

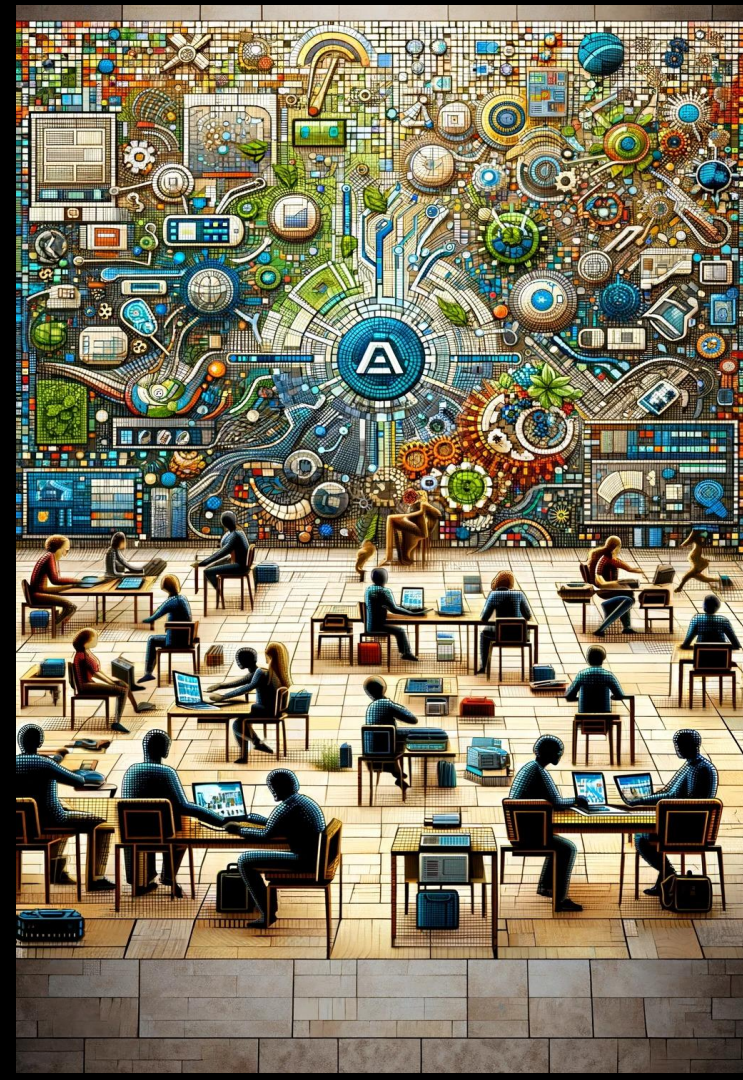
Preparing Students for an AI-Integrated Workplace: Authentic Assessments

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Objectives

1

Necessity of integrating AI competencies in education

2

Identify key student skills for a AI-Integrated Workplace

3

Provide practical authentic assessment examples from various disciplines

4

Provide examples of how to assess these skills

Poll 1

How do you currently use AI in education? Choose all that apply.?

- A) I haven't adopted AI in education yet.
- B) I allow students to use AI as part of an assignment.
- C) I integrate AI tools for personalized learning experiences.
- D) I use AI to assist in creating grading rubrics or quiz questions.
- E) I use AI in other ways in education not mentioned here.

