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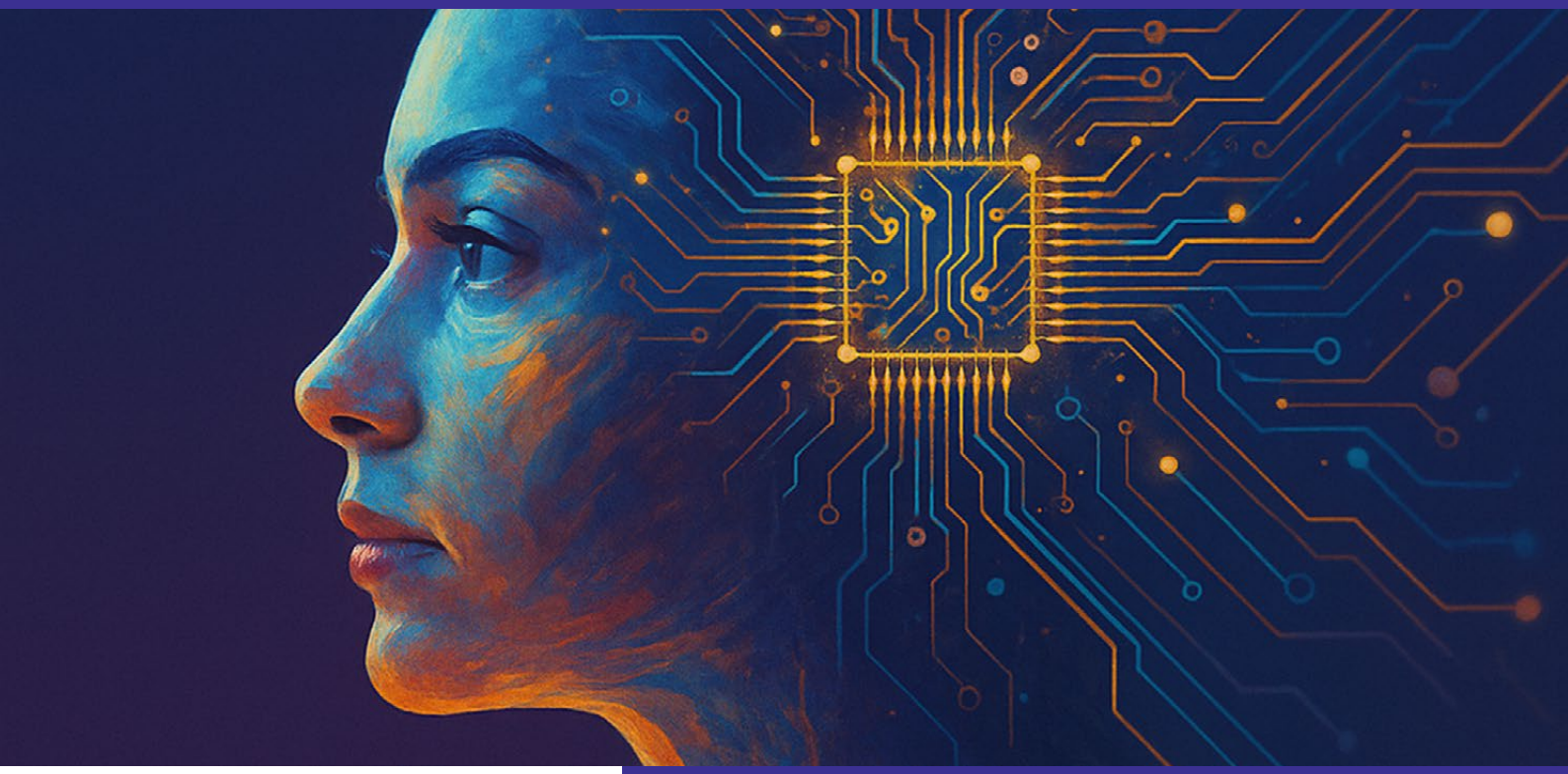

LIGHTS - Technology

From prototype to reusable template: Designing GPT-based teaching assistants for higher education

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Alara TASCIOGLU
ESCP Business School

ESCP RESEARCH INSTITUTE OF MANAGEMENT (ERIM)

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From prototype to reusable template: Designing GPT-based teaching assistants for higher education

Alara Tascioglu*

ESCP Business School

Abstract

This paper examines the design and deployment of a course-specific custom GPT teaching assistant, later generalized into a reusable template for broader use. Originally developed to support repetitive and time-consuming teaching tasks, such as content updates, activity design, and grading consistency checks, the course-specific custom GPT proved to be a fast and responsive aid that enhances instructional efficiency and quality without replacing pedagogical judgment. Drawing on classroom use and institutional interest, the paper details its key capabilities, student feedback, limitations, and the process of generalizing the assistant into a reusable template. It concludes with six design principles for building pedagogically grounded, reusable GPTs for higher education.

