Navigating the AI Frontier: Designing for Learner Success

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Introduction & Need for Strategy

The evolution of artificial intelligence (AI) presents both challenges and opportunities for higher education. While concerns about academic integrity often dominate the conversation, there is growing potential to use AI as a pedagogical ally to enhance student learning and instructional efficiency (Holmes et al., 2019; Luckin & Holmes, 2016). This project explores three strategies for integrating AI into the college classroom: (1) using an AI agent as a peer collaborator in place of traditional group work, (2) employing AI as an instructional coach for classroom case study reflection, and (3) leveraging AI for research assistance in literature review development. Together, these strategies demonstrate how AI can be embedded into pedagogy to scaffold critical thinking, promote collaboration, and reduce instructional burdens.

Connection to Literature

The integration of AI in higher education presents a wide range of applications including the creation of teaching materials, enhancement of skill development, support for student learning tasks, and the delivery of personalized feedback (Sekli et al., 2024). When AI is implemented with intention and transparency, it can serve as a cognitive partner that enhances student learning (Raza et al., 2024). Recent scholarship has also explored AI's role in shaping collaborative learning environments, with early evidence suggesting AI can simulate aspects of peer interaction and foster critical reflection (Luckin & Holmes, 2016; Zawacki-Richter et al., 2019). Yet, challenges remain regarding curriculum design, ethical use, and strategies to prevent overreliance on AI (Francis et al., 2025; Sidorkin, 2025). This project contributes to this conversation by offering a structured model for integrating AI into three distinct classroom practices.

How it Works & Implementation of Strategy

Peer Collaboration (AI as a Team Member)

An AI agent was created in Microsoft Copilot to function as a "team member" for students in an online advertising course. The agent was programmed to provide feedback, pose questions, and assist with brainstorming during projects, but was restricted from completing assignments outright. Students interacted with the AI team member for multiple assignments that would traditionally require peer collaboration. Course documents, such as an extensive syllabus statement, detailed assignment guidelines, and rubrics, were designed to ensure transparency and ethical use.

Instructional Coaching (Case Study Reflection)

A second strategy was developed by a teacher education faculty member to use AI as an instructional coach. Students selected a content area (e.g., high school math, third-grade reading) and topic (e.g., classroom management, special education), and the AI generated a realistic teaching case. A chatbot interface then prompted reflection, encouraging students to articulate strategies and receive feedback. The chatbot was trained to act as a coach, offering affirmations and suggesting areas for improvement without dictating a "correct" response.

Research Assistance (Annotated Bibliography & Literature Review)

In the third strategy, students used AI to generate an annotated bibliography on a self-selected topic. Students critically reviewed the AI's suggested sources, identified inaccuracies or

hallucinations, and added missing scholarly works. The revised bibliography then served as the foundation for a three-page literature review. This assignment emphasized prompt refinement, source verification, and academic integrity.

Results to Date/Implications/Impact

When utilizing AI for peer collaboration, students engage meaningfully with the Copilot agent, using it to explore, refine, and expand their thinking. Students were able to accomplish extensive tasks within a condensed course structure. The use of the agent also allowed students to complete their work on their own time, reducing the impacts of time conflicts present with traditional group assignments. However, a few students defaulted to passive use of the AI team member by attempting to complete the entirety of an assignment without personal input.

In early testing using the AI tool for teaching case study reflection with instructional coaching discussion, students have been positive about the possibilities. One class of 20 teacher education students of various content areas used the tool. All students found the cases it presented to be realistic and useful for reflection. With regard to the reflective chatbot, students were in agreement that the AI provided useful strategies and provided affirmations to their thinking, but many reported wanting more prompting on specific improvements to their proposed approaches to the given cases. These findings align with prior work noting that AI tends to provide surface-level feedback unless guided with structured prompts (Zawacki-Richter et al., 2019).

For use of AI to assist students with literature review construction, outcomes were closely tied to the clarity of AI prompts and the specificity of research topics. Broad topics often led to vague or unfocused bibliographies, while more targeted prompts yielded higher-quality, relevant sources. Although some students experienced initial frustration, this process opened valuable discussions about prompt engineering and topic refinement. A significant learning outcome was students' ability to identify and critically assess AI hallucinations, when AI generates outputs that are factually incorrect, nonsensical, or inconsistent with reality. This enforced students' information literacy and critical thinking while building a foundation for their literature reviews.

Future Plans/Advice to Others

Future work will refine prompt engineering for all three strategies, develop discipline-specific applications, and incorporate structured reflection logs to track learning outcomes over time (Luckin & Holmes, 2016). For peer collaboration, we plan to expand the AI team member model to additional disciplines, ensuring assignments require both AI engagement and personal accountability. For instructional coaching, prompts will be restructured to include tiered questioning that pushes beyond affirmation toward actionable improvement. For research assistance, we are developing guidelines for integrating AI into research tasks while emphasizing verification of sources and critical evaluation.

The integration of AI into the college classroom offers promising opportunities to enhance student engagement, reduce instructional burdens, and personalize learning at a scale. However, thoughtful design is essential to ensure AI supports learning rather than replacing the process all together. Faculty considering utilizing AI support in their classrooms should begin with clear learning objectives and define AI's role within the course. It is also crucial to establish transparency and accountability in regard to AI use. This could be accomplished by providing

guidelines for use, documenting AI interactions, or reflecting on AI contributions. By aligning AI use with pedagogical goals and course objectives, instructors can harness its benefits while fostering critical thinking, academic integrity, and inclusive participation.

References

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