

Exploring the Integration of Large Language Models in Higher Education: Challenges, Opportunities, and Ethical Considerations

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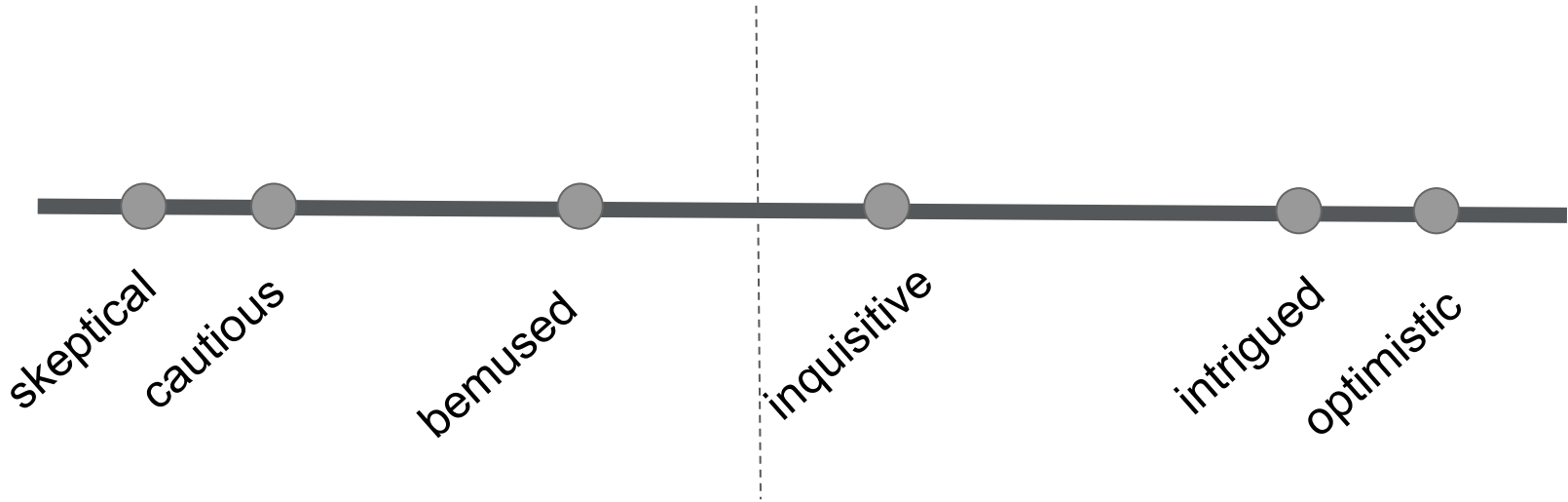
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How Do You Feel About Advanced AI Assistants?

Choose an adjective to express your feelings about the AI assistants listed below your name on your workshop name tags.



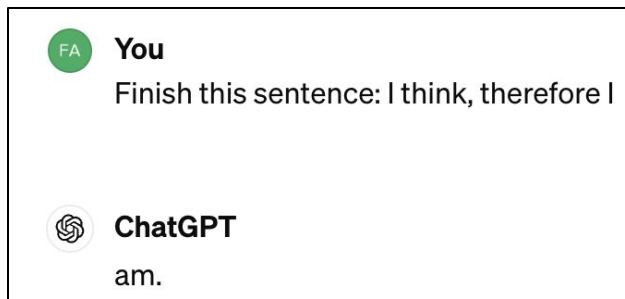
“There is nobody who has the complete picture of what AI means, and even the people making and using these systems do not understand **their full implications.**” – *Ethan Mollick*

How Large Language Models (LLMs) Work

They are analyzing a piece of text and predicting the next token which is simply a word or part of a word.

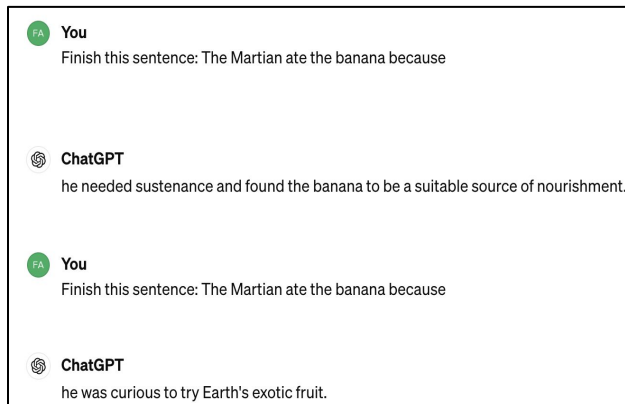
For example, ChatGPT acts as a very elaborate autocomplete like you have on your phone.

