



AI ANXIETY IN HIGHER EDUCATION: HOW UNDERGRADUATE RESEARCH CAN HELP

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ENDORSED BY THE CUR BOARD OF DIRECTORS

The Council on Undergraduate Research (CUR) Board of Directors is united in its support of a clear and thoughtful position on the role of artificial intelligence in undergraduate research. As AI continues to shape how knowledge is created, analyzed, and applied, the Board recognizes undergraduate research as a powerful framework for helping students engage with AI responsibly, ethically, and critically.

Undergraduate research equips students with the skills necessary to question assumptions, evaluate sources, understand limitations, and apply emerging technologies with intention.

By applying this critical frame to any use of AI within mentored research experiences, institutions can foster transparency, academic integrity, and equity—ensuring students are not only users of AI tools, but informed contributors to their development and application.

The CUR Board affirms that undergraduate research provides a unique and essential pathway for preparing students to navigate an AI-enabled future. Through inquiry-driven learning, mentorship, and interdisciplinary exploration, undergraduate research empowers students to understand both the potential and the responsibility that comes with rapidly evolving technologies. This shared position reflects CUR's commitment to advancing innovation while centering student learning, ethical practice, and inclusive access across all disciplines.

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The rapid advancement of generative Artificial Intelligence (AI) over the last few years has raised alarms across higher education. Will these tools make the skills of a college graduate obsolete? Or is this just another tech bubble driven more by ambition than reflection that risks collapsing under the weight of its own ethical and societal implications? Can these tools revolutionize education? Or are they just a super-powered way for students to cheat?

Higher education is searching for strategies that are robust in the face of this abundant uncertainty. Are there practices we should move away from and others we should stand behind? At CUR we believe that undergraduate research (UR) will emerge as one of the strongest high-impact practices we can pursue in an educational landscape changed by AI. UR is a tried and true practice that has already been incorporated into our tactics as we execute the higher education mission. Continuing to invest in this approach and intentionally nurturing its practice can help us address many of the challenges AI brings to the table and the opportunities it can provide for knowledge sharing.

“The abilities of today’s AI tools compel us to grapple with a key question about the focus of the education we provide: **what skills do students need to thrive in an AI future?**”

The AI models of 2022 were surprising for their facility with language, but full of hallucinations and at best struggled to mimic a ‘C’ student. But the best agent-enhanced models in 2025 can often tackle routine tasks with surprising, if not expert, skill. Where this trajectory leads is uncertain. But even the abilities of today’s AI tools compel us to grapple with a key question about the focus of the education we provide: what skills do students need to thrive in an AI future? Similar technology-driven transitions have happened in the past. Most recently, as the internet has given us ubiquitous access to information, higher education has shifted the emphasis in the skills we teach from retrieving and memorizing information to critically evaluating the over-abundance at our fingertips. *What shift in emphasis will AI bring?*

First, students will need to become skilled at deciding when a particular task can be handed off to AI and how to do that effectively. Second, as AI gets more capable, it will be increasingly critical that students are fluent in the skills that are beyond AI’s reach – work that only humans can do.

These are tasks that are high-level and integrative. They involve interacting with people, tools, and environments and then synthesizing across all those domains. They include reacting to evolving priorities and not simply solving problems, but deciding what problems need to be solved. They are intentionally self-reflective: do I have the right knowledge to make a decision, or do I need to seek outside support from an expert or even an AI?

These are the skills to tackle real-world problems in all their messiness, including the wicked problems that face the next generation of graduates. This work requires creativity and collaboration. It requires engaging in trust-building within small working teams and in external communication to multiple audiences. Participation in undergraduate research experiences is an ideal way to practice and develop exactly this set of skills. UR puts students in positions of independent decision-making, where the challenges they face and the strategies they need to employ are emergent.

UR helps students develop these skills in a mentored environment where failure and experimentation is the expected path to learning. There is alignment between what UR offers students and the challenges AI has raised for higher education. We can see the alignment in a number of specific cases.

