



Achieving Excellence in Workforce Education

Using GenAI Responsibly to Develop NSF ATE Grant Proposals

Part 1: AI in STEM Education Series

CCPI-CAST

AUGUST 22, 2025

1:00 – 2:00 PM ET

ccpi-stem.org/webcasts-podcasts/



PRINCE GEORGE'S
COMMUNITY COLLEGE

Presentations Slides , Zoom Recordings, & Upcoming CCPI-Casts

- ❖ Available on the CCPI-STEM website @ ccpi-stem.org/webcasts-podcasts/
- ❖ 16 previous CCPI-Cast episodes available as both webcasts and podcasts
- ❖ Upcoming 4-part CCPI-Cast series on **AI in STEM Education**: registration links available @ ccpi-stem.org under Upcoming Events
 - **Fri, Sept 26, 2025**: AI in STEM Education **Part 2**: Transforming Teaching and Learning with AI: A Live Demonstration for Faculty, Staff, and Administrators; Moraine Valley Community College
 - **Fri, Oct 17, 2025**: AI in STEM Education **Part 3**: The National Applied AI Consortium; Miami Dade College
 - **Fri, Nov 14, 2025**: AI in STEM Education **Part 4**: Developing the Blue-Collar AI Workforce; Sinclair Community College



Welcome and Introductions

Today's Speakers

- **Dr. Melanie Williamson**, Dean of Innovation, Bluegrass Community and Technical College, KY
- **Retired Prof. Cindy Tucker**, Computer Science, Bluegrass Community and Technical College, KY

Today's Moderator

- **Dr. Elizabeth K. Hawthorne**, CCPI-STEM Co-PI, Senior Professor Emerita, Computer Science and Cybersecurity, Union College, NJ