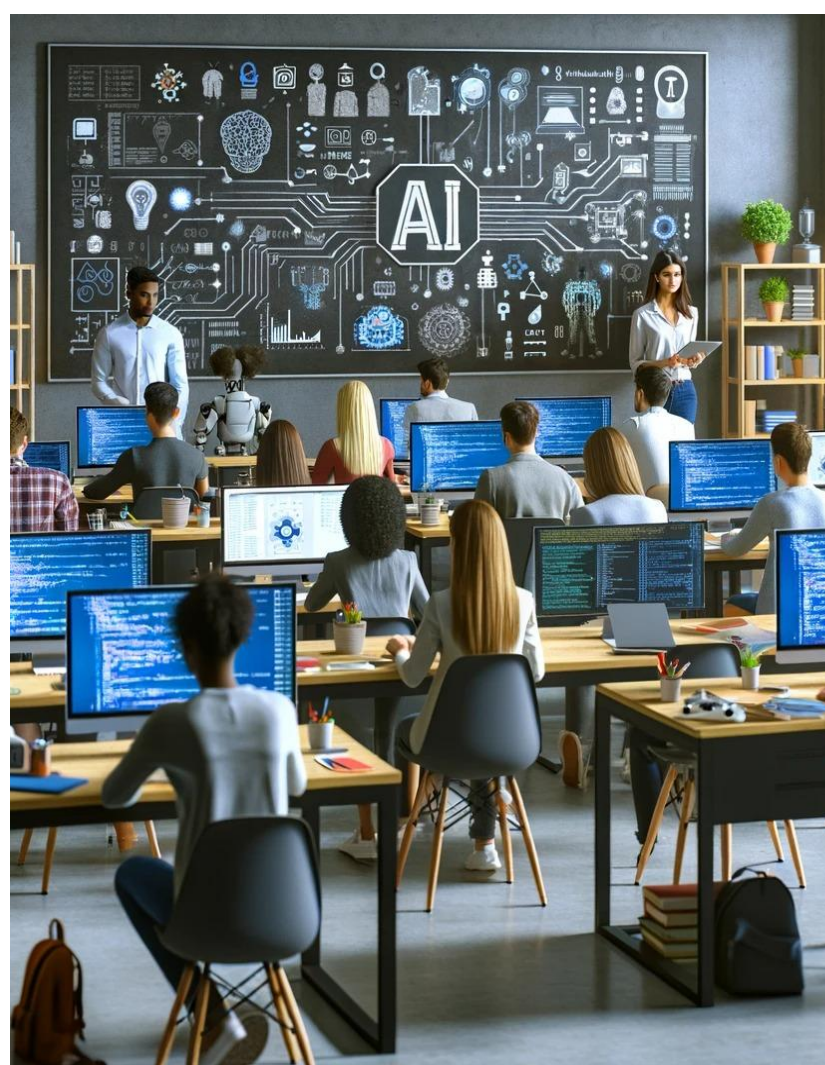


Generative AI



Challenges Using AI in Education

- **Ethical and Societal Implications:** Data privacy, bias in AI algorithms, equitable access to AI technologies ([Akgun & Greenhow, 2021](#)).
- **Teacher and Student Preparedness:** Enhancing teacher and student understanding of AI technologies—emphasizing AI literacy and ethical considerations ([Lin et al., 2022](#)).
- **Technological Integration and Accessibility:** Effective integration of AI tools, technical challenges, and accessibility to all students ([Luan et al., 2020](#)).
- **Trust and Privacy Concerns:** Building trust in AI systems among educators, students, and parents, handling and security of educational data ([Vincent-Lancrin & Vlies, 2020](#)).



Preparing Student for AI in the Workplace

- ..."the ability to **work "with" AI** will be increasingly important, as will the **ability to adapt to change**. Our students will need transferable, life-long skills that they can use to adapt and change along with continually evolving technology. And that almost certainly will include AI."

(Source: Preparing Students to Join the AI) Workforce - AVID Open Access, 2024)

- **What skills do students need to use with AI-based tools?**
- **How do we strengthen and assess these skills in education?**

Note: See handout "[Human Skills Needed in an AI-Integrated World](#)"

Authentic Assessment Defined



A holistic approach to evaluation, ensuring students are not only knowledgeable *but also **capable of applying their learning effectively.***

