



What is lazy metacognition and what can we do about it?

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Presentation abstract

Large language model (LLM) enabled tools are increasingly omnipresent in our teaching and learning environments. Most of the focus so far has predominantly been on the impacts on assessment and ensuring the security of those assessments. However, there are increasing questions being asked around impacts on learning. Since the 2010s we have been aware of risks to atrophy in the hippocampus due to changes in how we navigate when using GPS devices compared to when we do not (Stromberg, 2015). We are also aware that how we approach reading is different dependent on whether it is digital or in-print, with digital engagement often being quicker and of less depth, with potential impacts on learning (Allcott, 2021). Research by Kaufman and Flanagan (2016) found that students reading digitally did well on answering concrete questions. However, those reading in print did better on abstract questions needing inferential reasoning.

A recent paper by Fan et al. (2024) found that 'AI technologies such as ChatGPT may promote learners' dependence on technology and potentially trigger "metacognitive laziness"'. How learners engage with these new platforms and capabilities is increasingly important. When students seem increasingly willing to cognitively offload problem solving, what approaches could we take to enable the development the levels of critical engagement required to engage with these tools in a productive manner when many are novices and do not yet have the foundation knowledge and critical literacies to do so? In this interactive workshop you had the opportunity to discuss key issues related to lazy cognition and co-create learning development guidelines for enhancing critical literacies and fostering deep learning. Session outcomes are being collated and will be shared as a community resource. Workshop attendees had the opportunity to be named as co-authors.

Keywords: cognition; artificial intelligence; learning; meta-cognition.

Community response

The audience reflections on this workshop highlight the potential impacts artificial intelligence (AI) could have on students, as to whether AI supports or impedes learning. Specifically, they explore how AI might induce cognitive laziness in students. For example, this could occur when students are uncritical of AI outputs and accept them without question. This raises important considerations about students' agency in their use of AI or, in other words, how students co-learn or collaborate with AI. As pointed out by the community, students may miss valuable learning opportunities if they rely on AI to avoid mistakes and ensure correctness, as mistakes and failures are essential parts of the learning process that should not be overlooked:

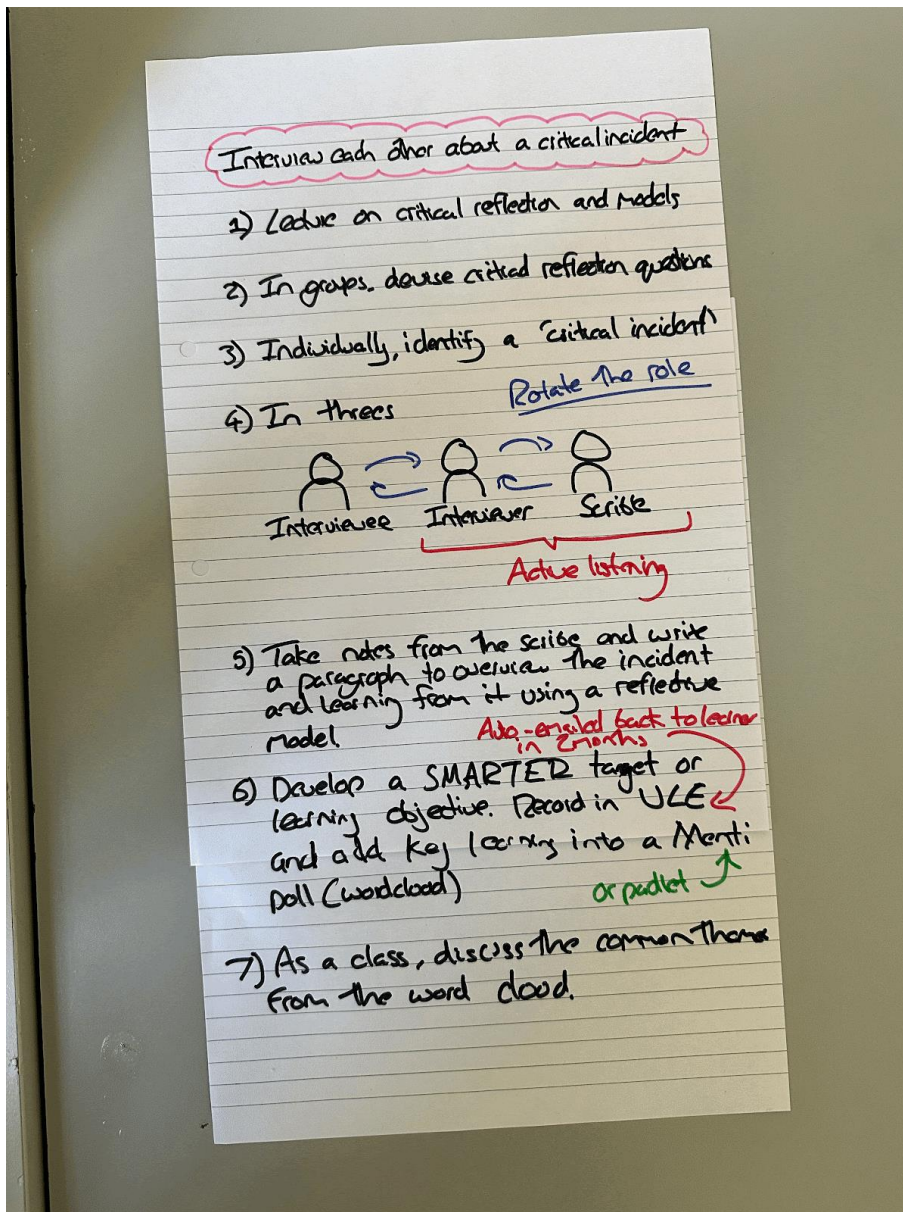
LF: I really appreciated the provocative start - framing how Large Language Models are 'pedagogically perverse'. They don't care if they are right or wrong - because they have no sense of truth and falsehood. There is no moral consciousness on what is generated. It isn't a person. It is a machine.

