

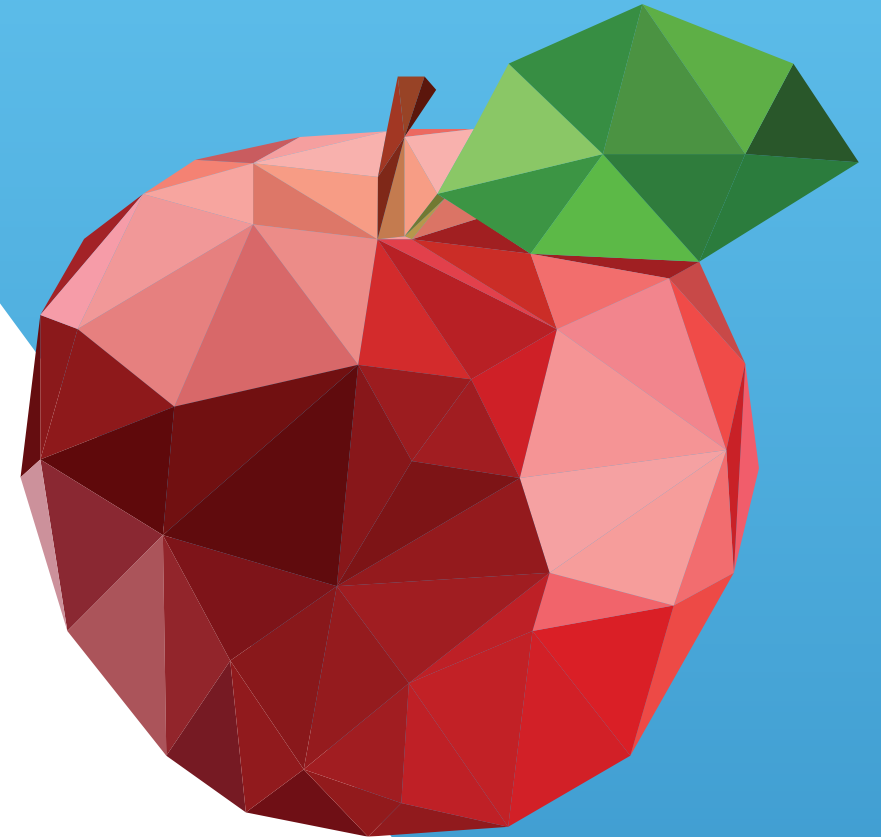
Meauxmentum Summit

# Teaching with AI: Reimagining Catapult Course Design for a New Era

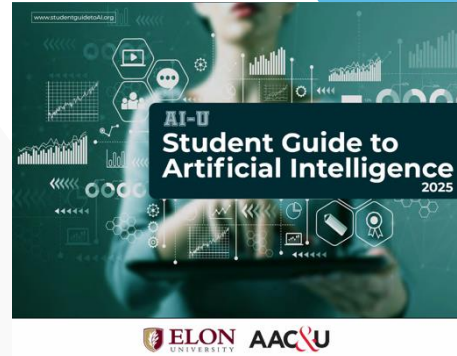
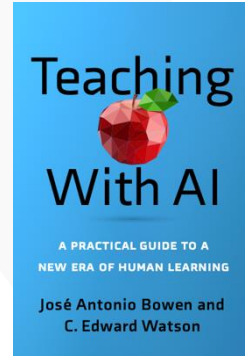
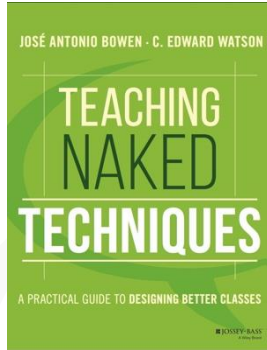
*How higher education can navigate our new  
grand challenge*

**Tuesday, December 2nd  
Online**

**AAC&U**



**C. Edward Watson, Ph.D.**

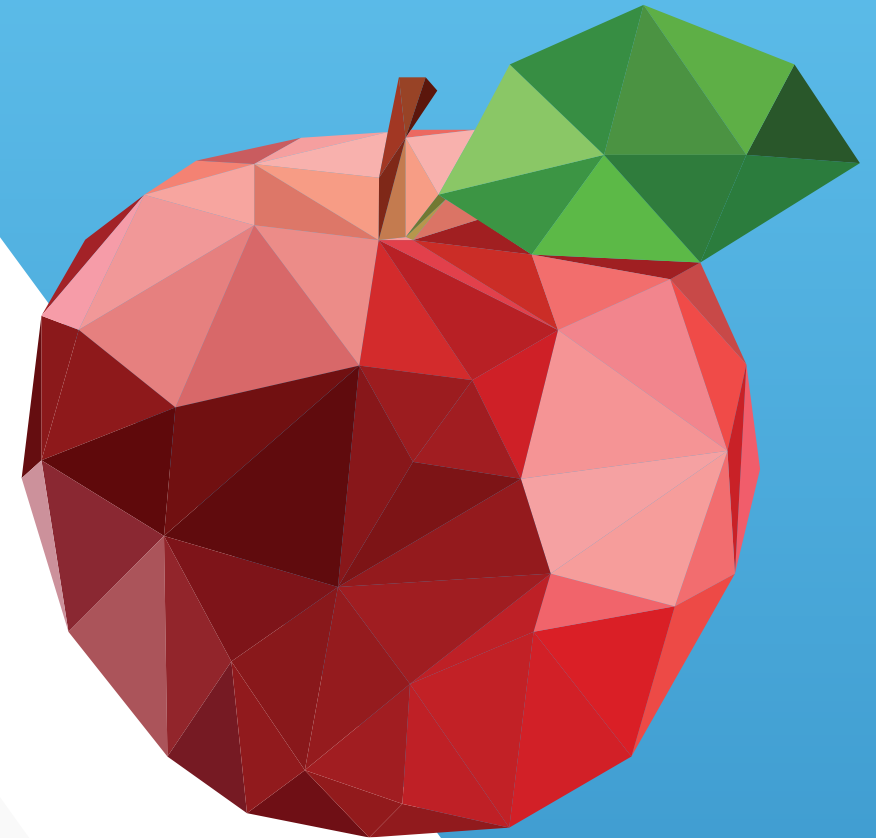


**Vice President for Digital Innovation  
American Association of Colleges and Universities**

**AAC&U**

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[\*\*http://eddiawatson.net\*\*](http://eddiawatson.net)



# How many journals are in the higher education domain?

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# What do we know about learning and cognition?

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# 1) Prior Knowledge Influences Learning

Last 4 digits of your phone \_\_\_\_\_

**Pre-Test**  
**Soil Fertility Workshop**  
**(circle your answer and check the box under each question)**

1. Which of the following terms includes the neutralizing ability, particle size, and moisture content of a lime material?

a. TNP	c. ENP
b. CCE	d. PMC

Yes, I know the Answer <input type="checkbox"/>	No, I am guessing <input type="checkbox"/>
---	--

2. The calcium and magnesium content in applied lime does not matter as long as the calcium soil test levels are greater than 200 parts per million and the magnesium soil test levels are greater than 50 parts per million and the calcium to magnesium ratio is greater than?

a. 6.5 to 1	c. 3 to 1
b. 4 to 1	d. 1 to 1

Yes, I know the Answer <input type="checkbox"/>	No, I am guessing <input type="checkbox"/>
---	--

3. The process of ammonium nitrogen converting to nitrate nitrogen is called volatilization?

a. True	b. False
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Yes, I know the Answer <input type="checkbox"/>	No, I am guessing <input type="checkbox"/>
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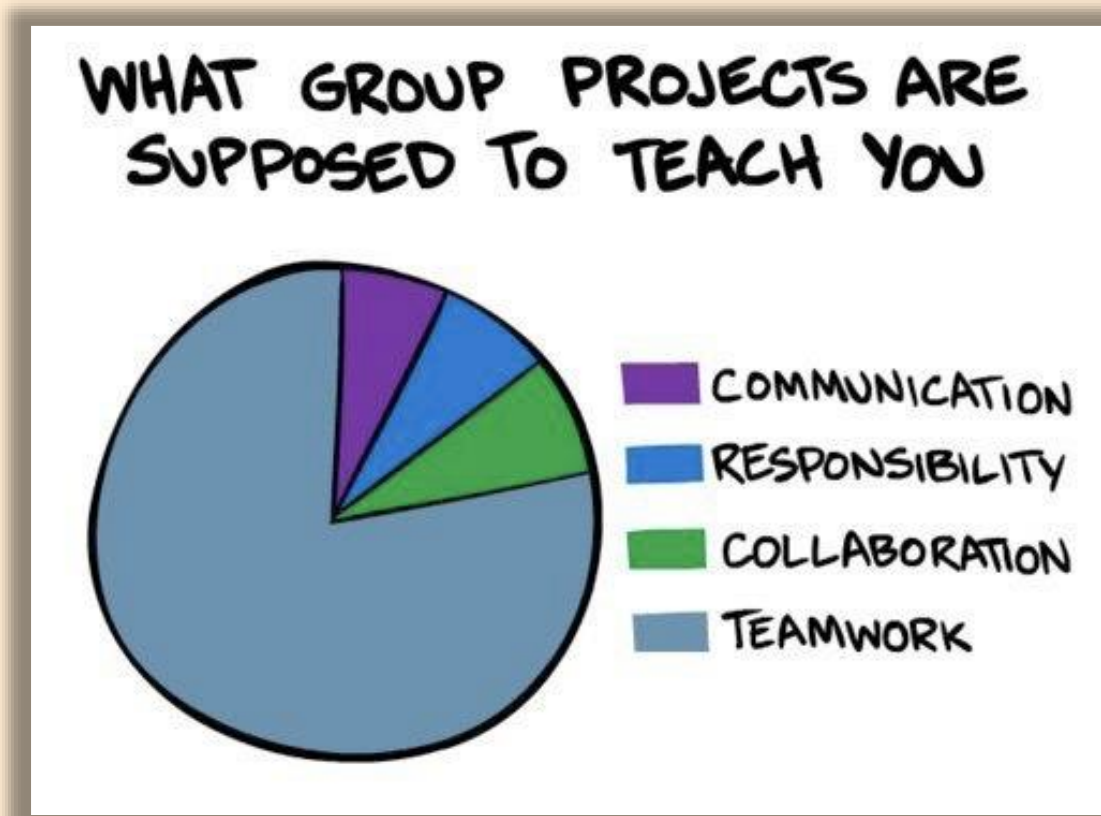
### 3) Learning is often facilitated by social interaction

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### 3) Learning is often facilitated by social interaction