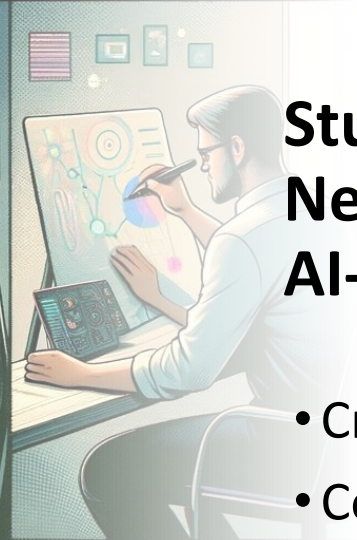
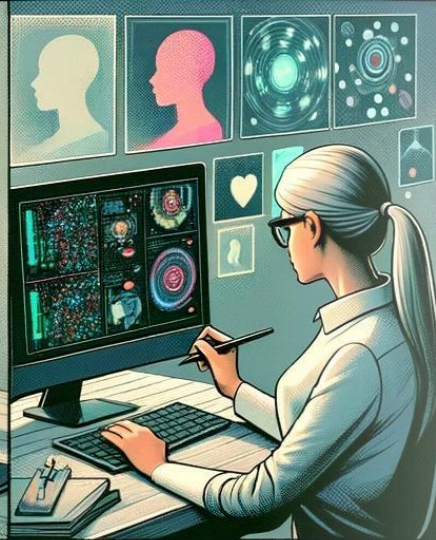
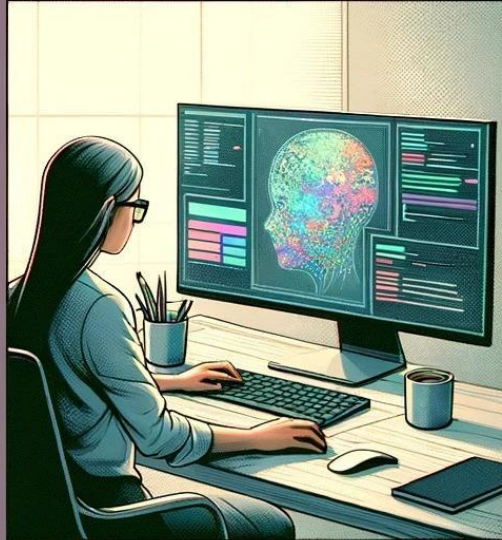


Bracey (1993) -- ***Beyond rote learning*** and memorization, encouraging students to construct responses and ***apply their knowledge, skills, social skills, and attitudes in real or simulated real-world situations.***

Poll 2

What are some of the human skills that you think are important when working in collaboration with AI?

- A) Critical thinking and problem-solving
- B) Creativity and innovation
- C) Communication and collaboration
- D) Ethical and social awareness
- E) All of the above



Student Skills Needed for AI-Integrated work

- Critical thinking skills
- Communication skills
- Creativity skills
- Teamwork skills

Skills

AI Strengths

Human Strengths

Critical thinking

Analyze and evaluate data using logical and mathematical algorithms, as well as identify patterns and trends that may not be obvious to humans.

Synthesize and apply information from various sources and perspectives, as well as **evaluate or judge the validity and reliability** of data and algorithms.

Communication

Process and transmit large amounts of data quickly and accurately, as well as generate natural language responses based on predefined rules or models.

Communicate with empathy, nuance, and context, as well as **understand the emotions, intentions, and feedback of others**.

Creativity

Generate new ideas, products, or solutions based on *existing data or models*, as well as adapt to changing situations and challenges.

Imagine and innovate beyond the limitations of data or models, as well as **express their individuality and originality**.

Teamwork

Collaborate with other AI systems or humans, as well as perform tasks that are repetitive, tedious, or dangerous for humans.

Collaborate with other humans or AI systems, as well as **respect and appreciate the diversity and differences** of their team members.



Integrating AI Competencies

Two Ways to Integrate AI into Authentic Assignments

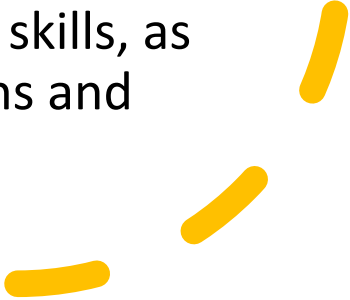
1. Focus on examining **AI as a topic** in the discipline.
2. **Integrate the use of AI-based tools** as part of an assignment.