Keywords: generative AI, GPT, OpenAI, education, technology

*Postdoctoral Research Fellow, ESCP Business School

From prototype to reusable template: Designing GPT-based teaching assistants for higher education

Generative AI is entering classrooms around the world not only as a topic of debate, but increasingly as a tool that supports how we work, teach, and learn. One particularly promising format is custom GPTs: specialized ChatGPT versions tailored with custom instructions, knowledge, and tools to support specific tasks (OpenAI, 2023). These tools are especially well-suited for automating well-defined, repetitive tasks in domain-specific settings (Akinnagbe, 2024).

Building and using a GPT teaching assistant

Delivering a course, whether for the first time or iteratively, typically involves a predictable set of repetitive and time-consuming tasks for each session: restructuring slides, updating examples, designing in-class quizzes, integrating interactive activities, preparing case studies and assignments, drafting related exam and mock questions, and ensuring grading consistency.

The repetitive yet specialized nature of these tasks makes them strong candidates for support through custom GPTs. However, in academic settings, concerns around data privacy, instructional quality, and institutional fit have often constrained their use. In 2024, ESCP launched a pilot partnership with OpenAI, providing selected faculty, staff, and students with secure access to ChatGPT via OpenAI's education platform. This initiative enabled us to build and deploy a course-specific GPT teaching assistant that met ESCP's data protection and instructional design standards.

A custom GPT teaching assistant was developed for a course delivered to two groups of approximately 45 students each, with five three-hour sessions per group. The assistant was designed to support the following activities:

- Flagging outdated data or unclear slide content
- Suggesting updated examples tied to current business and technology trends
- Accelerating the production of asynchronous learning materials
- Supporting the design of warm-up and wrap-up activities aligned with session goals
- Minimizing human error by improving grading and feedback consistency

The assistant was trained on all relevant course materials and given detailed task-specific instructions. Initially created prior to the course launch, it was iteratively updated throughout the term based on changes in session materials and improvement areas we identified, mirroring the rapid development of generative AI itself (Akinnagbe, 2024).

The assistant provided consistent and practical support across all functions. Two applications proved particularly impactful: its ability to surface minor grading inconsistencies that might otherwise have gone unnoticed, and its capacity to generate timely, relevant real-world examples tailored to the course's evolving content. The assistant was never meant to make autonomous decisions, but to function like the perfect teaching assistant: responsive, tireless, and fully aligned with instructor guidance. And it did just that by helping complete all its tasks more quickly, which in turn allowed for more improvement than otherwise possible for the same content within the same time frame.

For example, before GPT support, updating slides meant manually reviewing every figure; with GPT, outdated data was flagged automatically. Activity design shifted from generic prompts to session-specific interactive exercises generated with GPT suggestions. Grading checks that used to rely on memory benefited from GPT cross-referencing anonymized scores to ensure consistency. Unlike re-entering detailed ChatGPT prompts each time, the custom GPT retained the course context, grading rubrics, and session goals across interactions. This eliminated the need to re-explain instructions repeatedly and ensured consistent, course- and instructor-aligned outputs.

Qualitative student feedback strongly reflected these contributions. Many praised the timeliness and relevance of course content, noting "the relevance of the topics and how they related to current affairs" and describing it as "very related to actuality." Several commented on the quality of in-class activities, highlighting "interactive course design," "group work," "small exercises to understand real-world implementations," and "the mixture of lecturing and group work." Students also noted the effectiveness of grading and feedback, referencing "continuous feedback that helped improve with each assignment" and describing the course as "fair" and "clear on expectations."

However, the assistant did have its limitations, the biggest one being its struggle with open-ended or judgment-intensive tasks, such as developing new grading rubrics or identifying nuanced reasoning flaws in student work. These limitations further reinforced the initial goal of creating an assistant not to automate pedagogical judgment, but to scaffold it. Functioning more like a responsive collaborator than a decision-maker, the assistant proved fast, adaptable, and reliable when clearly guided. Unlike general-purpose prompting, the use of a customised version of GPT allowed for persistent memory, calibrated tone, and task-specific logic blocks, therefore reducing instructional friction and enabling reuse across sessions.

