

DEVELOPING TEACHERS' PROMPTING COMPETENCE USING CHATGPT: A COLLECTIVE ANTI-SHORTCUT APPROACH

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Abstract

The use of generative AI (GenAI) such as ChatGPT highlights the need for educators to develop critical competencies in order to harness its gains and limit its weaknesses for learning and productivity. This workshop aims to engage participants in a collective effort to define what makes for good “prompting competence”, that is, how instructions to the GenAI should be formulated by the user to generate desirable outcomes. A starting point is that what is desirable from an educational perspective differs notably from that of production; whereas productivity gains with GenAI are quick, human learning is slow and requires time for reflection and adaptation. Recent research suggests that extensive use of GenAI encourages users to take “cognitive shortcuts” – favoring fast and optimal solutions over slower and less practical ones – which negatively affects users’ cognitive abilities. We aim to explore effective countermeasures to such risks. In taking a deliberate “anti-shortcut” approach, participants will carry out a routine pedagogical task (grading a short text) using step-wise instructions (prompts) in ChatGPT. First, participants are presented with some concrete examples of effective/ineffective prompts. Second, small teams will “compete” in prompting ChatGPT to perform as well as possible, compared to a set benchmark (a human professional assessment of the text). Once the “winner” is determined, we will collectively “reverse engineer” what made the winning team’s prompting successful and reflect upon its implications for developing crucial competencies (e.g. critical thinking, analysis). The workshop is intended primarily for teachers in higher education with elementary experience of ChatGPT.

Keywords: *Generative AI, digital competence, higher education, ChatGPT, prompting.*

1. Introduction

It would be an understatement to claim that generative AI, or GenAI, is changing educational practices. However, users are still in the adaptation phase of embracing the technology – some with more hesitation than others – and it is becoming equally apparent that the extent and types of uses of GenAI vary widely between different academic institutions, as well as by individual teachers and students within the same institution. The academic literature can hardly keep up to date with this development. Some practice-oriented books quickly followed the unprecedented success of ChatGPT 3.5 (e.g. Hunter, 2023; as the author notes in the introduction, ChatGPT took five days to reach one million users; Instagram took 2.5 months and Netflix took 14 months). An emerging core competence is so-called “prompt engineering” – that is, how instructions to the GenAI can be effectively formulated and improved – which inspired our present proposal for increasing teachers’ prompting competence in relation to student work (which itself may involve using GenAI). Considering that presented examples of outcomes and limitations may become outdated already at the time of publication as the technology advances, we hold that any prescribed guidelines should be combined with actual training sessions to maintain their relevance and applicability. Therefore, rather than presenting empirical findings from our own work, or a ready-made recipe for teachers to follow, we chose a process-oriented approach in the form of a workshop, which aims to develop the participants’ current knowledge of the present technology (in this case, the most used version of ChatGPT) in relation to a benchmark set by human professionals. Here, we outline the structure of such a workshop, intended primarily for teachers in higher education, but which may be modified both in length (considering a minimum of 40-45 minutes) and educators on other levels who face similar tasks.

There are two points we find particularly worth considering for conducting a workshop of this kind. First, we hold that human teachers remain the experts in their field, but that they may learn how to use GenAI, such as ChatGPT, for carrying out certain educational tasks, such as assessing a student text, more effectively, while maintaining their professional standard and integrity. To achieve this, teachers must learn how to prompt properly. Second, we must consider the pitfalls associated with achieving deceptively quick results with technology that could mislead users to taking shortcuts and by-pass their critical thinking (Zhai et al., 2024). That is, we need to think before we act. The idea of a “collective anti-shortcut approach” warrants some elaboration before we describe how it may be implemented in the actual structure of the workshop.

