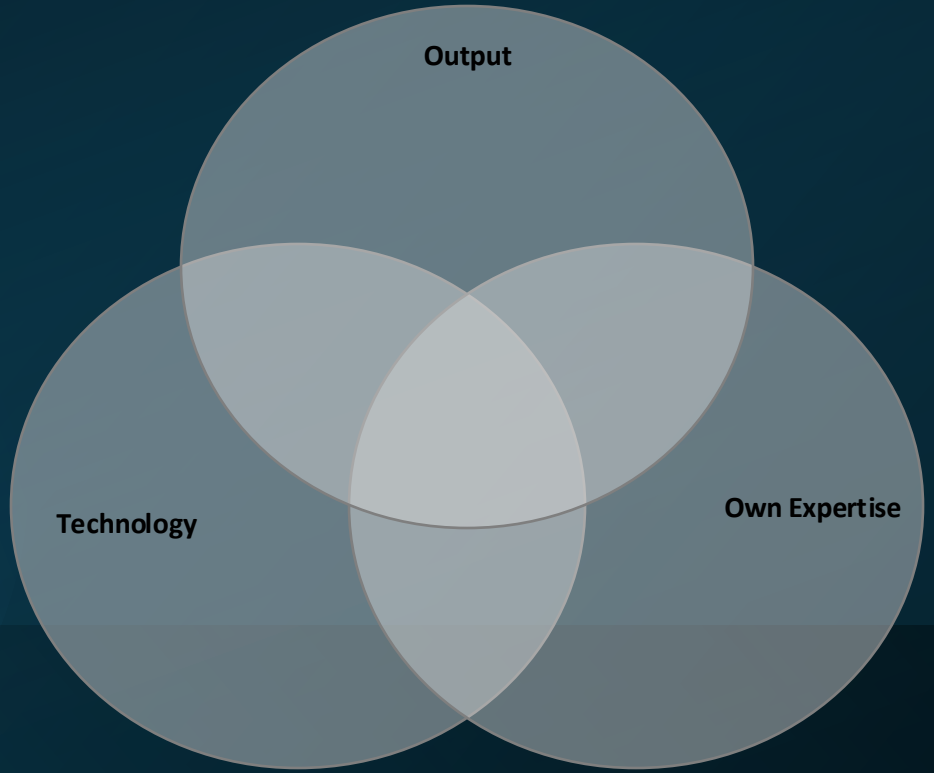
	Traditional focus	New focus
Critical Literature Review	“To create an accourage, well-organized, and nicely articulated critical review of the literature”	“How to be able to interrogate literature, surface the assumptions, assess the validity, and contextualize the ideas of literature”.
Academic Writing	“producing grammatically and linguistically correct, well-structured, and properly narrated text”	“How to identify their (common) mistakes, notice their lines of reasoning, and understand the way in which their writing can be seen from the perspective of the readers”

Encouraging “reflective practices”

Reflective practices concern critically examining the contents, objects, and interactions and forming a (critical) judgment about the quality of the outcomes they get in their interactions with these tools, as well as the efficiency of the tools and their own expertise and capabilities in performing the tasks (Dyer and Hurd 2016)

Reflecting on

1) output,
2) technology
3) their own expertise



Cycle 1: redesigning learning exercises

Treating GenAI as an “epistemic object” instead of a “tool”

Knorr-Cetina

Critical literature review

Old exercise

Read a paper

Write a critical summary of the paper

Challenge: hardly going beyond the initial understanding

New exercise

Ask ChatGPT to make a summary of the paper in around 400 words

Write the paper carefully and try to criticise the summary of ChatGPT on accuracy, depth, and completeness

(highlighting the source article as reference of their evaluations)