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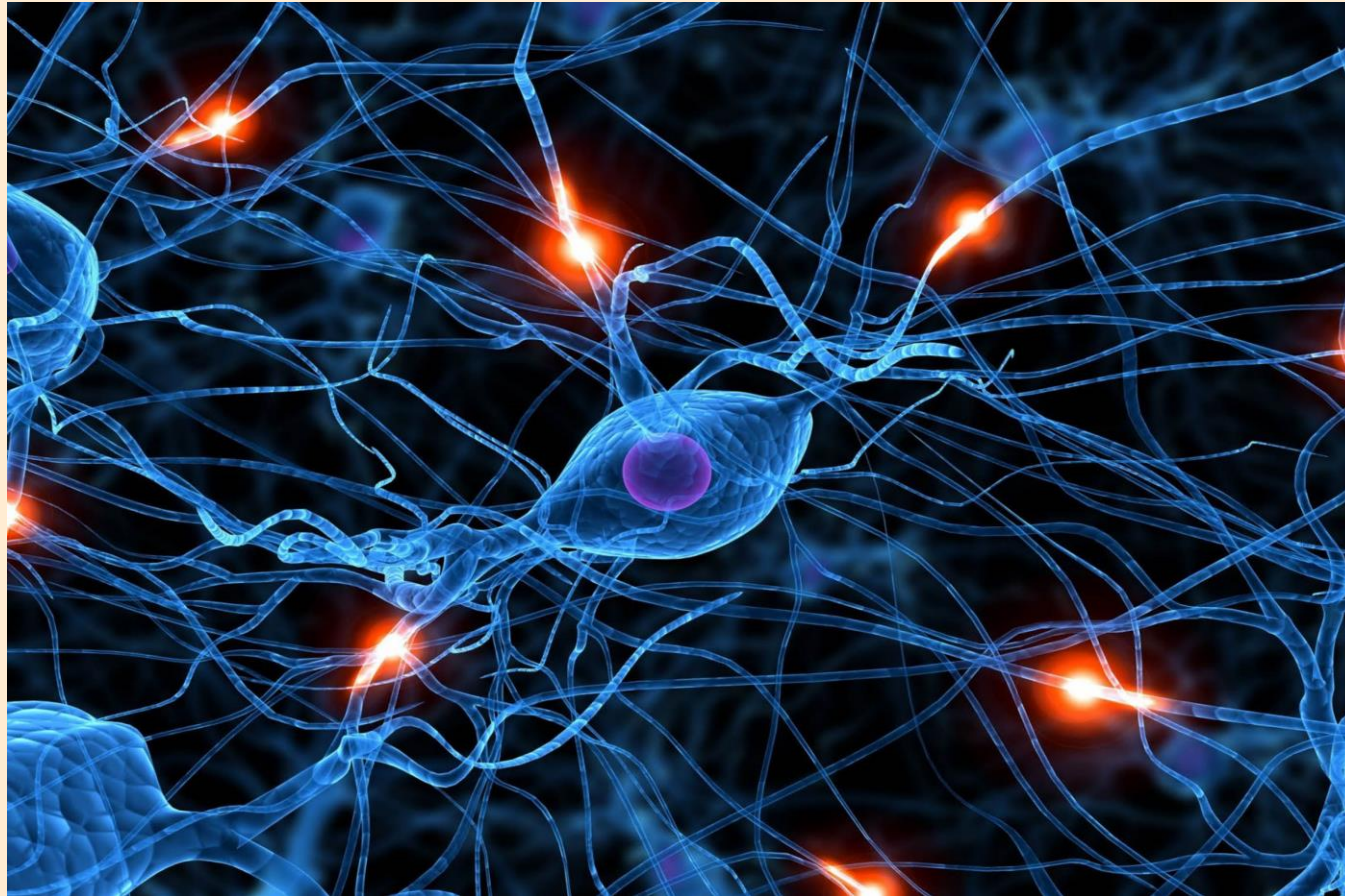
### 3) Learning is often facilitated by social interaction

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## 4) Recall Promotes Learning

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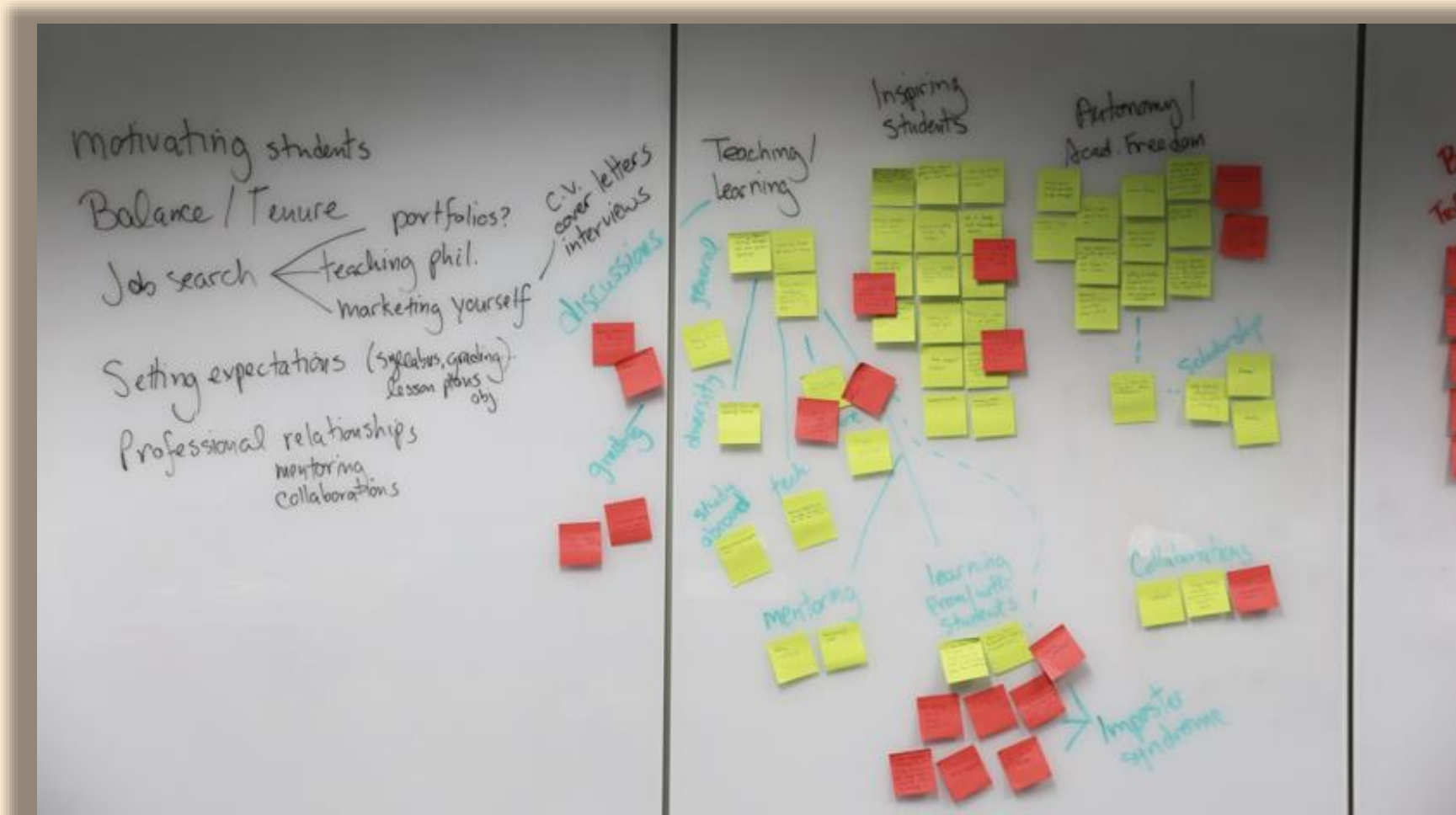


## Learning is S.W.E.E.T.

- Sleep
- Water
- Eating
- Exercise
- Time



## 5) Cognitive Processing is Key Attribute



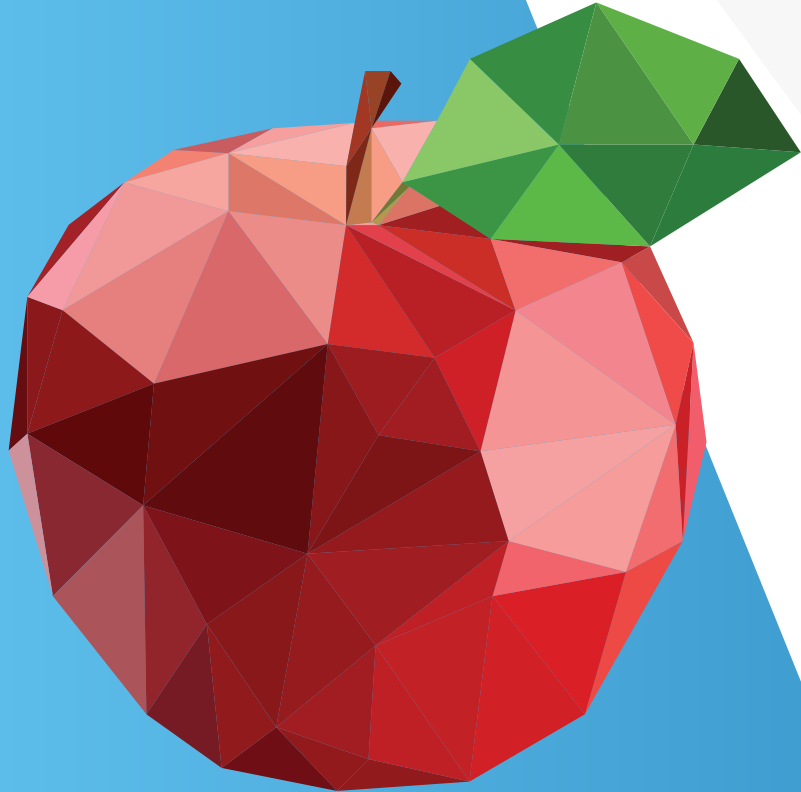
# What we know about learning?