You give it some initial text, and it keeps writing text based on what it **statistically calculated as the most likely next token** in the sequence.



FA You
Finish this sentence: I think, therefore I

ChatGPT
am.



FA You
Finish this sentence: The Martian ate the banana because

ChatGPT
he needed sustenance and found the banana to be a suitable source of nourishment.

FA You
Finish this sentence: The Martian ate the banana because

ChatGPT
he was curious to try Earth's exotic fruit.

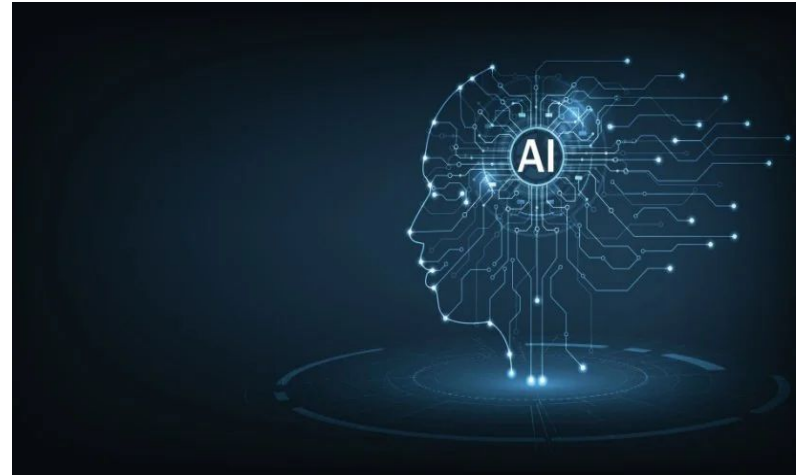
Adopted from [Co-Intelligence: Living and Working with AI by Ethan Mollick](#)

Teaching AI to Understand and Generate Humanlike Writing

Many of the AI companies keep the source text they train from, called **training corpuses**, a **secret**.

A typical example of training data largely consists of **text pulled from the internet**, public domain, and assorted other free sources of content,

e.g., the entire email database of Enron, shut down for corporate fraud, is used as part of the training material for many AI systems.

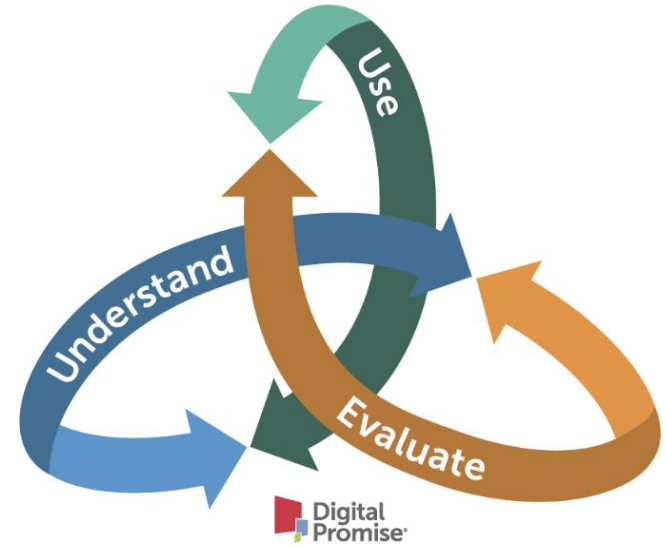


from: [10 Essential Terms To Understand Artificial Intelligence](#)

AI Literacy

AI literacy has emerged as a **skill set** for teachers and students to **safely use** emerging technologies in teaching and learning.

This framework for AI literacy ^[1] emphasizes that **understanding and evaluating AI** are critical to making informed decisions about **if and how to use AI** in learning environments.