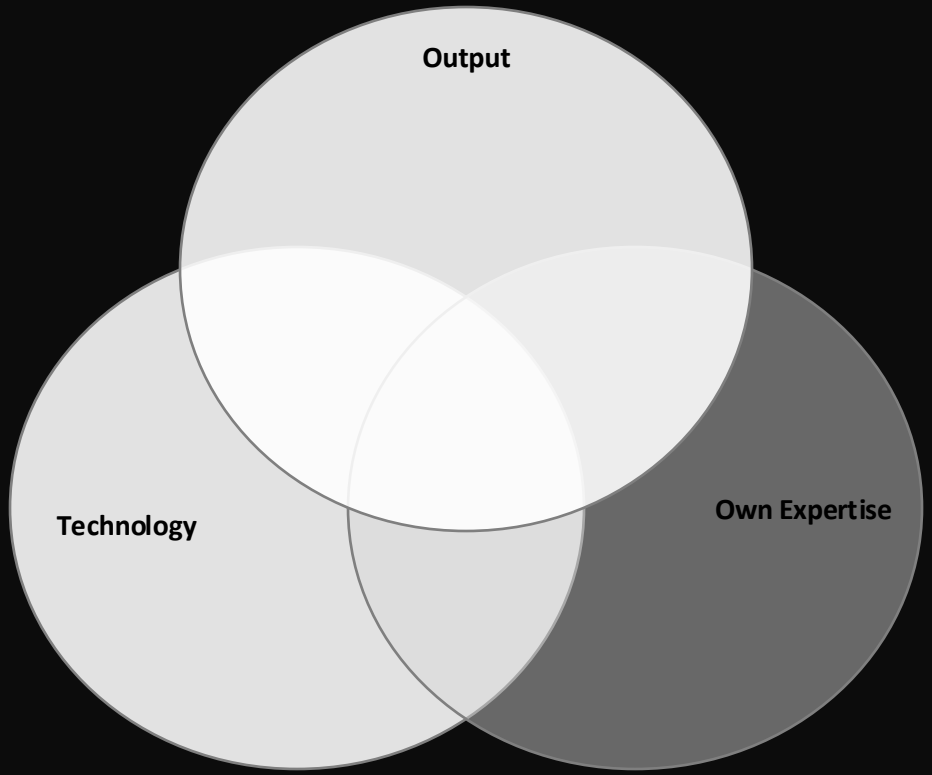
Observations from Cycle 1

- Becoming critical about ChatGPT
  "*I never use such a tool for understanding the literature … it makes so many mistakes and violates the message*"
  "*ChatGPT can easily miss important context and limitations of the studies*"
  "Missing on the core novelty (e.g., moderating effect or the core gap)"

- Understanding the content of the study
- Becoming (over?) sensitive to what are the important aspects of a scientific paper

Observation

Students are absorbed into the AI tools and primary obsessed by what they can generate as the output? (losing the sense of being themselves!)



Lesson #1:

We (teachers and students?) should observe their (inter)actions.

Cycle 2: formalizing distinct modes of interactions

Embodying distinct modes of interactions with GenAI and hence experiencing the different roles / relations they can have in their interactions

Academic Writing

Old exercise

Write your own text (often first focus on the content)

Revise your text for improving on the grammar, flow, structure, fluency, clarity …

(often prompting GenAI on can you rewrite the text for me …)

Challenge: they miss on focusing on 1) critically reflecting on their own expertise, and 2) advancing their own learning (at a deep level)

New exercise

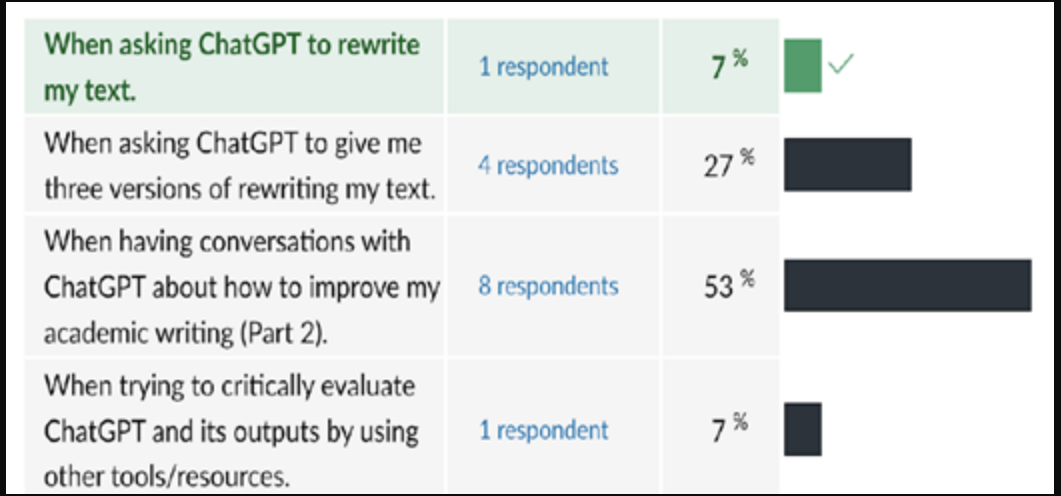
Engage in improving a text that they wrote a month ago (similar content and structure), and interact with ChatGPT in 3 ways:

1) ChatGPT as a learning mentor: asking for 3 rewrites of their own text and compare them and improve it,

2) ChatGPT as a learning coach: converse with ChatGPT by asking meta-questions on “how” to improve their writing, and

3) ChatGPT as a suspicious learning peer: using other tools to evaluate the output of ChatGPT based on the 1st step

Which mode of interaction was most effective for you to learn academic writing?