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## Solid Basic Formula

- Build upon prior knowledge
- Leverage social learning opportunities
- Performance with feedback
- Foster recall
- Promote processing in all that we do



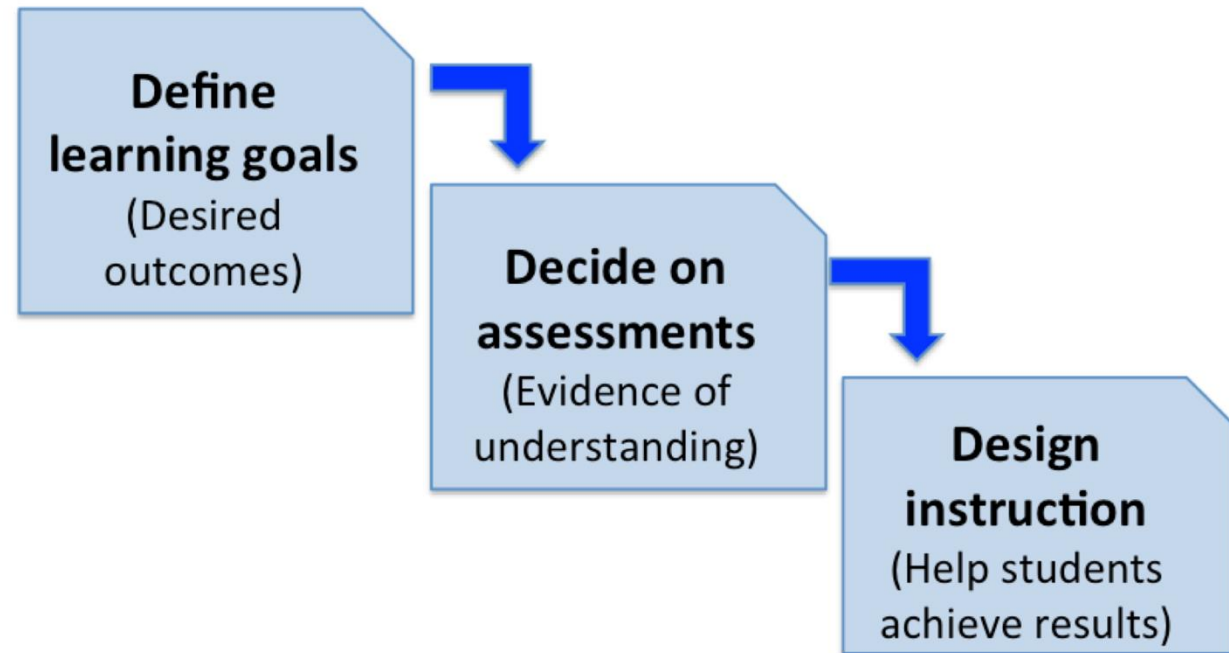


**How can you use AI to leverage this knowledge?**

# When to Design Instruction

Course  
Design  
Best  
Practice

“Backwards design”: Start at the End





# The Tasks of Teaching

- Syllabus development
- Course development
- Course building in a learning management system
- Course materials: locating and developing
- Assignment design
- Lecture design / class design
- Teaching: delivering lectures, active learning, class discussion, etc.
- Student assistance / office hours / mentorship / advising
- Test / assessment creation
- Formative and Summative feedback
- Grading
- Additional administrative tasks



# Asking Better Questions Matters



## 1. Task – Explicit Verbs

- Elaborate, Reimagine, Explore, Invent, Create, Summarize, Analyze, Resolve, Clarify

## 2. Format

- Essay, Blog Post, Email, Jargon-Free Summary, Script, List
- Syllabus, Lesson Plan, Outline, Product Description, Legal Brief, Nurses Notes
- Code, Spreadsheet, CSV file, Table, Chart,
- Length or number (500-words, 50 new ideas): List only the top four using bullet points.

## 3. Voice

- Using academic/marketing/comic/medical language, right-wing/left-wing, modern/archaic
- In the style of the King James Bible, Trader Joe's Frequent Flyer, Walmart press release
- Like a copywriter, engineer, human resources manager, millennial, politician,
- In the style of my professor, Oprah, this historical/anthropological person/group
- Respond as if you were Yoda, Martin Luther King Jr, single/married, happy/sad

## 4. Context

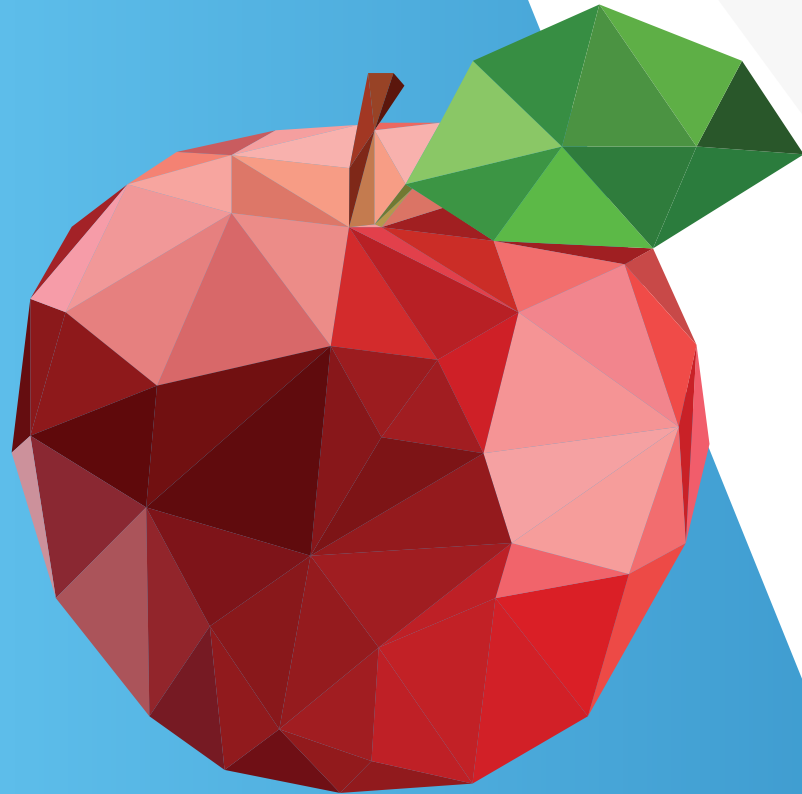
- Use/read/follow/imitate these models/examples
- Suitable as a reading assignment for an undergraduate course
- I'm trying to be serious and funny at the same time
- Negative commands are confusing: Don't think about the cookies!

## Prompt Examples

## Task – Format – Voice – Context

1. Generate a list of 5-10 important articles on gene splicing suitable for second-year undergraduates. I have students who are keen but have struggled to comprehend the articles in the journal Molecular Therapy. I would like for them to be reading primary science but perhaps in journals that are a little less technical.

2. Write a 300-word essay about Hamlet for an undergraduate class. Write in an academic style, but also include language that makes it clear you are an undergraduate. Use the books and ideas of [my professor] to shape the content without mentioning him/her in the essay.



# Syllabus / Course Development

AI as a Syllabus Assistant

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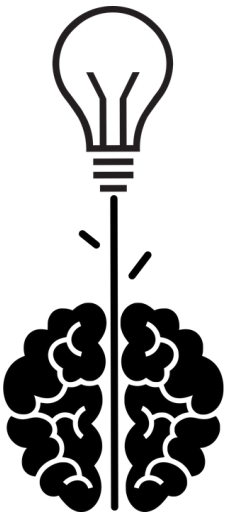
# Syllabus Creation Prompts

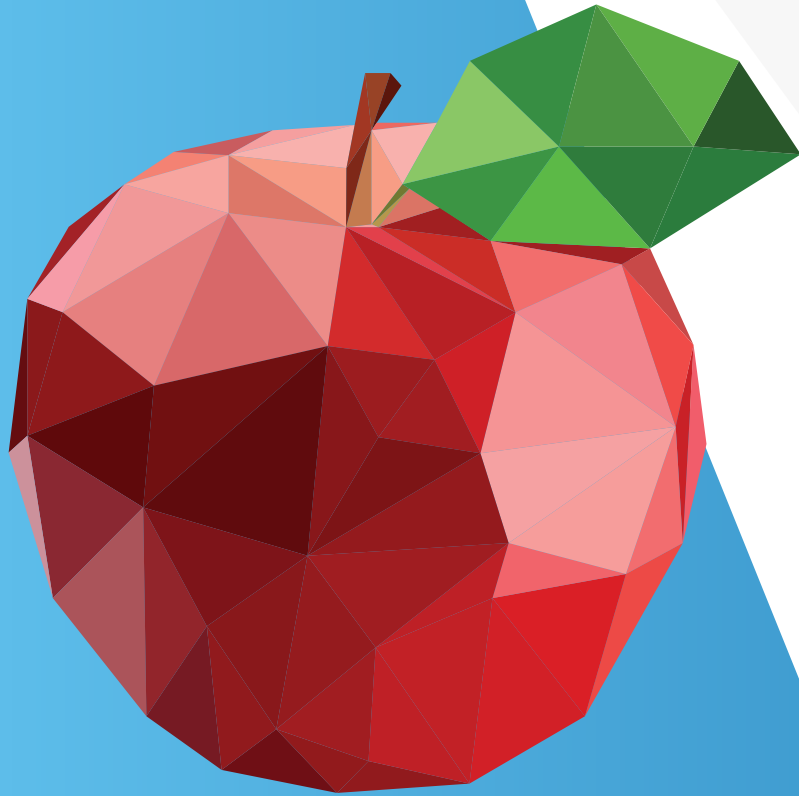
- Create a syllabus for [insert your course] to be taught at [insert your university]. Pretend you are a professor who has taught this course for [how many years you've taught the course] at this university. Review syllabi that are available online from [university name] and make sure all required elements are present in the syllabus.
- Create a syllabus for [insert your course] to be taught at [insert your university]. **Pretend you are an international expert in [insert your discipline] and craft a syllabus that reflects the knowledge of a preeminent expert.** Review syllabi that are available online from [university name] and make sure all required elements are present in the syllabus.

# Update a Syllabus

Examine the structure, topics and assignments in my current syllabus [ATTACH]. Help me revise this syllabus by suggesting any new topics, content, readings, videos, activities, lessons, assignments or assessments that might help me create a more motivating and relevant course for my students who mostly want... [SOMETHING ABOUT YOUR STUDENTS]. Explain your reasons for each of these suggestions. [You can follow up with requests for variations, materials etc.]. You are a kind, motivating and experienced professor.

You are skeptical of AI but recognize that your students are using it, and you want to prepare them for a world where it is an essential job skill.





# Lecture Design



# Good Lecture Creation Prompts

- Create a comprehensive outline for a 50-minute lecture on structural engineering principles, focusing on load paths and force distribution in buildings.
- Design a presentation outline explaining the historical evolution of transportation infrastructure, highlighting three pivotal innovations that transformed civil engineering practice.
- Develop an engaging lecture outline on environmental considerations in civil engineering projects, including case studies showing both successes and failures.
- Draft a technical yet accessible presentation structure on soil mechanics and foundation design that incorporates visual explanations for complex concepts.
- Create an outline for a lecture introducing water resource management systems, balancing technical details with real-world applications students might encounter in their future careers.



# Better, Evidence-based Lecture Prompt

- Provide a comprehensive outline for a 50-minute lecture on this week's topic that builds upon the students' prior knowledge from last week. Include an activity that requires the students to work together in meaningful ways to further develop their practical understanding of facility operations and management. I teach a sophomore level sports management college course entitled "Operations Management." Last week, I lectured on organizational structure and stakeholder management, and this week I will be lecturing on facility operations and management. In my lecture, I want to evoke the students' prior knowledge by evoking aspects of last weeks topics.





C. Edward Watson,  
Ph.D. Teacher,  
Researcher,  
Administrator, Speaker,  
Consultant, Author,  
Futurist

Teaching

# Getting Started with AI

<https://eddiewatson.net/ai>

## Current Prominent Generative AIs

- [chat.open.com](https://chat.openai.com) (ChatGPT - OpenAI)
- [claude.ai](https://claude.ai) (Anthropic)
- <https://gemini.google.com/app> (Google)
- [pi.ai](https://pi.ai) (Inflection)

## Free Access Paths into Generative AI

- [perplexity.ai](https://perplexity.ai)
  - Uses multiple AI including ChatGPT 4 and Claude
- [copilot.microsoft.com](https://copilot.microsoft.com) (Microsoft)
  - A free doorway into ChatGPT 4
- [poe.com](https://poe.com)
  - An AI aggregator - Talk to ChatGPT, GPT-4, Claude 3 Opus, DALLE 3, and others
- [huggingface.co/chat](https://huggingface.co/chat)
  - Opensource - leverages several lesser known and older LLMs



# Better, Evidence-based Lecture Prompt

- I teach a sophomore level sports management college course entitled “Operations Management.” Last week, I lectured on organizational structure and stakeholder management, and this week I will be lecturing on facility operations and management. In my lecture, I want to evoke the students’ prior knowledge by evoking aspects of last week’s topics. Provide a comprehensive outline for a 50-minute lecture on this week’s topic that builds upon the students’ prior knowledge from last week. Include an activity that requires the students to work together in meaningful ways to further develop their practical understanding of facility operations and management.