AI as a Topic: Student Critical Thinking Skills

Help students to:

- **Evaluate** the accuracy and reliability, and the bias of information gathered.
- Identify and **solve problems** related to AI.

Assign students to conduct research, analyze data, evaluate sources, or critique arguments on issues or problems related to AI in their discipline. Students will practice research, analysis, evaluation, and synthesis skills, as well as, develop their own positions and perspectives.





Integrating AI: Student Critical Thinking Skills

Help students to:

- **Analyze, evaluate, and synthesize** information from various sources and perspectives
- **Evaluate the validity and reliability** of data and algorithms.

Ask students to:

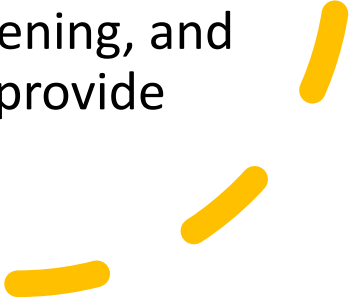
- **Compare/contrast** AI-generated and other sources of info, and justify their choices and conclusions.
- Identify and **address the strengths, weaknesses, opportunities, and threats** of using AI-generated info, and propose solutions/improvements.
- **Reflect** critical thinking **processes/** outcomes, and to provide constructive feedback/suggestions.

AI as a Topic: Student Communication Skills

Help students to:

- **Describe** AI and its inputs/outputs
- **Communicate** their findings, recommendations, and limitations to others.

Assign students to give oral presentations, write essays or reports, participate in class discussions or debates, or create podcasts or videos on topics related to their discipline and AI. Students will practice their speaking, writing, listening, and media skills, as well as receive and provide feedback.





Integrating AI: Student Communication Skills

Helps students to:

- **Express**, exchange, and comprehend information, ideas, opinions, or findings clearly and coherently
- Use appropriate **language, tone, and format for the audience, purpose, and context.**

Ask students to:


- Present AI-generated and other sources of information, using various modes and media, such as text, speech, images, or videos.
- Communicate AI-generated and other sources of information, using various genres and styles, such as academic, professional, or creative.
- Cite and acknowledge their AI-generated and other sources of information, using various formats and standards, such as APA, MLA, IEEE.

AI as a Topic: Student Creativity Skills

Help students to:

- **Generate new ideas, products, or solutions** that AI systems cannot
- **Adapt to changing situations** and challenges that AI systems pose.

Assign students to design a product, create a portfolio, compose a song, or write a story on themes or topics related to AI and their discipline. These assignments would help students practice their imagination, innovation, and adaptation skills, as well as express their individuality and originality.





Integrating AI: Student Creativity Skills

Helps students to:

- **Generate, adapt, or improve** information, products, or solutions based on existing data or models
- **Imagine or innovate beyond the limitations** of data or models.

Examples-Ask students to:


- Create novel and original AI-generated and other sources of information, using various tools and techniques, such as brainstorming, mind mapping, or prototyping.
- Modify and enhance their AI-generated and other sources of information, using various criteria and methods, such as novelty, usefulness, or quality.
- Express their individuality and originality in their AI-generated and other sources of information, using various elements and features, such as color, shape, or sound.

AI as a Topic: Student Teamwork Skills

Help students to:

- **Collaborate with other** humans and AI systems
- **Respect and appreciate** the diversity and differences of their team members.

Assign students to work in groups or pairs on projects, case studies, simulations, or games related to AI and their discipline. These assignments would help students practice their collaboration, negotiation, and respect skills, as well as appreciate and leverage the diversity and strengths of their team members.





Integrating AI: Teamwork Skills

Helps students to:

- **Collaborate** with other AI systems, humans, or peers
- **Respect and appreciate** the diversity and differences of their team members.