When asking ChatGPT to rewrite my text.	1 respondent	7 %
When asking ChatGPT to give me three versions of rewriting my text.	4 respondents	27 %
When having conversations with ChatGPT about how to improve my academic writing (Part 2).	8 respondents	53 %
When trying to critically evaluate ChatGPT and its outputs by using other tools/resources.	1 respondent	7 %

Observations of Cycle 2: reflection drift

Limited depth interactions directed towards “evaluation”

Uncritical on own expertise

Impressed by the apparent sophistication: *“[ChatGPT used] “complex words and analogy in order to explain the metaphor compared to my own work since with mine I use simple words” .*

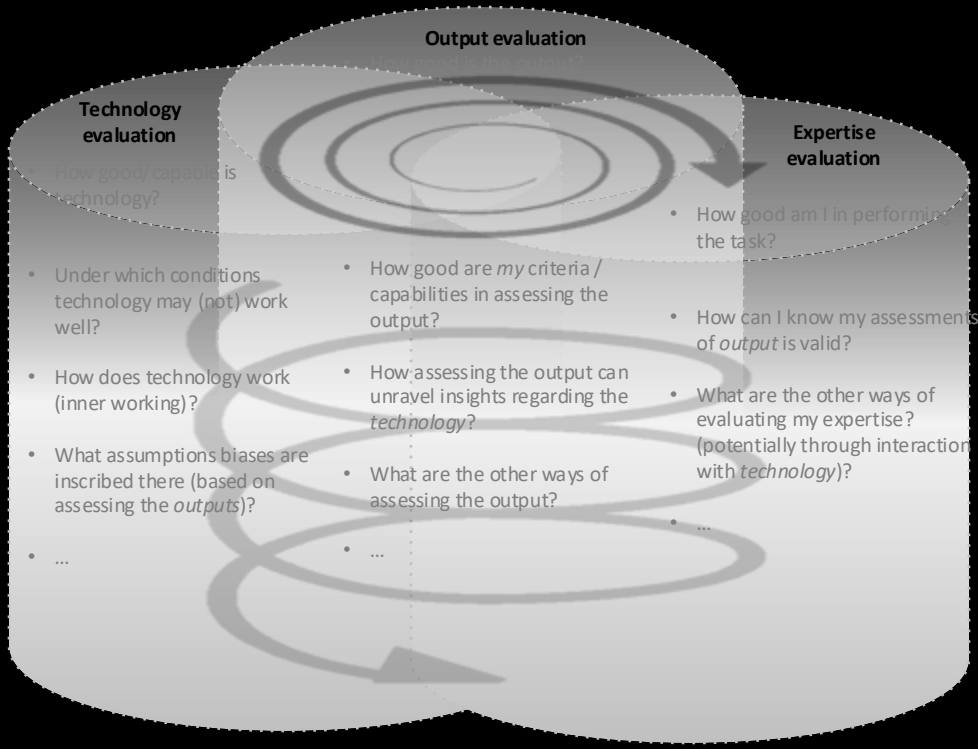
Overly confident about own expertise

- ChatGPT offers “connecting words” such as “to conclude”, “thus” …
- student: rejecting them as seeing them not much important

Lesson #2:

Interacting with GenAI (even for learning) is a highly slippery space that can easily drift us away from deep, critical reflection.


EX



Reflection drift

- Asking evaluation questions
- Triangulating for confirmation

Deep, critical reflection

- Asking interrogative questions
- Triangulating for exploration

Lesson #3:

We should not assume that that students (and teachers?) know what reflective practices are and how they can be effectively performed.

Cycle 3: guiding on how to avoid reflection drift

Offering them the inputs about the possibilities of reflection drift and how they can detect and avoid it