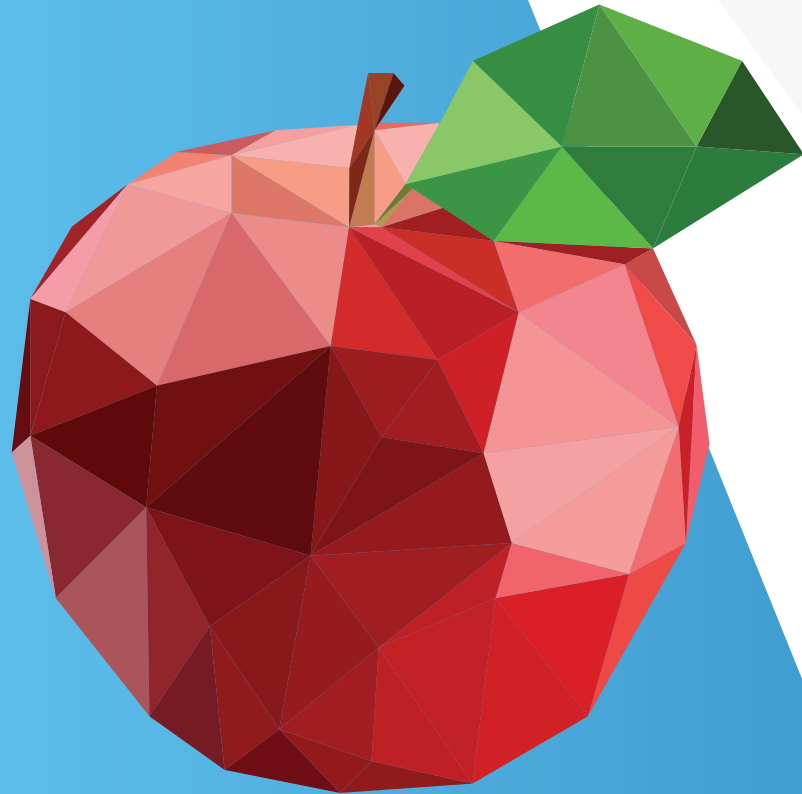
# What we know about learning?

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## Solid Basic Formula

- Build upon prior knowledge
- Leverage social learning opportunities
- Performance with feedback
- Foster recall
- Promote processing in all that we do





# Teaching & Active Learning



# Good Teaching Development Prompts

- Design an interactive balance sheet exercise where students work in groups to classify real-world business transactions, with discussion prompts to explain their reasoning.
- Create a case study activity about ethical decision-making in accounting, including scenario cards and guided reflection questions for small group discussions.
- Develop a hands-on activity that demonstrates the accounting cycle using simple transactions, with clear step-by-step instructions and visual aids for student groups.
- Design a competitive in-class game that reinforces the difference between cash and accrual accounting methods, with scoring rules and debrief questions.
- Create a financial statement analysis activity using simplified real company data, where students identify key ratios and present their findings to the class.
- Design class activities to teach X that employ <insert pedagogical approach>.



# Better, Evidence-based Teaching Development Prompts

- Design an interactive balance sheet exercise where students work in groups to classify real-world business transactions, with discussion prompts to explain their reasoning. Instructions for this activity should include opportunities for students to receive feedback from their peers regarding their work. Build upon students' prior knowledge within the course, specifically evoking topics listed in the first five weeks of the semester in the attached syllabus.



# Better, Evidence-based Teaching Development Prompts

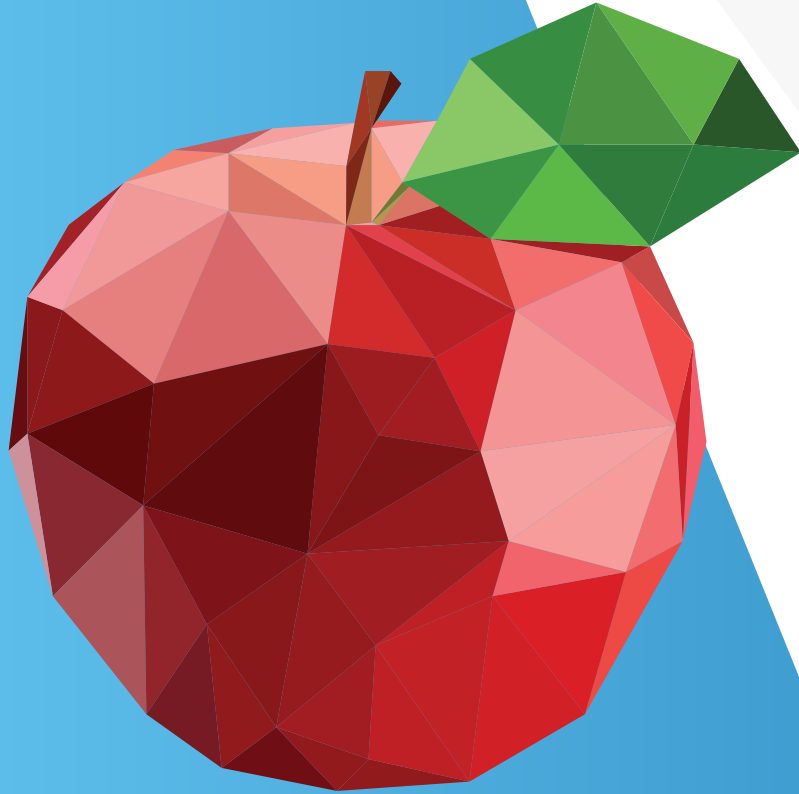
## **Social Learning opportunity**

## **Performance with feedback**

- Design an interactive balance sheet exercise where students work in groups to classify real-world business transactions, with discussion prompts to explain their reasoning. Instructions for this activity should include opportunities for students to receive feedback from their peers regarding their work. Build upon students' prior knowledge within the course, specifically evoking topics listed in the first five weeks of the semester in the attached syllabus.

## **Foster Recall**

## **Prior knowledge**

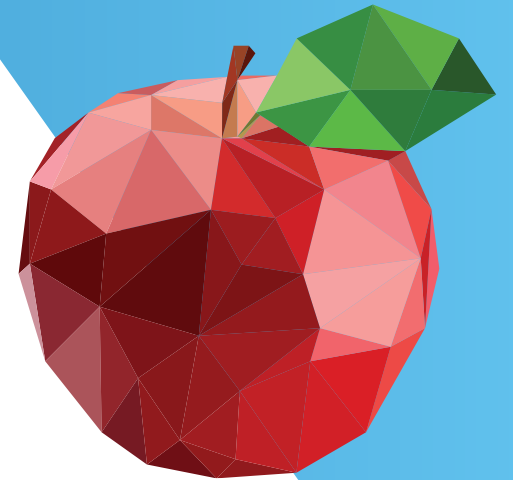


# Better Assignments



# Assignments

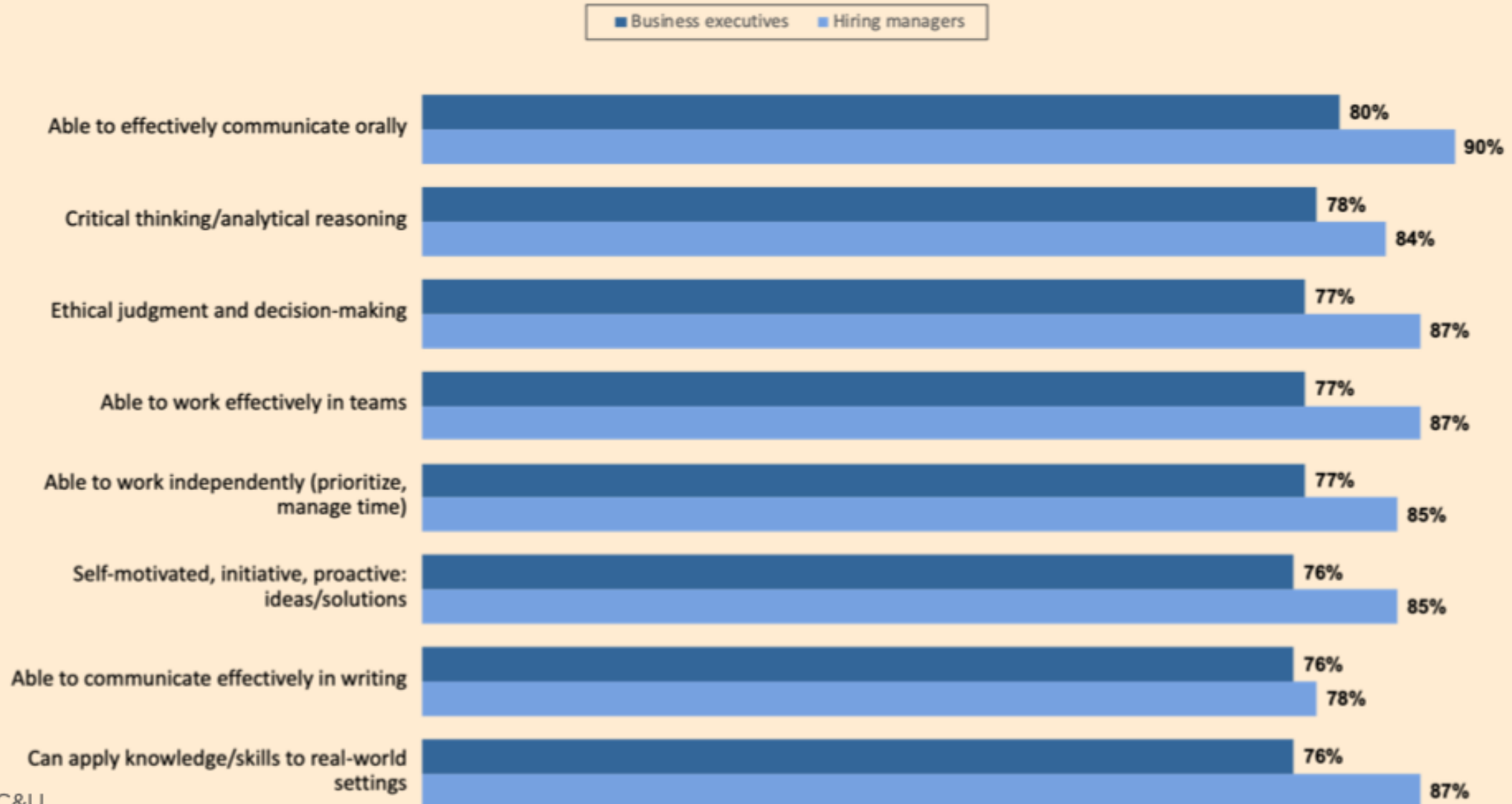
- Suggest 10 ways to make this assignment more motivating to students interested in X/majoring in Y.
- Here are some ideas for improving this assignment; use those to revise the assignment.
- Provide ten different ways I could make this assignment align better with the following ABET learning outcome:  
\_\_\_\_\_.