Undergraduate Research as Essential Preparation for Confronting AI-Era Challenges

Assessing Student Learning. One immediate challenge posed by AI is navigating the line between appropriate support for learning and inappropriate reliance on technology, especially in the context of commonly used summative assessment tools like the traditional academic essay. As educators experiment with a variety of strategies to navigate the new assessment landscape, one direction is to emphasize more process-based assessment. Holistic assessment approaches—like the authentic assessments used in project-based or service learning or even just graded iterative drafts—can help bypass AI's ability to fake final products by evaluating student engagement throughout longer projects. This evolution in assessment strategies can build on practices and educator expertise gained from their involvement as mentors in undergraduate research programs. The structure of a UR experience, both its open-endedness and clear emphasis on the mentoring process rather than final product, naturally aligns with the sort of learning and assessment environment we will see increasingly in the future. While UR won't resolve the immediate need to rethink some long-standing grading approaches, it can help model one of the ways forward.

Preparing students for a world of entry-level work changed by AI. Entry level jobs have traditionally focused on completing a set of low-risk, routine tasks while getting up to speed on the culture and practices that need to be mastered to move up to higher-level work.

But if those routine tasks are now taken care of by AI, “entry-level” workers will need to come through an employer’s door ready to tackle higher-level, human-only work immediately. UR offers students headed for the workforce this critical opportunity to practice and develop these skills in a low-risk environment with mentors focused on the student’s development rather than the bottom line.

As employers rethink what entry level roles look like, it will be critical for institutions to be able to articulate -- to employers, potential students, and internally -- how their programs prepare students for these new roles. How UR serves as a model in this work is illustrated in several reports which draw the connection between the skills developed from UR experiences and future workplace needs (*see reports by Hall, E. et al, and Mekolichick, J. in references*). These reports reveal that students understand the connections between their UR experience and their future careers. Furthermore, the reports provide a mapping between the NACE competencies recognized by employers and student learning in UR experiences. Institutions can partner with associations like CUR to build on work like this to lay out a clear vision of how their programs prepare their students for a future that includes AI.

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Higher education's mission is not only to train a workforce, but also to help develop an informed citizenry prepared to make the critical decisions that will lead to thriving communities and lives of meaning. While we may look hopefully to the AI-optimists' claims about its potential to solve our big problems in the future, AI's skill

at generating and disseminating misinformation is a clear and present danger. The students we are preparing will need to be more skilled than ever before at critically evaluating what's presented to them. What constitutes evidence and what are intellectually sound ways of navigating uncertainty? They will benefit from a deep understanding of how real knowledge is created. UR experiences offer a chance for students to participate in the knowledge-generation process

to see firsthand how the small pieces of authentic inquiry from individual scholars fit together into the two steps forward, one step back dialog that generates understanding about our world. A UR participant when presented with a new graph or claim will be inclined to think beyond it, to the data behind it or the person or process that created it. Their UR experience will have demystified the origin of expertise and empowered them to question and critically evaluate.

UR can promote civic engagement which is both foundational to restoring public trust in the research enterprise and a counter balance to AI-accelerated misinformation. When undergraduate researchers apply their skills to local contexts—presenting to city councils, contributing to community-based projects, or addressing shared challenges—they embody the role of science in a healthy democracy. Empowering this form of advocacy ensures that future scholars and citizens alike see research not as distant expertise, but as a vital civic practice that informs decision-making and strengthens communities.

Reacting to the rapid evolution of disciplinary practices, AI has the potential to reshape the ways we generate and disseminate new knowledge. Each discipline is grappling with what AI means for its norms and experimenting with how it might facilitate new paths forward. From the ethics of using AI to help author papers to surprising new areas

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These **mentor-led research experiences** model the adaptability and ethical grounding disciplines need to navigate AI disruption.”

of research, the landscape is changing rapidly. Undergraduate research puts students hands-on with current scholarly exploration even as it intersects with AI. For a student engaged in UR, “what is appropriate use of AI when creating a scientific poster” isn't a theoretical question from a class discussion, it's a real issue they need to navigate. UR presents students with the opportunity to learn authentic, disciplinary-relevant AI best practices as they are emerging. These mentor-led research experiences model the

adaptability and ethical grounding disciplines need to navigate AI disruption.