Examples- Ask students to:

- Work in groups/pairs to generate, share, or combine their AI-generated and other sources of information, using various platforms and channels, such as online, offline, or hybrid.
- Work in multidisciplinary /cross-cultural teams to generate, integrate, or apply their AI-generated and other sources of information, using various frameworks and models, such as STEAM or PBL.
- Contribute to and benefit from their team's goals or outcomes, using various roles and responsibilities, such as leader, follower, or facilitator.

Four Examples


Integrating AI into the classroom

Specific Examples of Integrating AI into Assignments


- **Engineering**: Students use generative AI tools to create novel and efficient designs for various engineering problems, such as bridges, aircraft, or buildings¹. They compare/evaluate their AI-generated designs with their own or their peers' designs and explain the advantages and disadvantages of each approach. Develops their ***design thinking, creativity, problem-solving, and teamwork skills***.
- **Medicine**: Students use generative AI tools to generate realistic medical images, such as X-rays, CT scans, or MRI scans, for diagnosis, training, or research purposes³. They analyze/interpret their AI-generated images, and compare them with real or simulated images. Develop their ***diagnosis, treatment, prevention, research, and education skills***.

Handout: [Integrating AI into Assignments by Discipline](#)

Specific Examples Integrating AI continued.

- **Education**: Students use generative AI tools to create personalized and adaptive learning content, such as quizzes, exercises, or summaries, for different subjects, levels, or styles⁴. They evaluate/reflect on their AI-generated content, provide suggestions for improvement. This assignment can help students ***develop their teaching, learning, assessment, feedback, and curriculum skills.***
 - **Business**: Students use generative AI tools to generate engaging and creative content (i.e. logos, slogans, ads, or videos) for business goals, such as branding, promotion, or conversion. They measure/optimize the effectiveness of their AI-generated content, and respond to customer feedback and needs. This assignment can help students ***develop their marketing, sales, customer service, product development, and innovation skills.***
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Assignment Example Sources

1. [Integrating AI into assignments | Teaching Commons](#)
 2. [AI-Resistant Assignments - Carleton College](#)
 3. [Designing Assignments and Activities with ChatGPT and Generative AI ...](#)
 4. [AI in Assignment Design | Center for Teaching Innovation](#)
 5. [ChatGPT Assignments to Use in Your Classroom Today](#)
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Assessing Integrating AI

Integration of AI Tools

Critical Thinking and Innovation

Understanding Implications of AI

Communication and Collaboration

Adaptability and Continuous Learning

Note: See Handout – [Rubric Assessing Skills in AI-Integrated Assignments](#) for specific rubric example

Assessing Integration of AI Tools - Discipline examples

Discipline	Marketing	History	Engineering	Education
Advanced	Utilizes AI chatbots to enhance customer service and engagement, applying natural language processing to interpret and respond to customer inquiries accurately.	Employs AI tools to digitize and categorize archival materials, making historical data more accessible and searchable.	Applies AI for predictive maintenance in manufacturing, using sensor data to prevent equipment failures.	Integrates AI educational software to support classroom teaching, providing additional resources and tailored feedback to students.
Developing	Begins to explore AI tools for market analysis, using basic sentiment analysis on customer reviews to gauge brand perception.	Uses AI-generated timelines to summarize historical events, but with limited depth in analysis and contextual understanding.	Tries out AI-based CAD tools for design improvements, but the application remains superficial with minimal impact on final designs.	Utilizes AI for grading and assessment with standard tools, but integration into broader pedagogical strategies is limited.