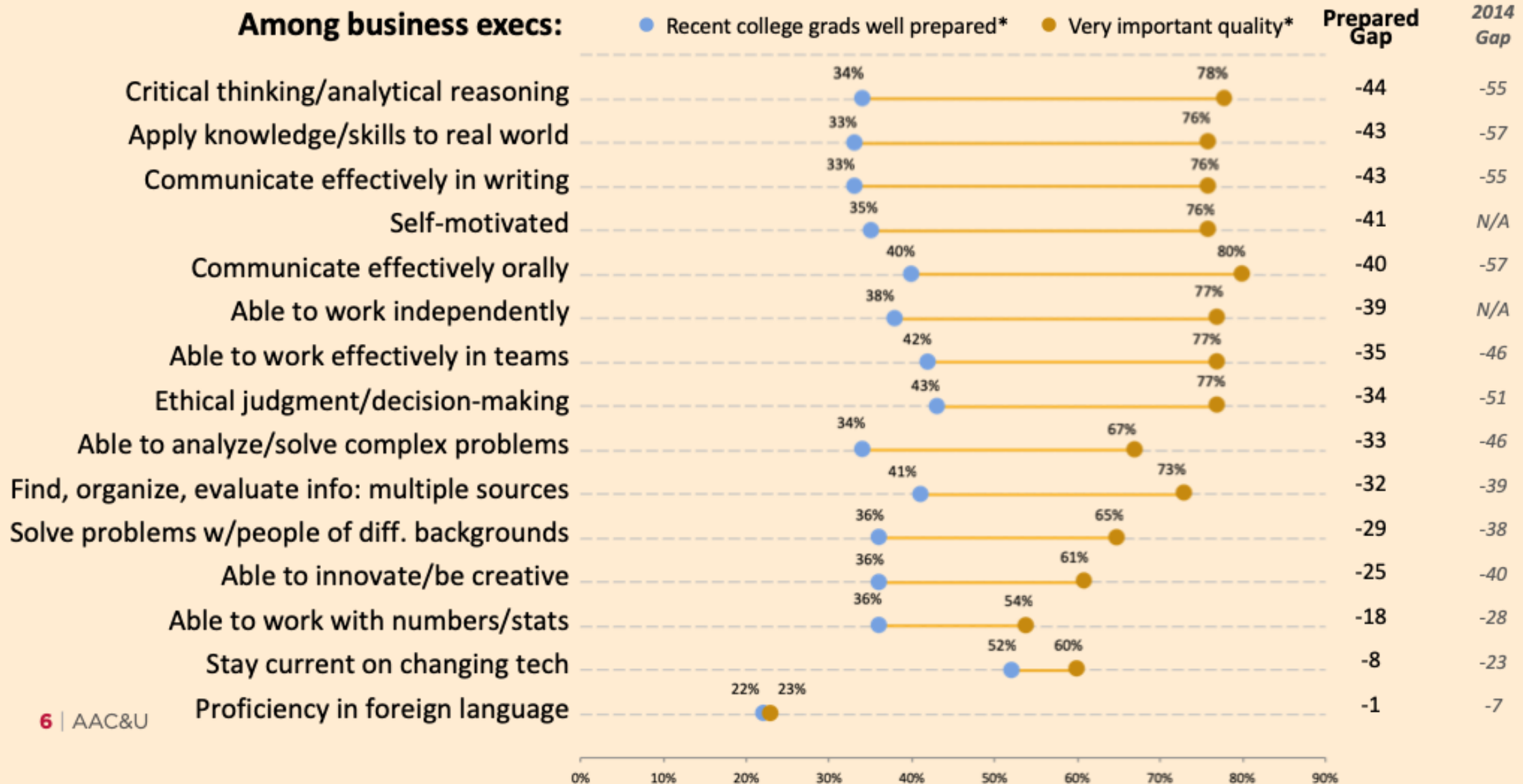
# The Case for Critical Thinking



# What Skills Do Employer's Value the Most?



# Employers' Perceptions of Preparedness



# Faculty think the future impact of AI will mostly be harmful in key student performance areas

% who say they believe GenAI tools will have these impacts on students in the future

■ A lot / some   ■ Not much / not at all

## Potential negative impacts

Develop an overreliance on Generative AI tools

95% 3%

Widen digital inequities

91% 9%

Diminish critical thinking skills

90% 8%

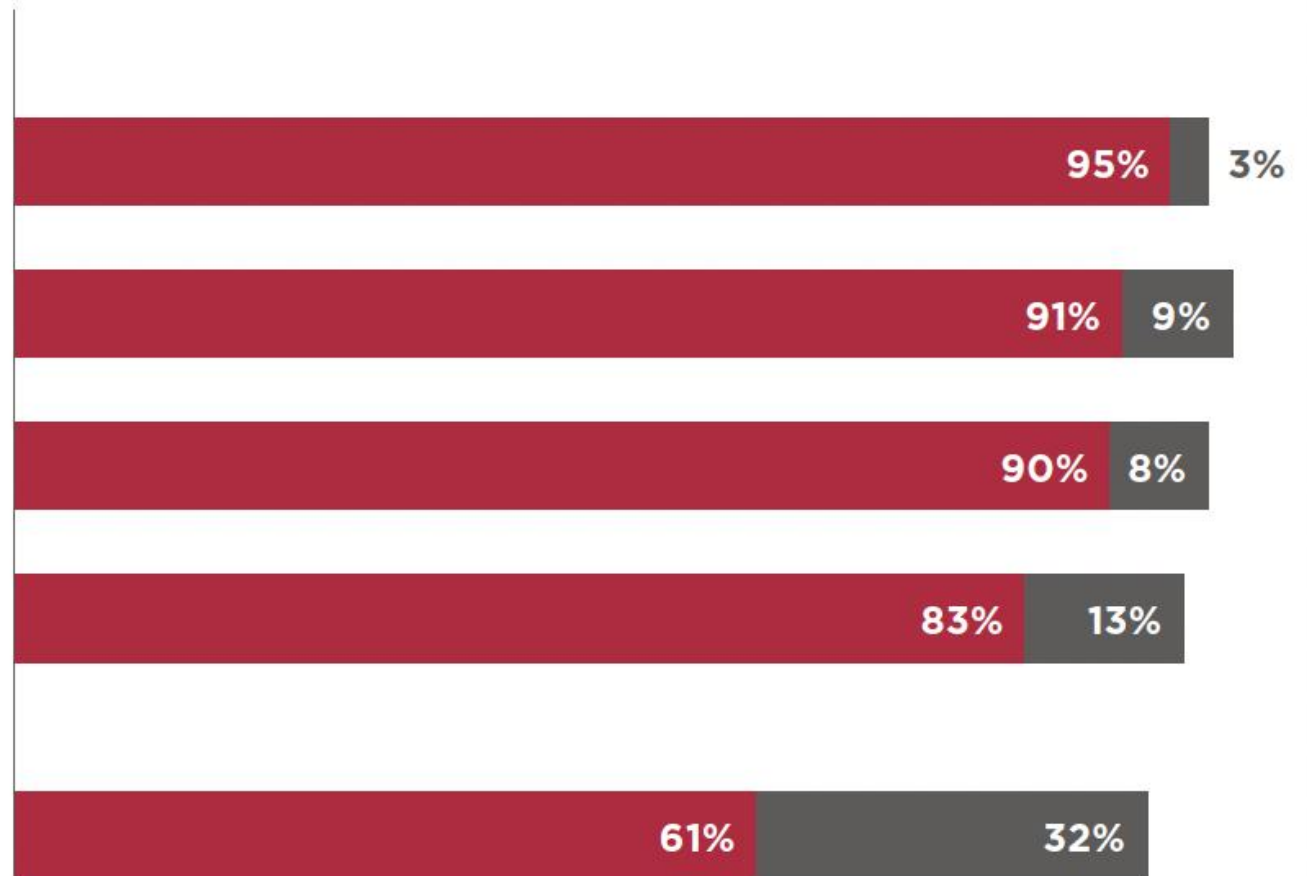
Decrease attention spans

83% 13%

## Potential positive impacts

Enhance and customize learning

61% 32%



# Defining Critical Thinking?





**V**ALID  
**A**SSASSESSMENT OF  
**L**EARNING IN  
**U**NDERGRADUATE  
**E**DUICATION

# The 16 VALUE Rubrics

 Civic Engagement - Local and Global	 Creative Thinking	 Critical Thinking	 Ethical Reasoning
 Foundations and Skills for Lifelong Learning	 Global Learning	 Information Literacy	 Inquiry and Analysis
 Integrative and Applied Learning	 Intercultural Knowledge and Competence	 Oral Communication	 Problem Solving
 Quantitative Literacy	 Reading	 Teamwork	 Written Communication



# Anatomy of the Critical Thinking VALUE Rubric

## CRITICAL THINKING VALUE RUBRIC

*for more information, please contact [value@aacu.org](mailto:value@aacu.org)*



The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can be shared nationally through a common dialog and understanding of student success.

### Definition

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

### Framing Language

This rubric is designed to be transdisciplinary, reflecting the recognition that success in all disciplines requires habits of inquiry and analysis that share common attributes. Further, research suggests that successful critical thinkers from all disciplines increasingly need to be able to apply those habits in various and changing situations encountered in all walks of life.

This rubric is designed for use with many different types of assignments and the suggestions here are not an exhaustive list of possibilities. Critical thinking can be demonstrated in assignments that require students to complete analyses of text, data, or issues. Assignments that cut across presentation mode might be especially useful in some fields. If insight into the process components of critical thinking (e.g., how information sources were evaluated regardless of whether they were included in the product) is important, assignments focused on student reflection might be especially illuminating.

### Glossary

*The definitions that follow were developed to clarify terms and concepts used in this rubric only.*

- **Ambiguity:** Information that may be interpreted in more than one way.
- **Assumptions:** Ideas, conditions, or beliefs (often implicit or unstated) that are "taken for granted or accepted as true without proof." (quoted from [www.dictionary.reference.com/browse/assumptions](http://www.dictionary.reference.com/browse/assumptions))
- **Context:** The historical, ethical, political, cultural, environmental, or circumstantial settings or conditions that influence and complicate the consideration of any issues, ideas, artifacts, and events.
- **Literal meaning:** Interpretation of information exactly as stated. For example, "she was green with envy" would be interpreted to mean that her skin was green.
- **Metaphor:** Information that is (intended to be) interpreted in a non-literal way. For example, "she was green with envy" is intended to convey an intensity of emotion, not a skin color.

