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Course-Embedded Advising in Large-Enrollment Online Courses: Applications of Artificial Intelligence

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Abstract

Course-embedded advising aims to provide micro-mentorship to students through 1:1 meetings near the middle of online classes. Faculty go over the prompts of an existing assignment with students individually, then add a growth-centric prompt to promote student engagement. This model works well in online programs with minor and moderate enrollments. In large-enrollment courses, faculty workload may suffer if individual student meetings are required. A bot with characteristics and personality settings resembling those of a faculty member is being piloted. The bot will administer the course-embedded advising session, thereby facilitating student engagement without increasing faculty workload. Prior investigations have found that course-embedded advising increases student engagement (Dennis, Fornero, Snelling, Thom, & Surles, 2020) and student learning outcomes (Dennis, 2024). Results of this study would support the use of course-embedded advising in large-enrollment courses, where high-impact practices such as this can increase continuation and graduation rates.

Keywords: Course-embedded advising, artificial intelligence, online students, online programs, student engagement

1. Introduction

Course-embedded advising involves replacing an assignment near the middle of an online class with a 1:1 student–faculty meeting to enrich the student experience, facilitate engagement, and support faculty mentorship. Course-embedded advising may be incorporated into classes with low completion rates, or it can be added to every third or fourth course in a program as a high-impact practice that provides students with live interaction at regular intervals. In course-embedded advising, students are presented with the prompts for the advising session early on and asked to schedule their meeting with the faculty near the middle of the class.

During each meeting, students share their responses to the prompts and faculty share their reflections. The first several prompts are identical to those from the assignment that was replaced with the course-embedded advising session, with the addition of one extra "micro-mentorship" prompt. The reason for keeping the prompts from the original assignment is that this practice preserves alignment between course activities and course-level outcomes, thereby facilitating practical assessment of student learning outcomes. The final "micro-mentorship" prompt is intended to orient students to real-world applications of the course content or real-life goals and plans. These prompts focus on career readiness, goals, or the ability to apply a key theory or practice. Course-embedded advising has been implemented with relative ease in small to moderate-sized higher education institutions and has yielded positive outcomes (Dennis, Fornero, Snelling, Thom, & Surles, 2020; Dennis, 2025).

The course-embedded advising model described above was designed to support faculty workload. For instance, during the week the advising session is scheduled, faculty are not required to grade any assignments. This is because the formal assignment for that week is the course-embedded advising session. Additionally, faculty are asked to create blocks in their schedules during the advising week so that students schedule sessions only during times when the faculty member is available. Finally, attention is taken to ensure that course size is kept to a maximum of 25 students in classes that include course-embedded advising sessions.

Implementing course-embedded advising or other similar high-touch initiatives in large-enrollment programs often poses challenges. The most obvious challenge is faculty workload. While faculty may be able to meet with 20 students individually, 30 will likely be problematic, and 40 would not align with the number of hours for which the faculty is being compensated. Unfortunately, course-embedded advising cannot be easily incorporated into large-enrollment classes, which are most likely to benefit from this high-impact practice. Undergraduate classes are more likely to have large enrollments, and they are also more likely to have lower rates of student continuation. Devising a way to effectively administer course-embedded advising while preserving faculty workload would have a significant positive

impact on student engagement and continuation. One potential solution is using a bot powered by artificial intelligence.

The bot, named after a program administrator and trained based on their personality and characteristics, will be introduced to students at the start of the pilot class. Students will get to know the bot and have the opportunity to ask it questions about the course material. Students will then schedule their meeting with the bot, and the bot will conduct a course-embedded advising session with each student. Continuation rates will be compared with those of student groups completing the course prior to the implementation of the bot-led course-embedded advising sessions.

2. Foundations and Related Work

Course-embedded advising is an instructional strategy that integrates structured advising activities directly into a course's design to foster meaningful, one-on-one engagement between faculty and students. By embedding advising into coursework, course designers can create an intentional touchpoint that supports students' academic and personal development. This approach has been shown to enhance student motivation, academic performance, and retention, particularly in online learning environments (Dennis et al., 2020; Dennis, 2024).

Course-embedded advising enhances student engagement and motivation. Research suggests that this approach, especially when aligned with Self-Determination Theory (SDT), can be effective in supporting online students (Chiu, 2020, 2023; Dennis et al., 2020; Richardson et al., 2022). Course-embedded advising also offers a personalized connection by enabling students to arrange one-on-one meetings with faculty (Dennis, 2024).

Typically, course-embedded advising methods are only used in smaller classes where faculty can reasonably meet with each student individually. This model becomes difficult to sustain in large-enrollment courses or in programs that rely heavily on adjunct instructors with limited availability. Additionally, coordinating meeting times can be challenging, particularly for students in online courses who are often working adults balancing multiple responsibilities and busy schedules. To address these limitations, the present study investigates how artificial intelligence (AI) can be used to scale the benefits of course-embedded advising to larger online courses.

AI-powered tools, such as interactive chatbots, offer promising avenues for scaling a course-embedded advising model in large-enrollment courses. These tools can simulate one-on-one conversations, provide real-time feedback, and guide students through reflective or decision-making processes (Davar et al., 2025; Labadze et al., 2023). Unlike static resources, AI-driven interactions can adapt to student input, encouraging deeper engagement and critical thinking (Engeness et al., 2025). This application of AI represents a novel extension

of course-embedded advising, distinguishing the current project from prior published work (e.g., Dennis et al., 2020, 2024; Dennis, 2024).