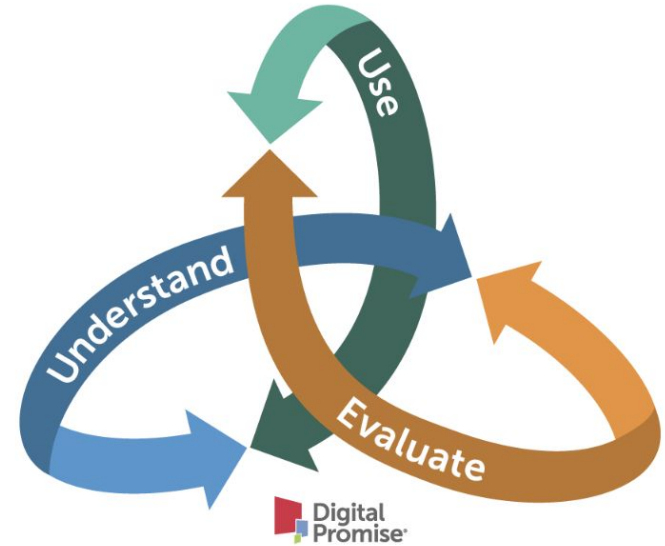


AI Literacy Framework

1. from: [Revealing an AI Literacy Framework for Learners and Educators](#)

AI Literacy

- Understanding AI
- Using AI
- Evaluating AI

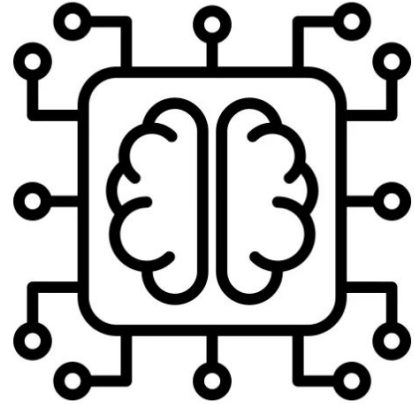


AI Literacy Framework

1. from: [Revealing an AI Literacy Framework for Learners and Educators](#)

Understanding AI requires a multidisciplinary set of skills and knowledge.

It applies to and intersects with computer science, cognitive science, natural language processing, robotics, and machine learning techniques through the use of data and predictive modeling. This involves foundational skills like **computational thinking practices**—such as pattern recognition, abstraction, and decomposition.



AI Literacy in Higher Education

Stakeholders	Understanding of AI	Usage of AI Systems	Evaluation of AI
University/Faculty Leadership	<ul style="list-style-type: none"> o Understand AI's potential o Understand AI's limitations 	<ul style="list-style-type: none"> o Strategic planning o Resources allocation o Policies formulation 	<ul style="list-style-type: none"> o Alignment with institutional goals o Ethical considerations
Faculty members	<ul style="list-style-type: none"> o Understanding of AI's implications for teaching learning, and research o Understand the limitations of AI tools 	<ul style="list-style-type: none"> o Integration into curriculum o Integration into research 	<ul style="list-style-type: none"> o Pedagogical effectiveness(teaching experience) o Student learning
Students	<ul style="list-style-type: none"> o Understanding of AI's role in supporting learning o Understand the limitations of AI tools 	<ul style="list-style-type: none"> o Accessing AI-powered tools for learning, for feedback, and for support 	<ul style="list-style-type: none"> o Learner experience o Learner sense of belonging (and agency), inclusivity o Impact on learning outcomes

AI Literacy in Higher Education

Stakeholders	Understanding of AI	Usage of AI Systems	Evaluation of AI
Researchers	<ul style="list-style-type: none">o Advanced understanding of AI's algorithms, methods and designs	<ul style="list-style-type: none">o Utilizing AI for scientific research (modelling, lab experiments, engineering, simulations)	<ul style="list-style-type: none">o Research integrity,o Reproducibility,o Ethical use of data
Learning Technologies Support	<ul style="list-style-type: none">o Understanding of AI tools and their educational applications	<ul style="list-style-type: none">o Supporting faculty in implementing AI-driven educational practices	<ul style="list-style-type: none">o Usability of the technologyo Integration with existing systemso Faculty support and training

AI Literacy in Higher Education

Stakeholders	Understanding of AI	Usage of AI Systems	Evaluation of AI
Legal/Compliance	<ul style="list-style-type: none">o Understanding of AI's legal and regulatory aspects	<ul style="list-style-type: none">o Ensuring AI systems comply with laws and regulations	<ul style="list-style-type: none">o Data protectiono Compliance with privacy regulations
IT Infrastructure Support	<ul style="list-style-type: none">o Understanding of AI systems' infrastructure requirements	<ul style="list-style-type: none">o Implementation, maintenance, and security of AI infrastructure	<ul style="list-style-type: none">o Scalabilityo Reliabilityo Data privacyo Adversarial attacks