# Anatomy of the Critical Thinking VALUE Rubric

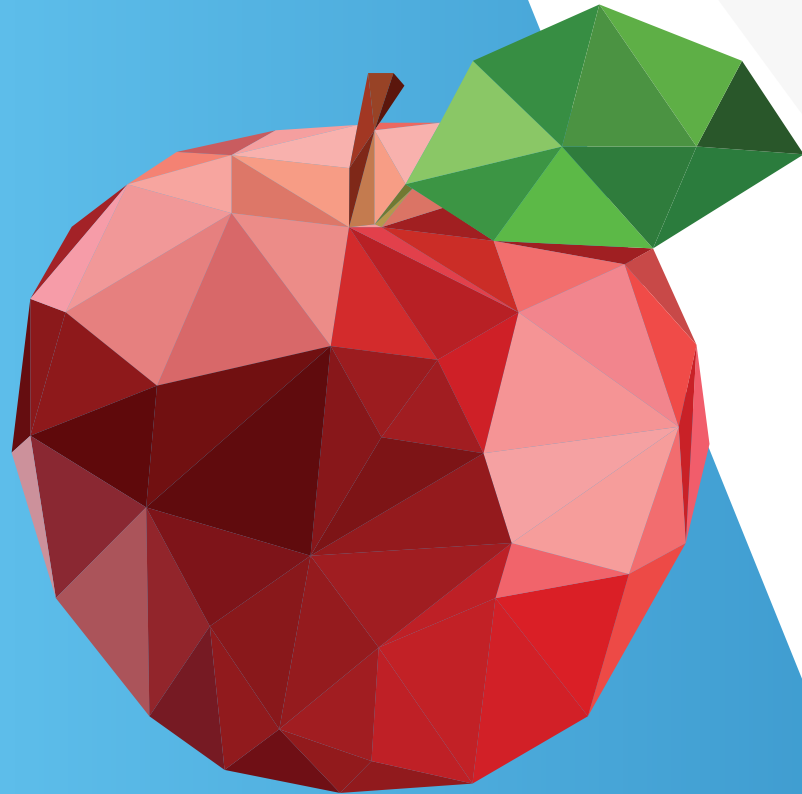
## Dimensions

## Performance Levels

	Capstone 4	Milestones 3                                  2		Benchmark 1
<b>Explanation of issues</b>	Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.	Issue/problem to be considered critically is stated without clarification or description.
<b>Evidence</b> <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
<b>Influence of context and assumptions</b>	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
<b>Student's position (perspective, thesis/hypothesis)</b>	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
<b>Conclusions and related outcomes (implications and consequences)</b>	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

## Performance Indicators





# Using AI to Develop Pedagogy to Foster Critical Thinking

# Using AI to revise assignments

EW

Analyze typical political science writing assignments and adapt or create five new assignments that specifically ask students to engage in critical thinking as defined by AAC&U's VALUE Rubric for Critical Thinking.

## Analysis and Adaptation of Political Science Writing Assignments

### Analysis of Typical Political Science Assignments

Traditional political science writing assignments often include:

1. **Research papers:** Students investigate a political question and develop a thesis-driven argument
2. **Policy memos:** Students analyze a policy problem and propose solutions for decision-makers
3. **Case studies:** Students examine specific political events or situations in depth
4. **Literature reviews:** Students summarize and synthesize existing scholarship on a topic
5. **Position papers:** Students defend a stance on a political issue with evidence

While these assignments can involve critical thinking, they often don't explicitly target all dimensions of the AAC&U VALUE Rubric: explanation of issues, evidence, influence of context and assumptions, student's position, and conclusions.

### Adapted Political Science Assignments Using the Critical Thinking VALUE Rubric

#### Assignment 1: Multi-Perspective Policy Analysis

**Core Skill Focus:** Contextual considerations, evidence evaluation

**Assignment:**

# Using AI to develop teaching and learning strategies fostering critical thinking

**EW** Using AAC&U's VALUE Rubric for Critical Thinking, provide five suggestions for how I can teach my students in my junior-level, college organic chemistry course to engage with the first two dimension of this rubric at the 3 milestone level.

Looking at the AAC&U VALUE Rubric for Critical Thinking, the first two dimensions are **Explanation of issues** and **Evidence**. Here are five suggestions for reaching the Milestone 3 level in your organic chemistry course:

## 1. Mechanism Analysis with Competing Pathways

Present students with a reaction that could proceed through multiple mechanisms (E1 vs E2, SN1 vs SN2). Have them articulate why the mechanism question matters for predicting products, then evaluate experimental evidence (stereochemistry, kinetics data, substrate structure) to determine which pathway dominates. This builds their ability to frame issues clearly and use relevant evidence appropriately.

## 2. Literature Case Study Discussions

Select a published synthesis or mechanistic study where chemists had to solve a specific problem (unexpected product formation, low yields, selectivity issues). Students read the paper and present: (a) how the researchers defined and scoped the problem, and (b) what experimental evidence they gathered and how it supported their conclusions. This directly targets both rubric dimensions.

## 3. Spectroscopic Structure Elucidation with Justification

Move beyond "solve this structure" problems. Require students to write a brief explanation of why structure determination matters in this context (synthesis verification, unknown identification), then have them explicitly connect each piece of spectroscopic data (NMR shifts, splitting patterns, IR peaks, MS fragments) to structural features, explaining which evidence is most definitive and why.

## 4. Predict-Observe-Explain Laboratory Rep

Before each lab, students predict outcomes and identify the key issue being investigated.

# Using AI to develop teaching and learning strategies fostering critical thinking

EW

Using AAC&U's VALUE Rubric for Critical Thinking, provide five suggestions for how I can teach my students in my Master's level postmodern dance course to engage with at least three dimensions of this rubric at the capstone level.

Here are five pedagogical strategies for your Master's level postmodern dance course that engage at least three VALUE Critical Thinking dimensions at the capstone level:

## 1. Genealogical Mapping Project

Students trace a specific postmodern dance concept (pedestrian movement, task-based choreography, contact improvisation) across multiple generations and geographies. They must comprehensively contextualize how the concept evolved through different cultural, political, and aesthetic frameworks—from Judson Church to European Tanztheater to contemporary global practices (**Context**). They identify and analyze deep assumptions about the body, authorship, or audience embedded in each iteration (**Assumptions**), and develop nuanced conclusions about how the concept's meaning shifts across contexts, acknowledging tensions and contradictions rather than seeking unified narratives (**Conclusions**). Capstone work demonstrates sophisticated understanding of how ideas are never culturally or historically neutral.

## 2. Embodied Research Symposium

Students design and lead a 90-minute research presentation combining scholarly analysis with embodied demonstration. They must clearly articulate a complex theoretical or historical issue with precision and establish why it matters to contemporary practice (**Explanation of issues**). The presentation situates their inquiry within extensive scholarly conversation, drawing connections across dance studies, philosophy, cultural theory, and related fields (**Context**). Through both verbal analysis and movement demonstration, they surface and critically examine assumptions about what constitutes knowledge in dance scholarship versus embodied practice (**Assumptions**). Peer respondents engage in rigorous questioning, requiring presenters to defend and refine their conclusions in real time—demonstrating capstone-level ability to engage with ambiguity and critique.

# Using AI to develop teaching and learning strategies fostering critical thinking

**EW** Using AAC&U's VALUE Rubric for Critical Thinking, provide five suggestions for how I can teach my students in my freshman-writing course to engage with all five dimensions of this rubric at benchmark level. The pedagogical strategies you suggest should require students to use AI themselves.

Here are five pedagogical strategies for your freshman writing course that engage all five VALUE Critical Thinking dimensions at the benchmark level while having students use AI as a learning tool:

## **1. AI-Assisted Issue Framing Workshop**

Students receive a broad, messy prompt (e.g., "social media affects society"). They use AI to generate multiple ways to frame this as a focused writing issue. Then they evaluate AI's suggestions, identify which framing is most appropriate for a specific audience and purpose, and explain their choice. They must articulate what makes their selected issue focused enough (Explanation of issues), note what perspectives the AI included or missed (Context), identify what types of evidence would be needed (Evidence), and describe one assumption underlying their chosen frame (Assumptions). This gets them practicing all dimensions at a basic level.

## **2. Evidence Evaluation Through AI Fact-Checking**

Students draft a paragraph making claims about a topic, then use AI to verify their claims and find supporting sources. They create a two-column chart: what AI confirmed vs. what it questioned or contradicted. They write a reflection identifying which evidence is relevant to their argument (Evidence), how the context of sources matters (Context), what assumptions they made when initially writing (Assumptions), what their position is after verification (Position), and what logical connections exist between claims and evidence (Conclusions). This systematic comparison develops emerging critical thinking.

## **3. Assumption Archaeology with AI Dialogue**

Students select a controversial statement and ↓ e an extended conversation with AI



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Researcher,  
Administrator, Speaker,  
Consultant, Author,  
Futurist

Teaching

# Getting Started with AI

<https://eddiewatson.net/ai>

## Current Prominent Generative AIs

- [chat.open.com](https://chat.openai.com) (ChatGPT - OpenAI)
- [claude.ai](https://claude.ai) (Anthropic)
- <https://gemini.google.com/app> (Google)
- [pi.ai](https://pi.ai) (Inflection)

## Free Access Paths into Generative AI

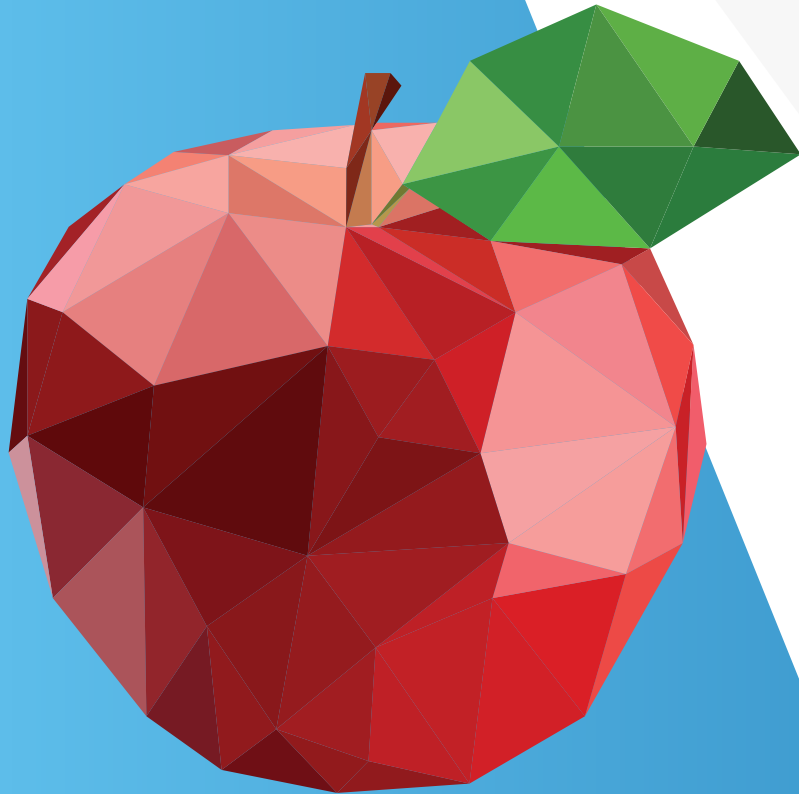
- [perplexity.ai](https://perplexity.ai)
  - Uses multiple AI including ChatGPT 4 and Claude
- [copilot.microsoft.com](https://copilot.microsoft.com) (Microsoft)
  - A free doorway into ChatGPT 4
- [poe.com](https://poe.com)
  - An AI aggregator - Talk to ChatGPT, GPT-4, Claude 3 Opus, DALLE 3, and others
- [huggingface.co/chat](https://huggingface.co/chat)
  - Opensource - leverages several lesser known and older LLMs



**EW** Using AAC&U's VALUE Rubric for Critical Thinking, provide five suggestions for how I can teach my students in my Master's level postmodern dance course to engage with at least three dimensions of this rubric at the capstone level.