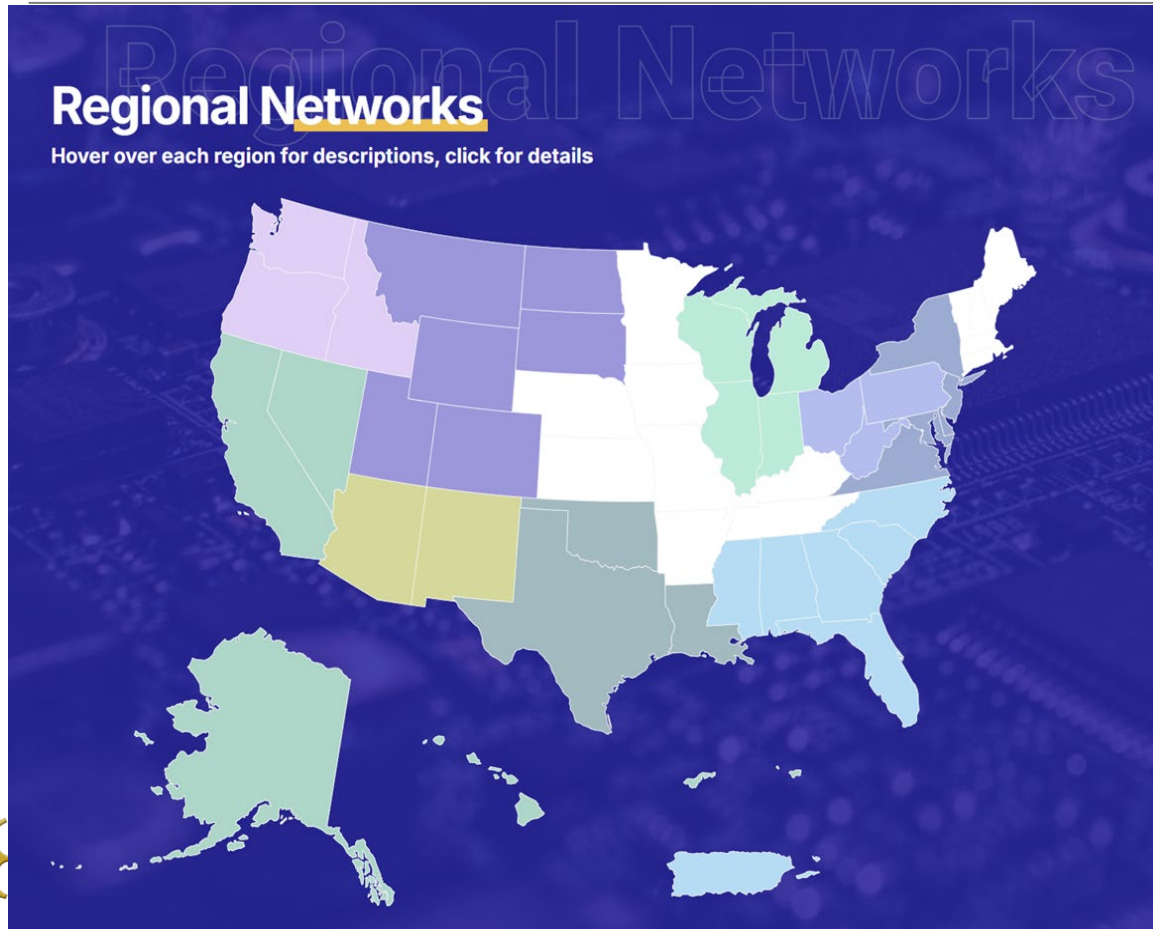


Today's Topics

- Key Initiatives of the CCPI-STEM Initiative - Dr. Charlene Dukes, Co-PI
- National Artificial Intelligence Research Resources ([NAIRR](#)):
NAIRR Pilot Expansion: Capacity and Community for Community Colleges (NSF CISE Award: 2518520)
- General Information about AI
- 2023 NSF Notice to the Research Community and 2026 Draft PAPPG
- Tips for Using GenAI to Develop NSF ATE Grant Proposals
- References
- Audience Q & A and Poll



Key Initiatives of CCPI-STEM



CCPI-STEM initiative focuses on advancing STEM workforce education, and promoting the NSF Advanced Technological Education (ATE) program

- Establishment of community college **Regional Networks** for advancing STEM workforce education and encouraging academic and business partnerships
- CCPI-STEM **Fellows & Mentoring Program**
- Development of NSF **ATE instructional modules** for inclusion in community college leadership graduate programs and leadership institutes
- **Dissemination:** National, Regional, Local CCPI-casts, Presidents' Press, Conferences, Publications, and 3 Thought Leaders Dialogues w/ the **League for Innovation in the CC**



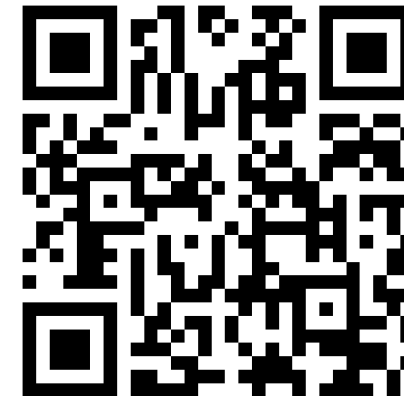
National Artificial Intelligence Research Resources ([NAIRR](#))

- NAIRR Pilot Expansion Project: Capacity and Community for Community Colleges (NSF CISE Award: 2518520)
- **Goal 1:** bring together community college faculty through virtual roundtable discussions and an in-person conference to help instructors build confidence and skills to teach AI, share best practices for inclusive AI education, and encourage more faculty to include AI in their courses.
- **Goal 2:** Promote the use of resources from nairrpilot.org and support the ongoing development of AI content for both computing and general education classes.