Using AI

Engagement Mode	Risky Areas	Mitigation Strategies
Interact	Data Privacy	Implement robust data privacy policies and measures
	Bias in Feedback	Regularly audit AI algorithms for biases
	Overreliance	Encourage critical thinking
Create	Plagiarism	Educate students on academic integrity
	Intellectual Property	Establish guidelines for ownership and attribution of AI-generated content
	Technical Dependence	Offer training in AI development to adapt AI models
Apply	Unintended Consequences	Conduct thorough risk assessments before deploying AI
	Impact on some of the roles/jobs	Communicate transparently about the role of AI and its impact on staffing
	Accessibility Issues	Ensure AI applications are designed with accessibility in mind

Evaluating AI: Impact is the common denominator, across all evaluation dimensions

- The shared common denominator across all the aspects of evaluating AI in higher education is *impact*.
- Each stakeholder group, from university leadership to students to, LT and IT infrastructure support, are concerned with the impact that AI's implementations will have on various aspects of students' learning experiences and the institution as a whole.
- Impact can be positive or negative impacts.
- Evaluating AI in higher education involves assessing its potential impact across multiple dimensions, using specific metrics, and underlined by an evidence-based framework (evidence of impact).

Hands-On Activity 1

<https://padlet.com/fatemehsalehiankia/celebrate-learning-week-workshop-may-8th-62nam4cfgam4ef2n>



The handout with the instructions was emailed to all registered attendees.

1. Reflect on what we presented in terms of what factors into AI literacy, the role of each of the stakeholders involved, their uses of AI, and more specifically ways to evaluate the impact of AI.
2. Which questions would you want to pose to evaluate the impact of AI as related to your current, past or future role in a higher education institution?
3. Please share your questions on the padlet.

Evaluating AI: Questions to guide the evaluation of the impact

Stakeholders	Aspects of the evaluation	Questions that guide the evaluation
University/Faculty Leadership	<ul style="list-style-type: none">● Alignment with institutional goals● Ethical considerations	Which questions to pose?
Instructor	<ul style="list-style-type: none">● Pedagogical effectiveness● Students' learning● Ethical implications	Which questions to pose?
Student	<ul style="list-style-type: none">● User experience● Data privacy● Impact on learning experience	Which questions to pose?
Researchers	<ul style="list-style-type: none">● Research integrity● Reproducibility● Ethical use of data	Which questions to pose?

Evaluating AI: Questions to guide the evaluation of the impact

Stakeholder	Aspects of the evaluation	Questions that guide the evaluation
Learning Technologies Support	<ul style="list-style-type: none">● Usability● Integration with existing systems● Faculty support and training	Which questions to pose?
Legal/Compliance	<ul style="list-style-type: none">● Data protection● Compliance with privacy regulations	Which questions to pose?
IT Infrastructure support	<ul style="list-style-type: none">● Scalability● Reliability● Data privacy● Adversarial attacks	Which questions to pose?

AI As a Coach in Higher Education

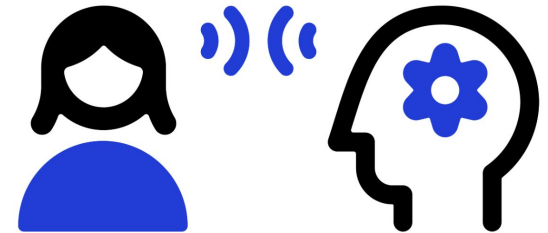
- Experts become experts through **deliberate practice** which is harder than merely repeating a task multiple times.
- Deliberate practice requires **serious engagement** and also needs a **coach** who can provide feedback and careful instruction.



from: [The Power of Deliberate Practice](#)

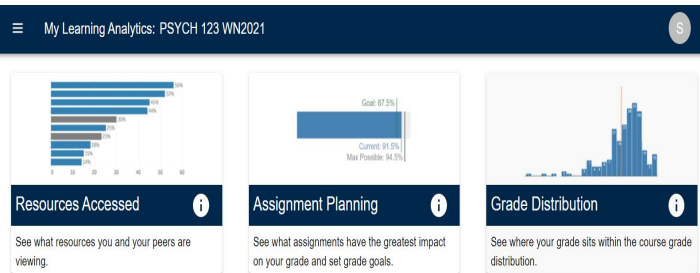
AI As a Coach in Higher Education

- We aim in our project with the aid of AI, embodies the essence of deliberate practice: rapid **feedback loop** with **targeted suggestions** for improvement in learning progress.
- Today's AI cannot achieve this entire vision. It is not able to connect complex concepts. it still hallucinate too much and it's lack of memory.



from: [What is conversational AI?](#)

What is MyLA?