**EW** Using AAC&U's VALUE Rubric for Critical Thinking, provide five suggestions for how I can teach my students in my freshman-writing course to engage with all five dimensions of this rubric at benchmark level. The pedagogical strategies you suggest should require students to use AI themselves.

**EW** Using AAC&U's VALUE Rubric for Critical Thinking, provide five suggestions for how I can teach my students in my junior-level, college organic chemistry course to engage with the first two dimension of this rubric at the 3 milestone level.



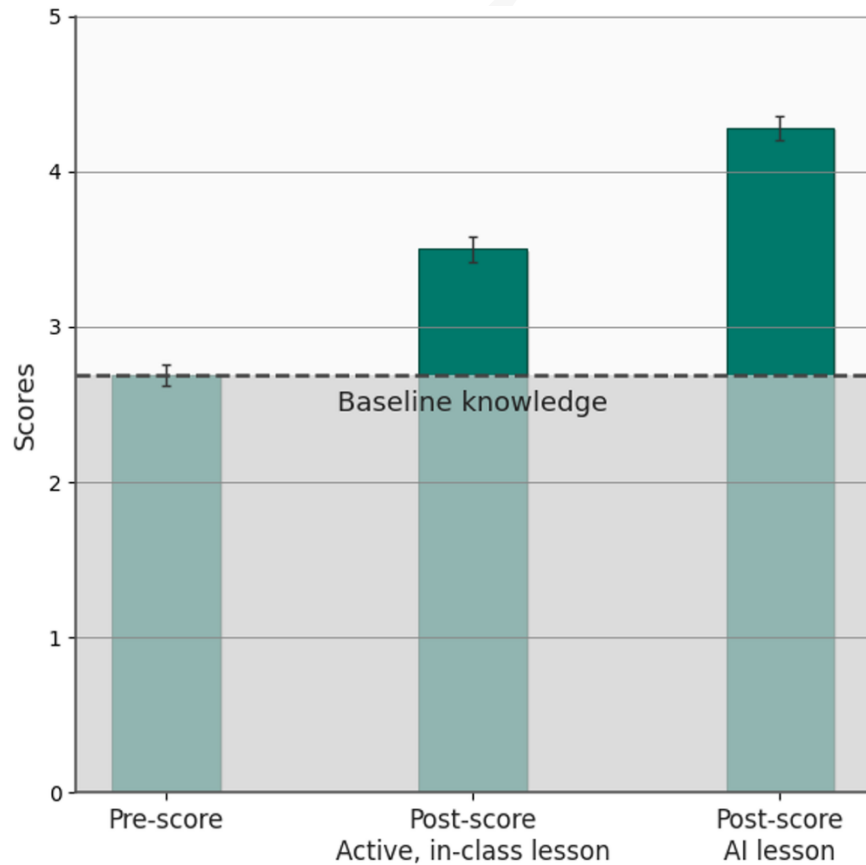
# **New Kinds of Assignments**

# AI-Tutor vs Active Learning

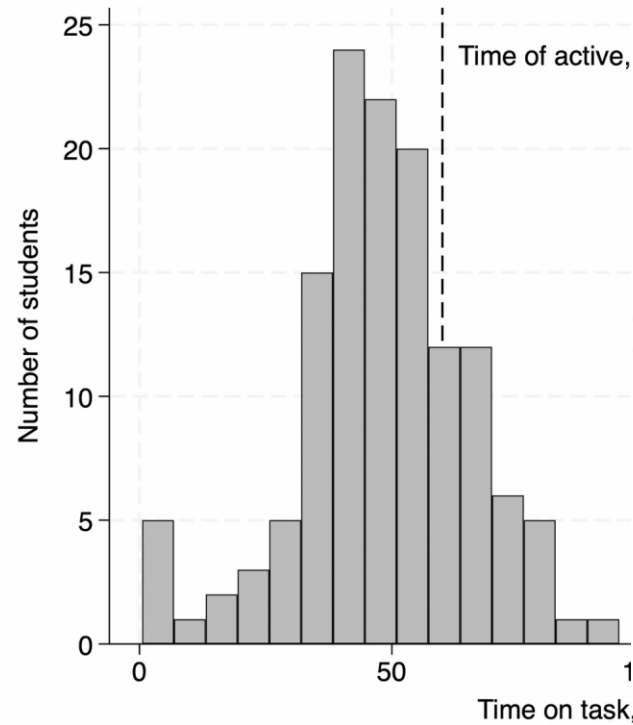
Kestin, *et al.* AI tutoring outperforms in-class active learning. *Sci Rep* 15, 17458 (2025)

**First RCT:** N=194. Both got both 60m treatments.

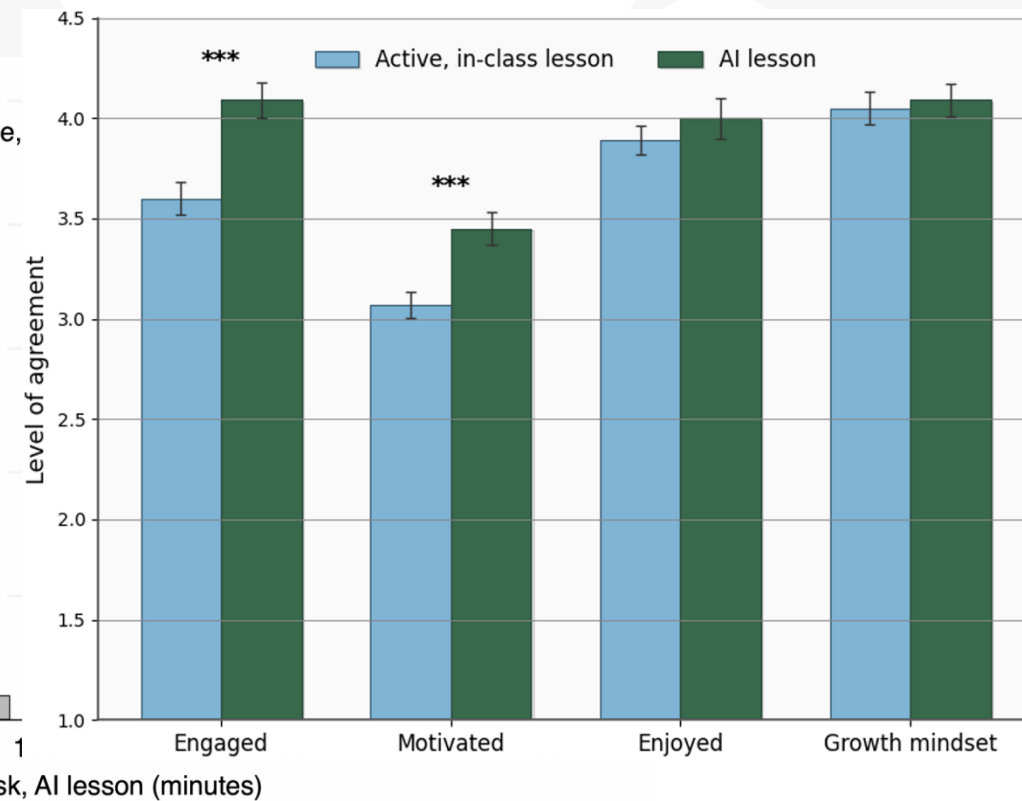
Students **learned more**



**faster**



with **more engagement**



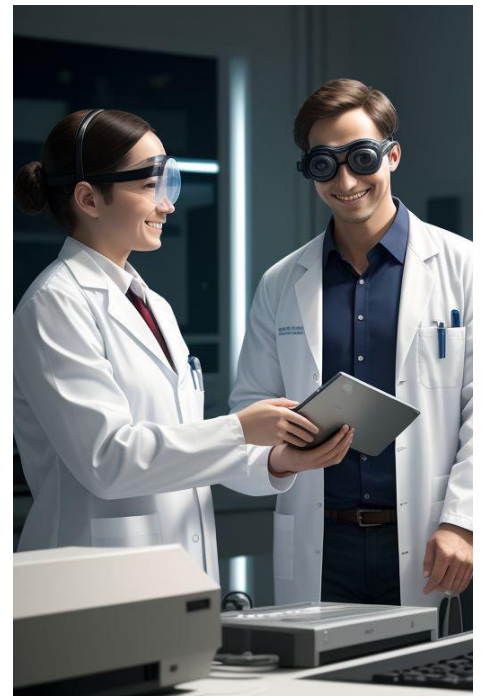
# A.I. as Tutor

Act like a friendly but experienced scientist.

Read my research plan and lead me through a dialogue that will challenge my perspectives.

Ask me one question at a time to help me anticipate problems and refine my plan.

Explicitly take an approach that requires critical thinking as defined by AAC&U's VALUE Rubric for Critical Thinking.



# A.I. as Tutor

**Act as my personal tutor** and teach me about the uploaded content. Start by asking me a question that helps you gauge my level of understanding. **Be encouraging** but **keep going until I have mastered the content**. Explicitly take an approach that requires me to engage in critical thinking as defined by AAC&U's VALUE Rubric for Critical Thinking.



A man with dark hair, wearing a blue long-sleeved shirt and dark pants, is sitting in a white modern-style chair. He is smiling and looking slightly to his right. His hands are clasped in his lap. The background is a blurred indoor setting with warm lighting and some furniture. Overlaid on the image is text in yellow and white.

## Role-Playing & Dialogues

Respond as if you were ...