NAIRR Pilot Expansion: Community Colleges

- Community college participants from geographically diverse locations
- Host 4 - 5 virtual round tables over the next 8 months
- Spring 2026 in-person conference (the League?) to share ideas
- Have questions? Email Melanie.Williamson@kctcs.edu or visit nairrpilot.org/projects/expansion/fa-2community
- Interested in participating? Use the QR code or visit forms.office.com/r/QYg9GjfcMK



AI

General Information



Generative AI vs Agentic AI

Artificial intelligence (AI) is the simulation of human intelligence by a machine (1949 Turing Test a.k.a. imitation game)

- **Generative AI** focuses on creating new content, like text, images, or code. Is **reactive** and output-focused.
Examples: AI Assistants like ChatGPT, Claude, Perplexity, Microsoft Copilot, etc. (Generative Pre-Trained Transformer)
- **Agentic AI** autonomously takes actions, learns from its environment, and adapts its behavior to achieve goals, often without direct human oversight. Is **proactive** and action-oriented.
Examples: autonomous vehicles and customer service chatbots



GenAI, LLMs and Prompt Engineering

- **Generative AI** focuses on generating new content (text, images, videos, data, etc.) - acting as co-creator with humans
- **Large Language Models (LLMs)** refers to deep learning models that are pre-trained on vast amounts of data and used by GenAI
- **Prompt Engineering** refers to guiding the LLM for a specific output needed; AI response by target audience (use professional voice)



GenAI Tools and Associated Strengths

- **OpenAI GPT-5.0:** conversational GenAI and content generation
- **Anthropic Claude:** creative writing and real-time collaborative content generation
- **Google Gemini:** tasks integrating text, images, audio, video, and code
- **Meta LLaMA 4:** research and academic use (open source)
- **Perplexity.ai:** research and context-driven search engine
- **Microsoft Copilot:** boosting productivity in Microsoft Office tools

MANY other GenAI Tools and versions



Limitations of GenAI

- **Hallucinations** (false or misleading results)
- **Human oversight** required to ensure ethical and responsible use
- **Static Knowledge** (frozen at the point of its training data)
- **Built-in bias** from training data
- Lack of true understanding

Asked for proof that dinosaurs built a civilization, ChatGPT claimed there were fossil remains of dinosaur tools and stated "some species of dinosaurs even developed primitive forms of art, such as engravings on stones".



Impact of GenAI

- **Computationally** intensive
 - Training
 - Over 300 million active ChatGPT users per week
- **Resource** intensive
 - Technology resources
 - Environmental resources (water, land)
 - Each prompt in ChatGPT uses ~1 12-oz bottle of water for cooling the Cloud servers in AI power plants
 - [Stargate Project](#) (Abilene, TX)



Proprietary vs. Open-Source LLMs

- **Proprietary LLMs** are language models developed and/or owned by a company which restrict access and usage rights to the company (employees and/or customers)

- Free Open-source vs Paid Proprietary versions
 - Hosting
 - Privacy (organizational protection)



LRMs

- **Large Reasoning Models (LRMs)** are a step beyond LLMs and emerging
 - ChatGPT 5.0 has some reasoning & logic features, e.g., improved math and computer programming
- LRMs engage in complex reasoning processes to mimic human thinking, analyze situations, employ deductive logic, and make informed decisions
- Excels in mathematics, programming, science and research



- (Chandrasekar, 2024 and Joshi, 2025)

Sample Emerging LRMs

- OpenAI O3
- Claude 4 Opus
- Google Gemini-Pro
- xAI Grok 4

- **And others...**



2023 NSF Notice to the Research Community and 2026 NSF PAPPG DRAFT



NSF Notice to Research Community Regarding the Use of Generative AI

(December 14, 2023)

To safeguard the integrity of the development and evaluation of proposals in the merit review process, this memo establishes guidelines for its use by reviewers and proposers:

- ✓ NSF reviewers are prohibited from uploading any content from proposals, review information and related records to **non-approved** generative AI tools.
- ✓ Proposers are encouraged to indicate in the project description the extent to which, if any, generative AI technology was used and how it was used to develop their proposal.
- ✓ NSF expects to update the 2025 PAPPG to align with the requirements stipulated in this memorandum or with additional guidance and requirements as necessary. NSF will also continuously evaluate future applications of generative AI technology for use by staff and the research community.