By integrating AI into the course-embedded advising model, the current project aims to preserve its pedagogical strengths while overcoming its scalability limitations. In doing so, it contributes to the evolving conversation on how technology can support student success in increasingly complex and high-demand educational contexts.

3. Project Description and Current Status

The chatbot-led course-embedded advising session will be incorporated into an upper-division undergraduate class focused on career preparation. The course is 10 weeks in length, and the session will be added to week 4. Content delivered in the week prior to the session focuses on résumé creation, and content in the week that follows centers on the interview process. The course-embedded advising sessions focus only on developing and evaluating LinkedIn profiles. The assignment preparation involves creating a LinkedIn profile or reviewing an existing one, and responding to prompts that focus on improving a LinkedIn profile, using LinkedIn for networking, other networking strategies, and best positioning oneself for success in networking.

Students are then asked to submit both a PDF of their LinkedIn profile and a transcript of their chatbot conversation. Faculty grade submissions using a streamlined rubric that emphasizes completion rather than quality.

To date, the chatbot has been created, and the session has been built out. The course-embedded advising session will be added to the selected course through a minor edit in July. In September, all faculty who will teach the new course during its first offering will attend a session introducing them to the changes. The new course will launch in October 2025. In October, multiple sections of students will complete the bot-led course-embedded advising session. Data on continuation will be examined in January, comparing the continuation rates of students completing the class with the bot-led course-embedded advising to those of students completing the earlier iteration of the course without the session.

4. Methodology and Approach

The chatbot-led course-embedded advising session will be implemented in all sections of an upper-division undergraduate course with scheduled offerings in October of the current year. Following the course's end, continuation rates for all sections will be compared to those of prior offerings of the course before the session was implemented.

5. Preliminary Findings

No results are yet available. Initial observations indicate that chatbots can be trained to resemble humans in tone, personality, and response style. It is hypothesized that a chatbot-led course-embedded advising session will yield results similar to those of a faculty-led session. Further, student completion of the sessions is expected to be higher than in typical faculty-led advising sessions, due to convenience. The chatbot is available at all hours of the day and night and can meet with multiple students individually and simultaneously, providing optimal flexibility.

6. Anticipated Outcomes and Significance

The primary goal of this project is to improve student outcomes and attitudes. We anticipate gains in assignment performance, course completion rates, and both quantitative and qualitative end-of-course evaluations. While increasing graduation rates may require broader interventions, this work lays important groundwork for long-term impact.

AI tools like chatbots can deliver personalized advising at scale, offering flexible, real-time support, which is especially valuable for online learners managing work and other responsibilities. This approach addresses common challenges in large-enrollment courses and courses taught by adjunct faculty, where instructor availability and student scheduling flexibility may be limited.

By integrating AI with course-embedded advising, this project contributes to the evolving field of AI in education. Its innovation lies in combining human-centered advising with scalable technology, offering a practical, research-informed model for supporting diverse learners in complex instructional environments.

7. Next Steps

The project is currently in the design phase. In the second half of 2025, we will revise the course to incorporate AI-supported, embedded advising. The updated version of the course is scheduled to run in Spring 2026, with initial data collection expected by June 2026. Since the course is offered twice annually, we will have the opportunity to make adjustments over the summer and implement changes in the Fall 2026 offering, if needed.

Our evaluation plan includes analyzing assignment grades, with particular attention to specific rubric components, and tracking course completion rates. We will also review both quantitative and qualitative data from end-of-course evaluations and gather feedback from the course instructor to assess the effectiveness and usability of the AI-supported advising model.

If the initial implementation of AI-supported course-embedded advising is successful, we plan to expand the model to additional courses in our online program. The next course where this method may be valuable is our undergraduate-level capstone course, where students prepare for their job search by finalizing their résumés and practicing interview strategies. Integrating AI-supported advising into this course could provide real-time, personalized feedback on career-preparation tasks and help students reflect more deeply on their goals, strengths, and areas of weakness. Ultimately, this could inform a program-wide strategy for integrating AI-enhanced advising into the curriculum, supporting student success at scale while maintaining a personalized learning experience.

8. Discussion Points

As we continue to develop and refine this project, we are eager to engage with the conference community on several key questions and challenges. One area where we seek feedback is on student perceptions of AI integration in the classroom. How have students in the courses, particularly adult learners in online courses, responded to the inclusion of AI tools? Do they view these technologies as valuable enhancements to their learning experience, or do they express concerns about reduced instructor presence or the perceived quality of education?

We are also interested in best practices for introducing AI-supported activities to students. What strategies have been found effective for explaining how these tools work and setting expectations for their use? We would appreciate guidance on how to frame the ethical use of AI for our online adult learner population.

Finally, we welcome opportunities to collaborate with colleagues who are exploring similar instructional models or who have experience implementing and evaluating AI-driven interventions in online learning environments, especially those serving adult learners. Others' insights and experiences would be invaluable as we continue shaping this work.

9. Conclusion

Course-embedded advising, involving individual student–faculty meetings during an online class, was designed to replace an existing assignment without disrupting the course's curriculum map. The session repurposes prompts from the original assignment and adds one prompt that focuses on real-world or practical applications, thereby facilitating micro-mentorship. The course-embedded advising model works well in small- to medium-sized higher education institutions, but implementing it in large-enrollment courses may pose challenges related to faculty workload. The current pilot uses a chatbot programmed with the characteristics of a program administrator. Chatbot-led course-embedded advising is expected

to provide the engagement and mentorship necessary to increase student continuation rates without impacting faculty workload.

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