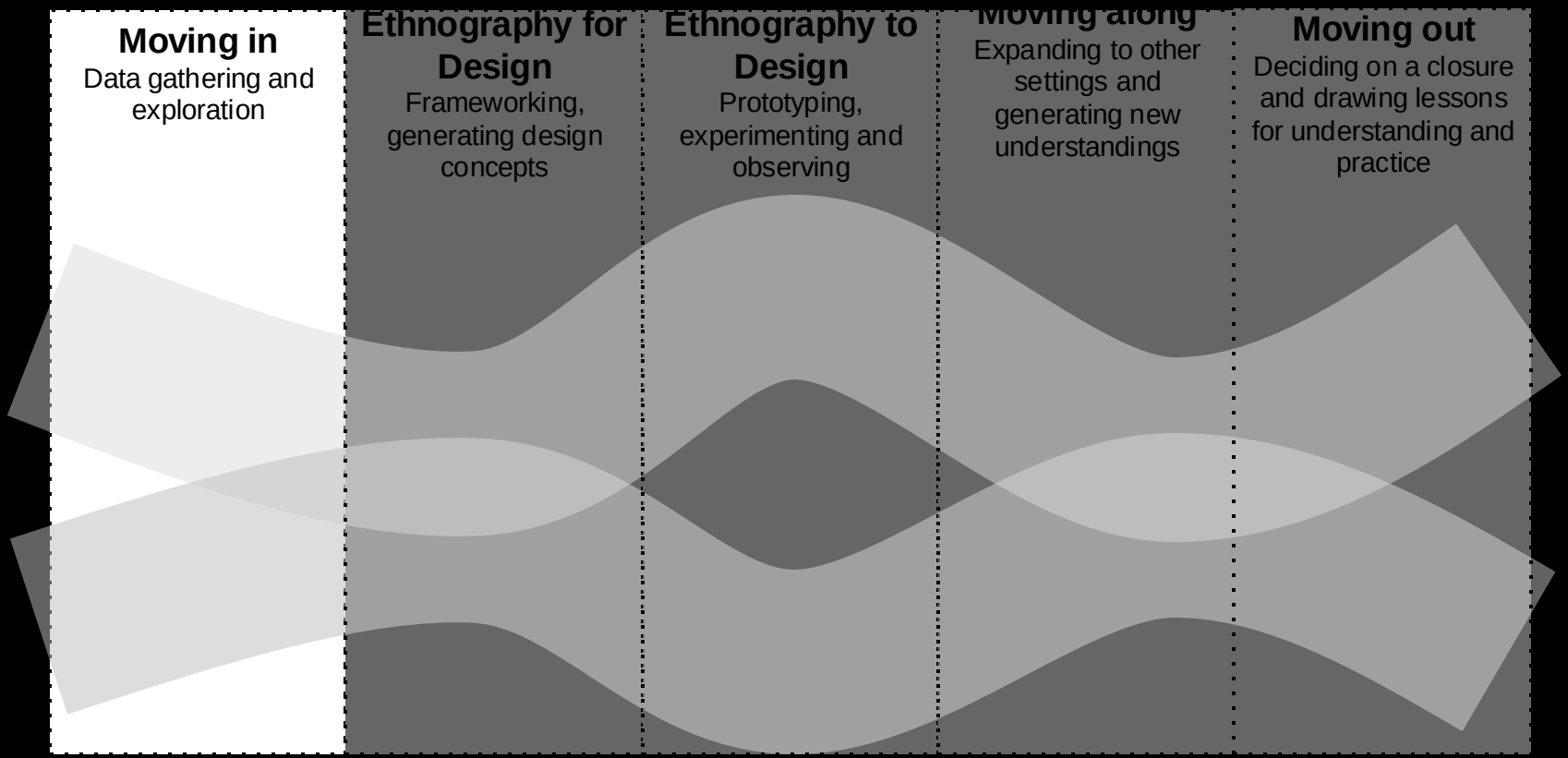
Design ethnography process

"Design ethnography is where the researcher goes beyond observation and actively engages with people in the field."

" ….ethnographic research techniques are fully integrated with design science techniques"

"Design ethnography builds forward from E4D and E2D. Ethnographer designers will want ethnographic forms of data on which to base their designs (E4D); and like E2D, the ethnographer designer will be immersed in practical acts of designing, which, along with science, technology and art, has become an important domain of cultural production (Berglund, 2014)."

Baskerville, Richard L., and Michael D. Myers. "Design ethnography in information systems." *Information Systems Journal* 25.1 (2015): 23-46.


Moving in
Data gathering and exploration
Ethnography for Design
Frameworking, generating design concepts
Ethnography to Design
Prototyping, experimenting and observing
Moving along
Expanding to other settings and generating new understandings
Moving out
Deciding on a closure and drawing lessons for understanding and practice

Good practice Thibault Schrepel

Presentation Thibault

Reflective conversation

Make groups of 3 and discuss:

1. What did you like about these 2 good practices?
2. What are other **central concepts / mechanisms** that are important for learning in interacting with AI? Reflexivity, embodiment, feedback, emotions, …
3. What are the **opportunities for designing novel learning** exercises around AI (both for students and teachers)?
4. What are the **new roles / relations** that students / teachers can form in relation to AI in the process of education?
5. What are the **ethical and professional considerations** in experimenting with students?

Where to go from here?

Want to experiment with AI? We're here to help:

- onderwijswerkplaats@vu.nl
- Workshops, including many on AI

Want to know more?

- Generative learning through, not despite, generative AI; a real-life experiment
- 5 active learning activities to teach students to work with AI
- Kunnen chatbots studenten en docenten helpen bij leren en doceren?