<https://new.nsf.gov/news/notice-to-the-research-community-on-ai>

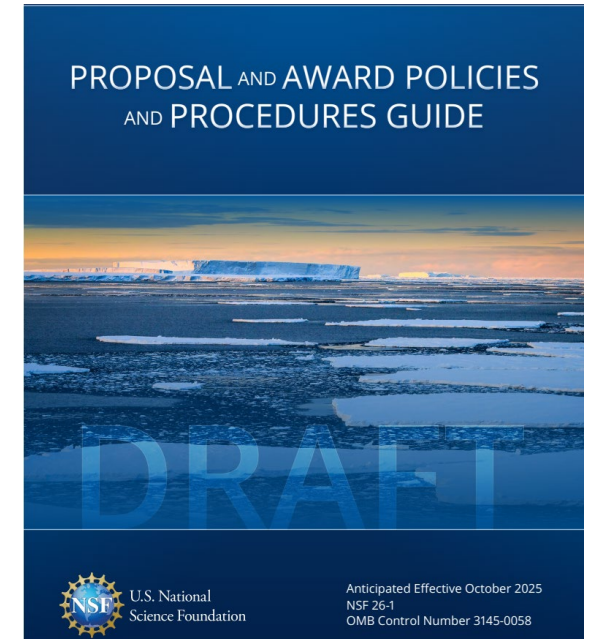


October 2025 Anticipated Release Date

Proposal and Award Policies and Procedures Guide (26-1)

RESEARCH MISCONDUCT means fabrication, falsification, or plagiarism (whether committed by an individual directly or through the use or assistance of other persons, entities, or tools, including artificial intelligence (AI)-based tools) in proposing or performing research funded by NSF, reviewing research proposals submitted to NSF, or in reporting research results funded by NSF. The Foundation's Research Misconduct Regulation is found at 45 CFR part 689.

https://nsf-gov-resources.nsf.gov/files/draftpappg_dec2024.pdf



Sample GenAI Statement

The PIs used the AI-powered <AI tool(s)> to research existing ideas. To maintain proposal integrity and authenticity, unique ideas were not generated by AI technology. In all cases, the PIs take responsibility for the intellectual merit and content of this proposal.

- ✓ Proposers are encouraged to indicate in the project description the extent to which, if any, generative AI technology was used and how it was used to develop their proposal



Tips for Using Open GenAI to Develop NSF ATE Grant Proposals



Do not rely solely on GenAI to produce any section of your grant proposal

- Using content from a GenAI tool can introduce plagiarism and biases
- Using GenAI to “write” your grant can have a negative impact on your **academic integrity, intellectual merit, and fundability**
- Proofread carefully, checking accuracy, readability, and tone to ensure your message conveys exactly what you intend
- Grammar improvement tools, such as Grammarly, might be better suited



Learn how your conversations are utilized by GenAI tools for LLM training

- Will your content appear in responses to others?
- Will the responses and ideas you receive come from others?

**This can have an impact on professional academic integrity
and
the originality of your grant proposal**



Fact check GenAI responses

- Check for GenAI hallucinations and biases by
 - Checking references
 - Assessing reasonableness
 - Verifying with a non-AI, traditional search

- Read responses to see if they fit your context and scenario



Uses of GenAI to Refine NSF ATE Grant Proposals

- Motivating Rationale
- Broader Impact and Societal Impact
- Budget Costs and Budget Justification for Specific Items
- Dissemination Plan (new avenues for dissemination)
- Sustainability (creative ideas for sustaining project)
- Evaluation Plan (if not allowed to name an evaluator)
- Project Timeline suggestions



References

- [Artificial Intelligence and the Future of Work](#)
- [Generative AI vs. Agentic AI](#)
- [Innovations in Education and AI: eCampus News](#)
- [National Applied AI Consortium](#)
- [National Artificial Intelligence Research Resource \(NAIRR\) Pilot Expansion - Capacity and Community for Community Colleges](#)
- [NSF Draft of 2026 PAPPG](#)
- [NSF Notice to Research Community](#)
- [The Truth about AI in Grant Writing](#)
- [Top 10: Generative AI Tools](#)



Audience: Poll, Questions & Discussions



ccpi-stem.org

leadership@ccpi-stem.org

[linkedin.com/company/community-college-presidents-initiative/](https://www.linkedin.com/company/community-college-presidents-initiative/)