How the assistant became a shared tool

What began as a lightweight assistant for a single course later evolved into a more generalizable template in response to institutional interest. After the assistant demonstrated its value in one course, a template version, called the AI Teaching Assistant (AITA), was developed and shared with ESCP faculty.

Adapting the assistant for broader faculty use highlighted challenges such as varying teaching styles, rubric structures, and disciplines. These were addressed by abstracting task instructions into modular blocks, some applicable across courses, others covering instructor- and course-specific components, to facilitate instructor-level customization. Addressing these variations required not only modular template design but also active faculty engagement. Workshops, including online cross-campus sessions and in-person events during the annual faculty meeting, were essential for demonstrating use, gathering feedback, and supporting adoption.

The demand for this tool highlights a broader potential: low-code GPT templates can enable reproducible, adaptable academic support with minimal overhead and maximum alignment with guidelines. When embedded into teaching workflows, such tools can reinforce consistency, clarity, and content responsiveness. While it has not become part of the institutional infrastructure, the assistant demonstrated how lightweight generative tools can extend beyond experimentation and begin contributing to shared academic practice.

ESCP's strategic partnership with OpenAI made this possible, not only by offering secure technical access, but also by enabling experimentation within clear data protection boundaries. The template now serves as one example of how generative AI can be aligned with institutional values, empowering educators to guide and shape AI use in ways that reflect course goals and instructional integrity. By enabling instructors to co-develop GPTs tailored to their pedagogical needs, the initiative supports not just AI literacy, but thoughtful, instructor-led AI use in higher education.

Principles for designing educational GPT templates

Custom GPTs like AITA could be further developed and scaled into institution-wide assets, but such expansion raises important pedagogical and ethical questions. As GPTs become more capable and more likely to be mistaken for decision-makers, they must be held to the same standards of care we apply to grading policies, curriculum design, and student privacy. Overreliance on GPT outputs can also risk narrowing instructional creativity or reducing critical oversight. Educators should use these tools to support, not replace, pedagogical judgment, maintaining an active role in reviewing and shaping all outputs. These concerns echo broader calls for Responsible AI in education, which emphasize human oversight, explainability, and bounded delegation (Holmes et al., 2021; UNESCO, 2022). In this spirit, both the course-specific assistant and its generalized version, AITA, were designed not as autonomous systems, but as collaborative tools: fast and flexible, yet always guided by human framing, ethical boundaries, and educational goals.

AI tools also raise environmental concerns. Running large models consumes energy, contributing to CO_2 emissions (UNESCO, 2022). To limit impact, it's important to focus GPT use on high-value, repetitive tasks where educational benefits clearly justify the computational cost.

Developing the course-specific teaching assistant GPT and extending it into a reusable template, together with the ethical considerations discussed, surface the following design principles for building shareable and pedagogically grounded GPTs in education:

1. **Template the task, not the teacher.** Focus instructions on repeatable tasks (e.g., feedback generation, quiz creation) that are not course- or instructor-specific.
2. **Modularize for reuse.** Structure instructions into clear, editable blocks (e.g., grading logic, reference sourcing), including course- and instructor-specific sections.
3. **Constrain scope and control response quality.** Define what the GPT should and should not do (e.g., suggesting final grading decisions, inventing references).
4. **Acknowledge need for continuous improvement.** As generative AI continues to evolve, all custom GPTs should be treated as living tools subject to iteration, refinement, and feedback.
5. **Reflect institutional values.** Align examples and expectations with pedagogical principles (e.g., clarity, fairness, inclusivity) and institutional values.
6. **Share responsibly.** Treat templates as adaptable foundations and not turnkey solutions. Given the rapidly evolving nature and environmental footprint of generative AI, encourage local testing, ownership, and critical reflection to ensure use is justified, efficient, and avoids silent drift or misuse.

Used well, GPT templates should not replace pedagogy but scaffold it by freeing up time for further improvements, enhancing clarity, and supporting more intentional instruction. Like the ideal teaching assistant, their value lies in how they are guided. As more educators

begin to adopt these tools, we should not just scale them, but design and govern them wisely so that they serve, rather than shape, teaching.

While the specific GPT template used in this project was developed for ESCP's internal OpenAI Education environment and is not publicly available, the OpenAI Custom GPT feature (OpenAI, 2023) offers a user-friendly starting point for building comparable assistants tailored to local contexts.

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