Assessing Critical Thinking and Innovation- Discipline examples

Discipline	Marketing	History	Engineering	Education
Advanced	Uses AI to identify emerging market trends, employing data analytics to craft strategies that challenge industry norms.	Applies AI to validate historical hypotheses with data analytics, bringing new insights into historical debates.	Utilizes AI to optimize energy consumption in smart grid systems, demonstrating innovative engineering solutions.	Integrates AI tools to foster critical thinking skills among students, using data-driven insights to tailor discussions and activities.
Developing	Begins to question the effectiveness of AI-driven analytics in marketing strategies, exploring basic alternatives for improvement.	Utilizes AI for historical research but with limited questioning of AI's biases and implications on historical accuracy.	Applies basic AI techniques to solve engineering problems but without significant innovation or questioning of methodologies.	Experiments with AI for educational purposes, showing some creativity in lesson planning but with room for deeper integration.

Assessing Understanding Implications of AI - Discipline examples

Discipline	Marketing	History	Engineering	Education
Advanced	Considers the privacy and ethical use of AI in customer segmentation, ensuring data protection and ethical marketing strategies.	Reflects on the biases AI might introduce into historical analysis, promoting a balanced use of AI in uncovering historical truths.	Considers the safety and ethical implications of AI in engineering projects, ensuring responsible design and implementation.	Addresses concerns about AI and student privacy, ensuring that AI tools used in education adhere to ethical standards.
Developing	Begins to recognize the importance of ethical considerations in AI-driven marketing, but with limited application or depth.	Acknowledges potential biases in AI-driven historical research, but lacks a thorough analysis of ethical implications.	Recognizes the potential ethical implications of AI in engineering but lacks a comprehensive approach to address them.	Recognizes the potential impact of AI on student privacy and fairness but has limited understanding of how to navigate these concerns.

Assessing Communication and Collaboration - Discipline examples

Discipline	Marketing	History	Engineering	Education
Advanced	Communicates AI-driven insights effectively to stakeholders, collaborating with the team to integrate these insights into marketing strategies.	Engages in collaborative research projects, using AI tools to share findings and foster discussions on historical methodologies.	Collaborates on engineering projects using AI, communicating effectively across different disciplines to achieve project goals.	Uses AI tools to support group learning activities, promoting effective communication and collaboration among students.
Developing	Begins to use AI tools in team settings, attempting to communicate insights but facing challenges in clarity or persuasiveness.	Participates in group projects using AI for historical analysis, but communication and collaboration skills need improvement.	Engages in collaborative projects using AI, but communication between team members and across disciplines is not optimized.	Implements group activities using AI tools but faces challenges in facilitating smooth communication and collaboration.

Assessing Adaptability and Continuous Learning - Discipline examples

Discipline	Marketing	History	Engineering	Education
Advanced	Actively learns about new AI applications in marketing, adapting strategies to leverage these tools effectively.	Keeps abreast of new AI tools in historical research, showing adaptability by incorporating these technologies into their work.	Adapts to new AI technologies in engineering projects, continuously learning to improve design and functionality.	Incorporates new AI tools into teaching practices, showing adaptability and a commitment to enhancing educational outcomes.
Developing	Shows interest in learning about AI but applies new knowledge inconsistently in marketing strategies.	Explores new AI technologies for historical analysis but hesitates to fully integrate these tools into research methodologies.	Begins to explore new AI technologies but lacks confidence in fully applying these to engineering challenges.	Shows openness to using AI in education but with limited exploration of new tools or methods for teaching.



Strategies to Reduce Misuse of AI

Authentic Assessment

- Personalize
- Higher Order Thinking
- Reflection and Application
- Creativity and Originality
- Critical Analysis
- Peer Review
- Presentation

Poll 3

How likely and how do you plan to use AI in education?

- A) **I am already integrating** Authentic AI assignments into my courses.
- B) **Very likely**, I see the benefits and challenges of AI assignments and I want to try them out.
- C) **Likely**, I am interested in the potential of AI assignments and I want to learn more about them.
- D) **Not very likely**, I am skeptical about the feasibility and effectiveness of AI assignments and I need more evidence or support.
- E) **Not likely at all**, I prefer traditional methods.




Q&A

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Prompt Engineering for Authentic Assessment 1) Ideas, 2) Instructions, and 3) Rubrics and feedback statements

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