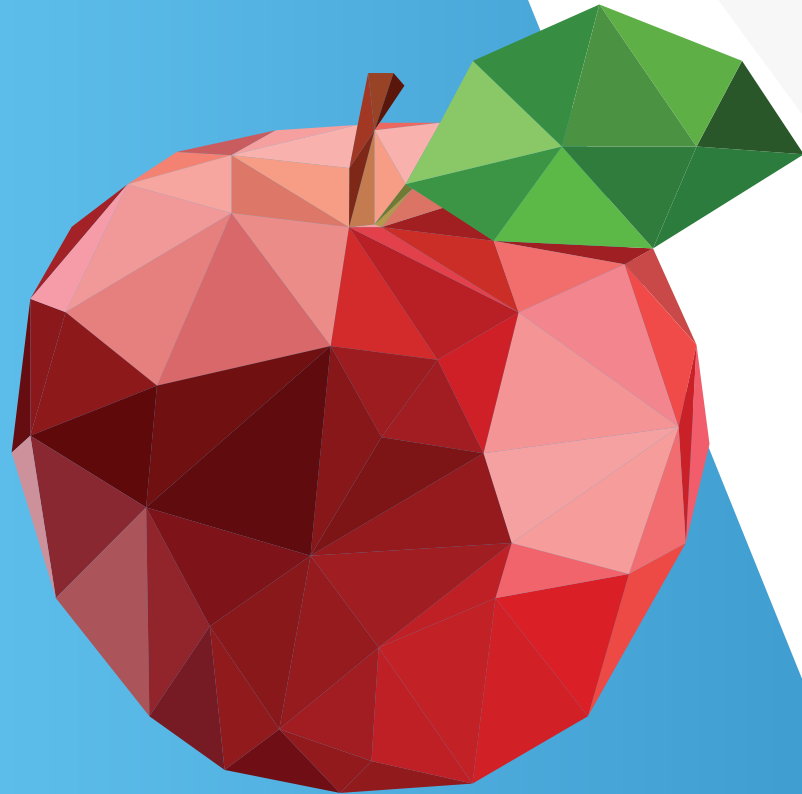
Help me practice...

Present counter arguments...

# Bot Assignments & Simulations

- Run a nuclear power plan
- Teach a class
- Run an experiment
- Secure capital
- Plan an exhibition
- Manage a lab
- Buy a car
- Moderate a disagreement
- Climb a mountain
- Improve a service
- Diagnose a problem
- Verify a story





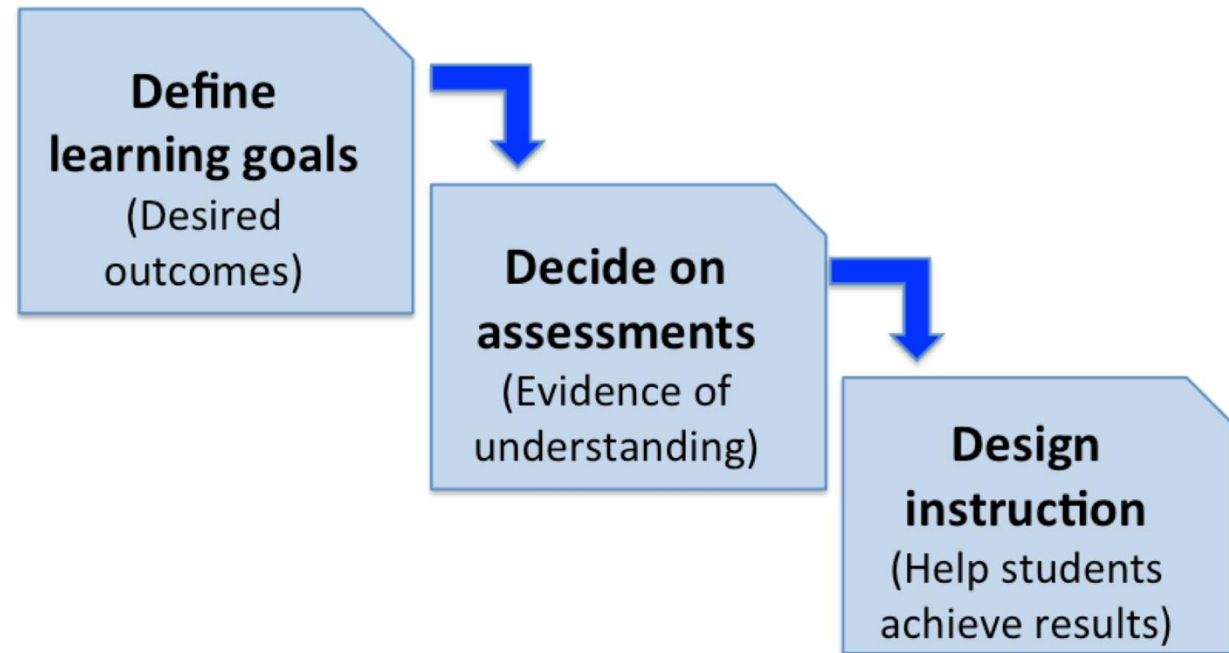
# Test Creation, Feedback, and Grading



# When to Design Instruction

Course  
Design  
Best  
Practice

“Backwards design”: Start at the End



# Exam & Assessments



- Design an “exit ticket” that I can ask students to help me learn what they understood about this class.
- Use my attached syllabus/course readings/lecture slides to create excellent college-level exam questions for a midterm in [my course title]. Create 25 easy short answer questions, 25 hard short answer questions, 50 multiple-choice questions sorted into various levels of difficulty and 10 longer essay questions all based on the course material.

# AI as Test Generator



Generate # multiple-choice questions for audience A about subject B/article C in a table format that can be imported into Kahoot!

Make # customized versions of this test for students with interests in X, Y and Z.

Develop a comprehensive exam for course A/this syllabus

Draft a make-up midterm of the same content and level of difficulty.

# AI for EXAM QUESTIONS



- Use my attached syllabus/course readings/lecture slides to create excellent college-level exam questions for a midterm in [my course title]. Create 25 easy short answer questions, 25 hard short answer questions, 50 multiple-choice questions sorted into various levels of difficulty and 10 longer essay questions all based on the course material.

# Feedback AND Grading?!



Provide detailed and constructive feedback to students in my voice using this rubric, previously graded assignments/essays and feedback. Focus on code readability and efficiency.

Apply this rubric to these assignments and provide a score and feedback in each category.



Backed by  Combinator

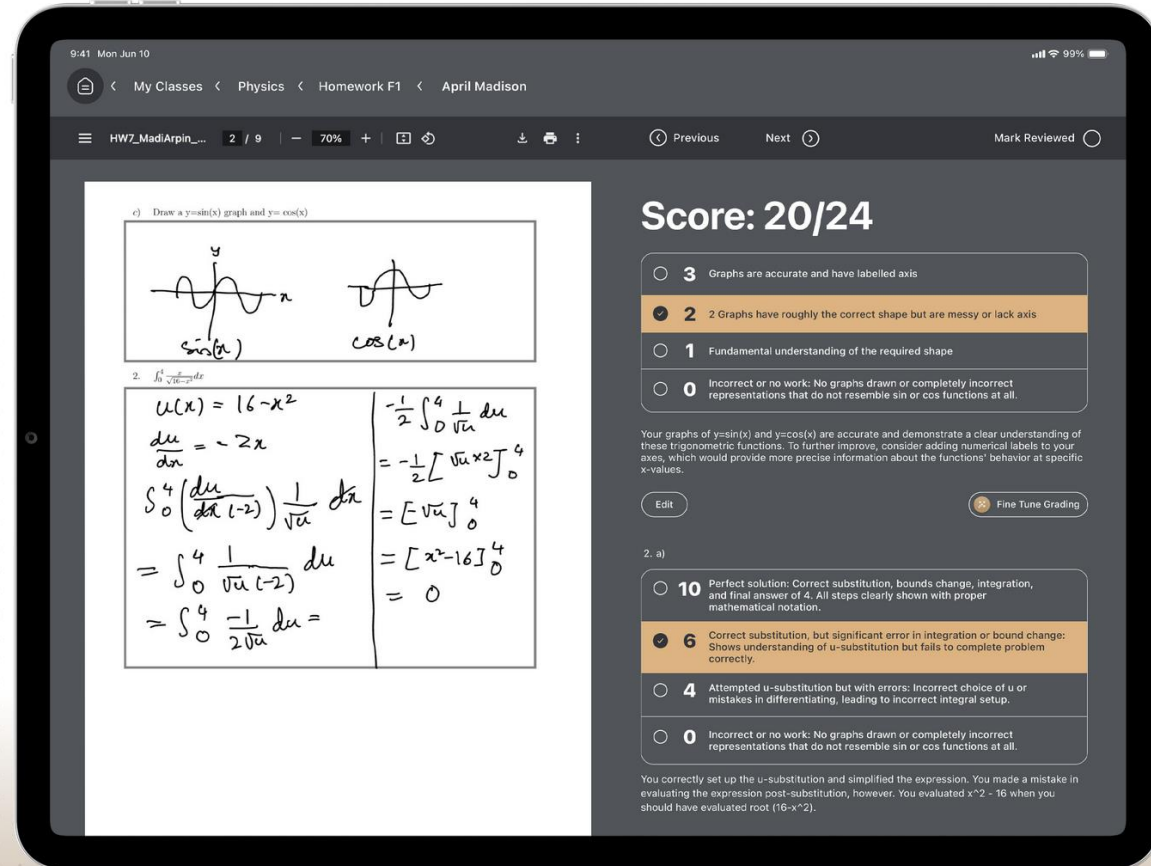
# AI Teaching Assistant for Grading

Educators should spend their time doing what they love: teaching their students. Not getting buried under endless stacks of paper to grade.

At the same time, students deserve detailed feedback that doesn't take weeks. Join us on our mission to modernize education.

Talk to Founders

Contact Us



# Platforms

(From Faculty - NFP)



- **AI Tutor Pro** (Contact North - <https://www.aitutorpro.ca/>)
- **CoachTutor Bot** (Mark Marino <https://poe.com/CoachTutor>)
- **MyEssayFeedback** (Eric Kean- <https://myessayfeedback.ai/>)
- **Maizey (U of Michigan)**

Train, test, and deploy a 24/7 TA on your course materials in minutes  
<https://genai.umich.edu/video>

# AI for Rubrics

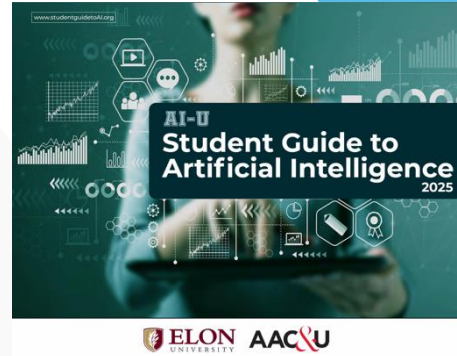
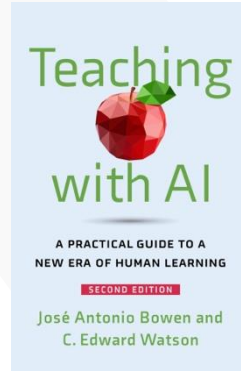
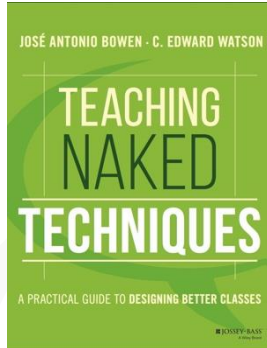
Table

Criteria	Poor	Fair	Good	Excellent
Identify key historical issues and figures	Student fails to identify key historical issues and figures	Student identifies some key historical issues and figures	Student identifies most key historical issues and figures	Student identifies all key historical issues and figures
Evaluate sources for	Student fails to evaluate	Student evaluates	Student evaluates	Student evaluates all

Create a rubric in table form to assess the learning in this assignment using these learning outcomes. List criteria in the first column and then provide descriptions in subsequent columns for poor, fair, good and excellent.



**C. Edward Watson, Ph.D.**



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**American Association of Colleges and Universities**

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