2. The problem of shortcuts (and how to make them problem-free)

We believe that people – teachers and students included – are entitled to take shortcuts in known territories, in order to reach their goals faster and in the service of others. For students, this could mean using ChatGPT for explaining a concept they did not understand from the teacher, rather than having to ask the teacher again (if at all possible). For teachers, it could mean using ChatGPT for constructing or making an assessment, to free up their time and resources for helping students learn rather than just assessing them. In both cases, it is assumed that the user already has the required skill (asking for help, constructing a test) which has been preceded by much longer learning (going to school, taking a research degree). Importantly, what is being produced (knowledge) must not be confused with the process of production (learning).

Whereas productivity gains with GenAI can be quick, human learning is slow and requires time for reflection and adaptation. There is overwhelming evidence that humans resist mental effort when they can, and that hard thinking is generally associated with negative affect (David et al., 2024). This fact itself may explain what Zhai et al. (2024) refer to as users’ tendency to take “cognitive shortcuts”, or heuristics, when using AI, in the face of ethical issues and at the risk of a negative impact on their cognitive abilities. A core risk that applies to students and teachers alike is an over-reliance on the AI output, without proper questioning and verification (including factors such as AI hallucination, algorithmic bias, plagiarism, privacy concerns, and transparency issues, and how over-reliance impacts decision-making, critical thinking, and analytical thinking). In short, taking shortcuts with AI may lower educational quality (Ahmad et al., 2023), unless careful attention is given to such issues. In our case, we specifically target how teachers may avoid taking invalidated shortcuts to assessment by carefully examining and reconstructing their prompts, while acknowledging that AI can be highly useful for this kind of task. For example, good prompt engineering has been highlighted as critical to avoid and mitigate the weaknesses of using GenAI, with reference to ChatGPT specifically (Johnson, 2024).

Our idea is that the collective knowledge of the participants is best captured and developed by “reverse engineering” prompts which yield the result most closely matching that of a set human benchmark. That is, we start from a proven, functional end result (the prompting that generated the best assessment according to a predetermined, high human standard) and then analyze its structure and method, rather than starting from the basics of how to formulate prompts (and gradually work one’s way up towards a hopefully functional result). Hence, by first engaging together in slower, possibly effortful but rewarding thinking, we aim to clear the thickets of the current GenAI use, such that educational practices can move forward, ethically, mindfully and practically, and with a clearer goal in sight. This anti-shortcut approach to learning better prompting may thus properly prepare teachers to create the shortcuts they truly need and wish for, without the cost of losing track of the terrain.

3. Workshop structure

The present protocol is intended for a full workshop of about 45 minutes, in five steps.

3.1. Brief introduction (5 min)

Quick overview of prompting competence and why it matters.

- The anti-shortcut approach: Avoiding over-reliance on AI by understanding how to prompt effectively – and avoiding pitfalls from learning it not too quickly.
- The challenge: Using ChatGPT to grade an (excerpt from an) essay as accurately as a human.

3.2. Effective vs. ineffective prompts (10 min)

Participants review three different grading prompts:

- A basic/ineffective prompt
- A suboptimal prompt
- A highly effective one

Group discussion: What makes some prompts work better than others?

3.3. Team-based prompting challenge (15 min)

Teams (3-5 people) compete to create the “best” prompts in ChatGPT for a given task (assessing/grading a short student text):

- The teams iterate and refine their prompts for better AI responses.
- Goal: Match or exceed a human-provided assessment benchmark.

Teams submit their final prompts.

3.4. Reverse engineering the “best” prompt (10 min)

The winning prompt is analyzed step by step:

- What made it work?
- How did it structure instructions?
- How can these principles apply reliably, for different texts and assessment criteria (e.g. are there possible sources of errors humans would not do)?

Teams adjust their own prompts based on these insights.

3.5. Rapid reflection & takeaways (5 min)

Participants discuss:

- What can you learn from this prompting approach in your pedagogical practice?
- What are the risks of taking AI shortcuts for pedagogical tasks, such as this?

Summary of best practices and final Q&A.

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