



Maryland Center for Computing Education (MCCE)



About MCCE



The Maryland Center for Computing Education (MCCE) is housed within the University System of Maryland. The University System of Maryland (USM) is the state's public higher education system. USM's 12 institutions, 3 regional higher education centers, and system office work closely together to leverage their collective expertise and resources, share best practices, increase the system's effectiveness and efficiency, and advance USM's mission to improve the quality of life in Maryland. MCCE was formally established in statute and funded with the enactment of *Securing the Future: Computer Science Education for All* on July 1, 2018. The purpose of MCCE is to "expand access to high-quality computer science education in grades pre-kindergarten through 12 by strengthening the skills of educators and increasing the number of computer science teachers in elementary and secondary education (Maryland Code, § 12-118)." MCCE received an initial state funding in 2018 and an additional state funding each year since 2018. MCCE has worked to increase the computing knowledge and skills of the Maryland public teacher workforce and enable the Maryland Local Education Agencies (LEAs) to offer more computing instruction.

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Designing for the Unseen: Preparing CTE Learners for AI- Enhanced Industries

A guide for CTE educators to prepare students for success in an AI-transformed workforce.

Presented by Quiana Bannerman



The AI Revolution: A New Era for CTE

Artificial Intelligence (AI) encompasses a wide range of computer systems designed to perform tasks that traditionally require human intelligence. These tasks include, but are not limited to, learning from experience, making decisions, identifying patterns in text and imagery, understanding natural language, and solving complex problems. Integrating AI into educational settings demands thoughtful planning and strategic execution (TeachAI, 2024).

AI is rapidly transforming industries, creating new opportunities and challenges for today's career and technical education students.

To effectively prepare Career and Technical Education (CTE) students for an evolving workforce, CTE programs must actively incorporate AI technologies and create meaningful opportunities for students to explore, understand, and apply them.

This presentation provides actionable strategies for CTE teachers to prepare students for AI-enhanced careers.



AI in CTE Careers Personas

Activity: AI Skills for Future Careers

Instructions: Explore the personas posted around the room. For each one, identify at least one AI-related skill that the student should begin developing now to succeed in their future career. Write your response on a sticky note and place it beneath the corresponding persona profile.

10 minutes

[AI-in-CTE-Careers-Personas.pdf](#)





Why AI Matters for CTE Students

Cross-Industry Impact

AI is transforming all sectors - from healthcare and construction to automotive and agriculture - not just tech companies.

Evolving Skills Demand

Employers increasingly seek workers who can collaborate with AI systems, interpret AI outputs, and understand when human judgment should override AI recommendations.

Competitive Advantage

CTE students who understand, and leverage AI will have significant advantages in the job market and career advancement.



Deepening Digital Literacy: Foundational Skills

1

Practical AI Literacy

Teach students to use AI tools effectively and ethically through hands-on projects with real-world applications in their career pathway.

- Introduce industry-specific AI tools
- Practice prompt engineering skills
- Develop AI evaluation frameworks

2

AI Capabilities & Limitations

Guide students in understanding what AI can and cannot do through comparative analysis activities.

- Identify AI hallucinations
- Recognize outdated information
- Understand AI biases

3

Critical Thinking Skills

Develop frameworks for evaluating AI outputs and making human-centered decisions.

- Verify AI-generated information
- Question assumptions
- Translate AI outputs into industry-relevant solutions through skilled interpretation



Enhancing Technical Skill Development with AI



AI as Learning Tool

Integrate AI tools to support skill acquisition through simulation, feedback, and guided practice



Personalized Learning

Use AI to create customized learning paths based on student strengths, weaknesses, and learning styles



Workflow Enhancement

Train students to use AI for design iteration, troubleshooting, analysis, and quality control



Ethical Considerations: Navigating the AI Landscape



Ethical Implications

Facilitate discussions on workplace scenarios where AI use raises ethical questions about privacy, bias, and human agency

Responsible AI Practices

Teach students to recognize biased data, understand consent, and implement responsible AI workflows

Human Oversight

Emphasize the critical role of human judgment in reviewing, correcting, and improving AI outputs



Practical Strategies for CTE Teachers



Start Small

1

Begin with basic AI applications that complement existing curriculum:

- Use AI for brainstorming project ideas
- Implement AI-powered safety checklist tools
- Explore simple text-to-image applications for design concepts

Foster Field Exploration

3

Guide students to discover AI applications specific to their career interests:

- Research industry-specific AI adoption trends
- Interview professionals about AI impact in their field
- Create personal AI toolkits for their chosen career path

2

Build Integrated Projects

Create projects that incorporate AI into students' technical skill development:

- Design AI-enhanced solutions to industry problems
- Compare human vs. AI performance on technical tasks
- Use AI to document and optimize workflow processes



Resources and Support

AI Tools for CTE Classrooms

- Canva.com - AI-enhanced design tools
- Synthesia.io - Video creation with AI avatars
- ChatGPT - Text generation and analysis
- Dall-E - Image generation for design concepts
- Descript - Audio/video editing with AI

Professional Development

- MCCE AI for Educators Workshops
- AI4EDU - Teacher training resources
- ISTE AI in Education certification
- CTE-specific AI webinars (ACTE)
- Industry partner shadowing programs



The Future is Now: Empowering CTE Learners

Embrace the AI Opportunity

By integrating AI into CTE programs now, teachers prepare students for emerging career opportunities and ensure they remain competitive in rapidly evolving industries.

Balance Technical & Human Skills

The most successful future workers will combine technical expertise with uniquely human capabilities like creativity, ethics, and interpersonal communication.

Lead the Change

CTE educators have a crucial role in shaping how the next generation of workers will harness AI's potential while maintaining human-centered values in the workplace.



Resources

- [CSTA Identifying AI Priorities Report 2025](#)
- [TeachAI | AI Guidance for Schools Toolkit](#)
- [Day of AI - Free K-12 AI Literacy Curriculum + Best AI Tools for Education](#)
- [Building AI Resilient CTE Pipelines - CTE Policy Watch: A blog for CTE advocates](#)
- [Teaching CTE Students to Use AI | Edutopia](#)





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Statewide AI Model Pilot Project for Educators - Registration

<http://bit.ly/4kXMWre>