And this disruption is only just beginning. [Current examples of how AI is impacting research range](#) from historical LLMs to explorations of whether the complete research cycle can be driven by AI: from identification of a research question all the way through the creation of a [scholarly publication](#) describing research conducted by AI. Wherever these paths lead, they are likely to create a series of not-yet-anticipated AI-driven challenges for higher education.

The Path Forward

This disruption has created a mix of worry, optimism, and a call for action across the higher education landscape. A recent survey of higher education leaders by AAC&U and Elon University's Imagining the Digital Future Center (2025) revealed that a majority of respondents "believe their institutions are not very or not at all ready to use GenAI for such things as: preparing students for the future...preparing faculty to use GenAI for teaching and mentoring...and helping non-faculty staff use these tools for work." Despite worries about preparation, the survey found that higher education leaders are optimistic about the capacity for GenAI tools to enhance student learning as well as improve research skills, student writing, and creativity. An EDUCAUSE QuickPoll (Burns & Muscanell, 2024) of higher education professionals discovered "a large majority felt that their institution should focus more on using AI to enhance student learning experiences (71%) and to create new approaches to learning design and assessment (70%)."

We need to decide what moves to make so that higher education can continue to fulfill its obligation to prepare our students. Practices like undergraduate research, that put students in authentically complex and challenging situations while providing support for learning and growth, will become increasingly central. In an age when AI can replicate content but not curiosity, and when many worry that AI will weaken the bond between faculty and students through automated tutoring and grading, undergraduate research offers a powerful counterpoint. UR both generates and strengthens the critical faculty-student bond while signaling to employers and society that institutions are preparing thinkers, not task-doers. The work ahead will depend on the strength of our communities, associations, and partnerships. No single institution can navigate the evolving research and AI landscape alone. CUR is here to support you, along with your faculty, staff and students, as you build and support the execution of UR and an AI-resilient model of learning—one grounded in mentorship, discovery, and civic engagement. That is where innovation and trust grow.



THE FUTURE DEMANDS HUMAN-CENTERED SKILLS THAT AI CAN'T REPLACE.

While AI excels at routine tasks, students will increasingly need skills like critical thinking, ethical judgment, creativity, collaboration, adaptability, and problem framing. UR intentionally develops these higher-order, integrative skills through real-world, mentored inquiry.

Recognizing that no institution can navigate AI disruption alone, CUR affirms its role in supporting faculty, staff, and students as they strengthen undergraduate research and build a future-ready, human-centered model of education.

UR SUPPORTS MORE AUTHENTIC, PROCESS-BASED ASSESSMENT

AI complicates traditional assessment methods, but UR models a shift toward holistic, process-oriented evaluation, emphasizing mentorship, iteration, reflection, and learning over final products alone.

UR PREPARES STUDENTS FOR AN AI-ALTERED WORKFORCE

As AI automates many entry-level tasks, students must arrive career-ready for complex, human-driven work. UR provides a low-risk environment where students practice decision-making, problem-solving, and professional skills valued by employers.

UR EMBEDS ETHICAL, DISCIPLINE-SPECIFIC ENGAGEMENT WITH AI

As disciplinary norms around AI evolve, UR places students at the forefront of real-time scholarly practice—learning how to use AI appropriately, ethically, and transparently under mentor guidance.

UR FOSTERS CIVIC ENGAGEMENT AND PUBLIC TRUST IN RESEARCH

By applying research skills in community contexts, students learn to communicate knowledge responsibly and contribute to democratic decision-making—counterbalancing AI-driven misinformation and restoring trust in the research enterprise.

UR STRENGTHENS STUDENTS' ABILITY TO CRITICALLY EVALUATE INFORMATION

In an era of AI-generated misinformation, UR helps students understand how knowledge is created, evaluated, and challenged—empowering them to assess evidence, question claims, and navigate uncertainty as informed citizens.

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