AI-Powered Tutoring Support: Lessons from a Pilot at a Regional Campus

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Since the emergence of ChatGPT 3.5 in 2022, there has been a widespread proliferation of technologies that leverage the power of Artificial Intelligence (AI) to do jobs that were either not possible or very labor intensive. Tutoring is one such area where AI technologies, if used well, can lighten the load for tutors and administrators andreduce the barriers for students to seek tutoring.

Most students will only seek tutoring in response to poor grades. This puts students into a reactive mindset, and even if they manage to get help from a tutor at this point, the success of the student is largely dependent on how much time they have, to remedy their learning, their mindset, their availability, and work ethic. At University of Cincinnati Clermont College, it is not often that students with poor grades are able to turn their grades around. While tutoring can help, it is often a race against time to ensure the intervention succeeds. Therefore, faculty and staff are always encouraging students to seek tutoring proactively from day one of the semester. Despite these efforts, there is a strong resistance to seeking tutoring proactively, and the cycle continues.

To turn things around, UC Clermont Learning Commons (UCCLC) has been developing an AI tutor that students can engage with any time they want right from the comfort of their couch. This tutor can act as a study buddy or a subject matter expert. The tutor can be embedded right inside a course and be available every day at any time. This means no scheduling is needed, or no social stigma is associated with seeking tutoring.

In 2023, UCCLC built a Canvas course using AI to provide on-demand learning support for students in MATH0030 – Fundamentals of Algebra, the first of a series of pre-college math courses offered at UC Clermont. The key components of this course are:

- Core learning objectives that parallel those laid out in the curriculum,

- Learning modules that include written and video explanations, step by step guidance on example problems, practice problems with solutions, and an AI chat option powered by Microsoft CoPilot, and

- Quizzes to test comprehension.

In the summer of 2024, UCCLC partnered with the math faculty to support students taking this course with this AI tutor. In the middle of the semester, a few at risk students were targeted and given the the opportunity to use the AI tutor to help them catch up. Only two took advantage of it and both experienced success in the course.

Key takeaways from this pilot were:

1. Despite having access to an AI tutor 24/7, students need to be willing to put in the work to reap the benefits.
2. Students were given access to the AI tutor only after they expressed interest in using it for learning to help them do better in their courses.
3. Many students did not even respond to express interest in getting any type of help. These students were also the ones who had stopped participating in their courses.

The on-demand AI powered course with AI chat was structured such that students needed to show competency on previous concepts before moving forward to advanced concepts. This required some level of busy work to get to a more challenging concept. In general students who seek tutoring need targeted intervention, and this approach requires students to spend a good number of hours working in the system to get to the areas they were struggling in. It is likely this was a frustrating experience resulting in abandonment by learners. Moreover, it was hard to gauge what students struggled with in the AI environment and what barriers can be removed to ensure optimal engagement. This was due to a limited feedback loop which only provided us with details on how students scored on their quizzes. We therefore took to the drawing board to recreate the AI tutoring experience to mimic that of a good human tutor.

An ideal AI tutor should embody the same core qualities that define a highly skilled human tutor: empathy, adaptability, clarity, patience, and the ability to foster independent thinking. At the heart of effective tutoring is the ability to understand and respond to a student's unique needs. An AI tutor should be able to interpret not only the content of a student's question, but also the context, emotional cues, and level of confidence or confusion. This kind of responsive empathy allows the AI to adjust its approach, pacing, and tone to build trust and reduce student anxiety—just as a great human tutor does.

Adaptability is equally critical. A skilled human tutor continuously adjusts their strategies based on how the student is progressing. Similarly, an AI tutor must be able to recognize when a concept hasn't been understood and reframe it using different analogies, examples, or levels of complexity. It should tailor lessons to match the learner's cognitive style, previous knowledge, and goals—providing scaffolding when needed and stepping back to encourage autonomy when appropriate.

Clarity and communication are foundational. An AI tutor must present information in a way that is accurate, coherent, and pedagogically sound. Like a good human tutor, it should explain complex topics step-by-step, highlight key ideas, and check for understanding before moving on. It should also ask thoughtful questions that promote critical thinking and guide students to make their own discoveries, rather than simply delivering answers.

Lastly, an ideal AI tutor should cultivate a sense of curiosity and motivation in the learner.

Skilled human tutors often inspire students through encouragement, positive reinforcement, and by connecting material to students' interests or goals. An AI tutor should replicate this by personalizing content, celebrating progress, and suggesting meaningful challenges that spark a student's intrinsic motivation to learn. Together, these qualities ensure that an AI tutor is not just informational but transformational—supporting not only what students learn, but how they grow as learners.

While we have been contemplating how to construct an AI tutor like this, we were lucky enough to be included in the pilot AI from UC, called BearcatGPT, that is powered by ChatGPT within UC's private environment. We started working towards building an AI tutor in the Spring of 2025 and have made good progress. Eventually, we are hopeful that we will be able to create a plethora of tutoring solutions that can be customized at the course level, and that faculty can integrate at the course level. We envision that one day every UC student will have access to this AI tutor.