As part of the session, we were challenged to co-create an activity to enable students to trigger deeper metacognitive processes. Examples of activities and discussion points included:

1. Focus on the process - not the end point – for example, getting students to journal alongside their dissertation. Focus on assessing that journal/sketchbook in equal weight with the final output.
2. Work on provocative topics to engage them. Provide a range of sources – some may be developed by an AI to be critical of.
3. Get students to 'want' to learn and engage with the knowledge.
4. Get students to teach the topic.
5. Focus on assessing the metacognition.
6. Start with critical thinking and ask students to develop questions to critique a statement they have been given. Do they agree with it? How do they know? Link to paragraph structures. Look at the topic sentence – what do they expect to come next? Then look at the rest of the paragraph. Did it deliver what they needed? So what?
7. Mind mapping literature reviews – focus on synthesis. Visualise the connections and strands and themes. Look at examples of extracts and evaluate them, focusing on evidence and reasoning.

8. Start with an environmental case study. The student becomes the teacher.
9. Debates – no polarisation – open-mindedness, different perspectives and so on.
10. Promote curiosity!

Figure 1. A visual reflection on the session which developed a specific activity on reflective thinking.



JV: Thank you for your engaging workshop. I found your topic really thought provoking, especially the question of whether we are inadvertently creating learning environments where students become comfortable outsourcing their thinking processes rather than developing their own analytical capabilities. I'm particularly curious about the long-term implications of AI use.

SG: This session provided a great opportunity to work with other learning developers to discuss similar challenges, hear successes and co-develop an

activity to encourage deeper learning. I am going to trial the activity our group produced in the next academic year. Thank you!

HG: Thank you for such a thought-provoking and enjoyable workshop, which gave me lots of ideas on different activities to try out with my Foundation Year students. I have been coming back to the thoughts raised in this workshop following a raft of academic misconduct meetings relating to the use of AI. One of the things that has struck me in these meetings is where students engage with AI due to a lack of confidence in their own abilities – for example, one student essentially using Meta as a study skills tutor, engaging in a ‘conversation’ in which it checked and assessed his work for him. While, on the one hand, there could be something valuable in developing this as part of a working process, it made me realise that one of the biggest dangers of AI is that it potentially removes the ability for students to learn from making mistakes and getting things wrong. Pedagogical practice, research, and most of our own learning experiences show us that there is great value in making and correcting errors in our work. If students don’t have that experience, are they missing out on a significant part of learning? Not only that, but it potentially affects their resilience in managing failures or mistakes beyond their studies. I think the solution to this links back to the very valid point raised in the workshop – trying to ensure the focus is on the process rather than the end product.

Next steps and additional questions

Audience members pointed out some areas they would like to know more about:

If students become accustomed to AI generating ideas, organising thoughts, or even identifying problems, what happens to their ability to engage in independent critical thinking and problem solving? Does it improve as they learn to critically evaluate the AI output or diminish as they use these skills less? The tension seems to be that while AI can make thinking visible and provide excellent metacognitive prompts, there’s a risk that students might become dependent on these external scaffolds rather than developing their own internal monitoring and self-regulation strategies. In supporting learning, how do we distinguish between AI as a cognitive tool that enhances thinking versus AI as a replacement for thinking? When students use AI to help structure their arguments or identify connections, are they building metacognitive skills or bypassing the cognitive work that typically develops these skills? In my own work and teaching practice, I’m also wondering about the scaffolding process with AI. At what point should we expect students to internalise the thinking patterns that AI might be modelling for them, and do we assess whether that internalisation is happening?

Author’s reflection

The workshop provided an opportunity to explore a topic I have been considering in my own context with colleagues from other discipline areas and institutions. The discussion that evolved from my provocation has led to further thought on the topic and will lead into

an additional piece of work in this area, combining the ideas generated in the session and an expansion on the prompts for this work. The generosity of ideas and richness of discussion was greatly appreciated as there were a number of AI-themed sessions throughout the event.

Additionally, further reflection on the session and the participants' comments, draw me back to questions around the purpose of our engagement with students and what we want them to gain from that engagement. Ultimately, what is the purpose of higher education? Is it the same for us and our students? If not, what are the implications for teaching and learning?

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