My Learning Analytics (MyLA) was designed to **support adaptive motivation and self-regulated learning**, which is critically related to academic performance.

MyLA provides **students** with information about their engagement with course learning materials, assignments, and grades.

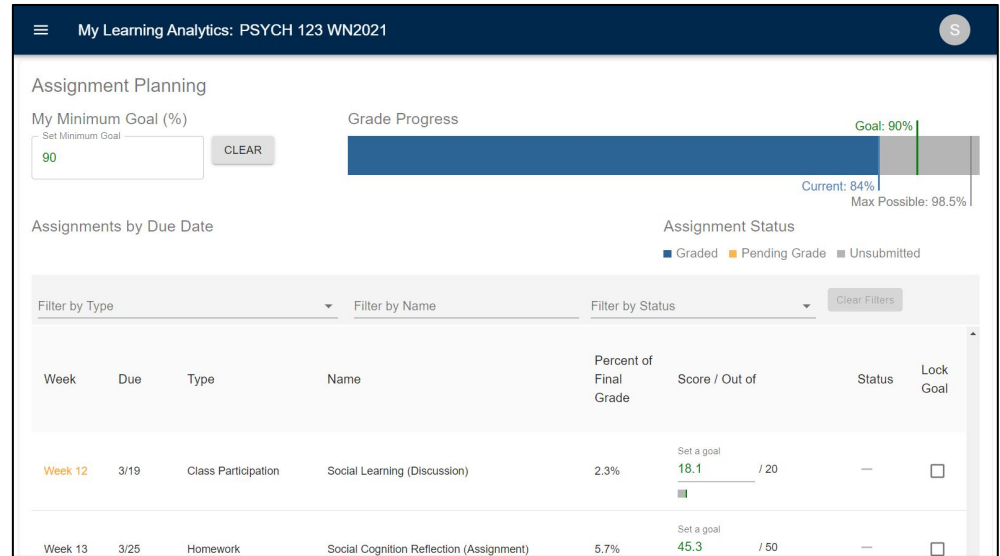
MyLA is embedded in LMS Canvas.

Assignment Planning Tool

Purpose: Helps students set clear goals and plan their assignments.

Students were not taught how to plan their learning process.

MyLA provides guidance on how to **break down** the learning objectives into **smaller, manageable goals** (e.g., assignment scores, exam performance).



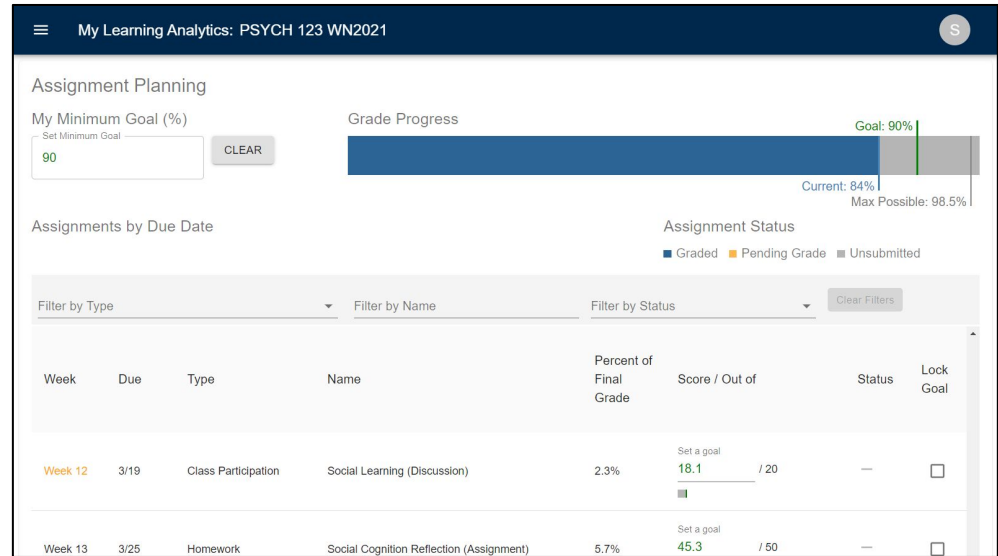
How Can Conversational AI Enhance Assignment Planning?

Aids students in understanding **how to achieve** their desired goals.

Grade Target: Students input their desired minimum final grade (e.g., 90).

Students can explore different scenarios with **LearnCoach**:

- What if I score higher on Assignment X?
- How can I allocate time and effort for each assignment based on its weight and due date?



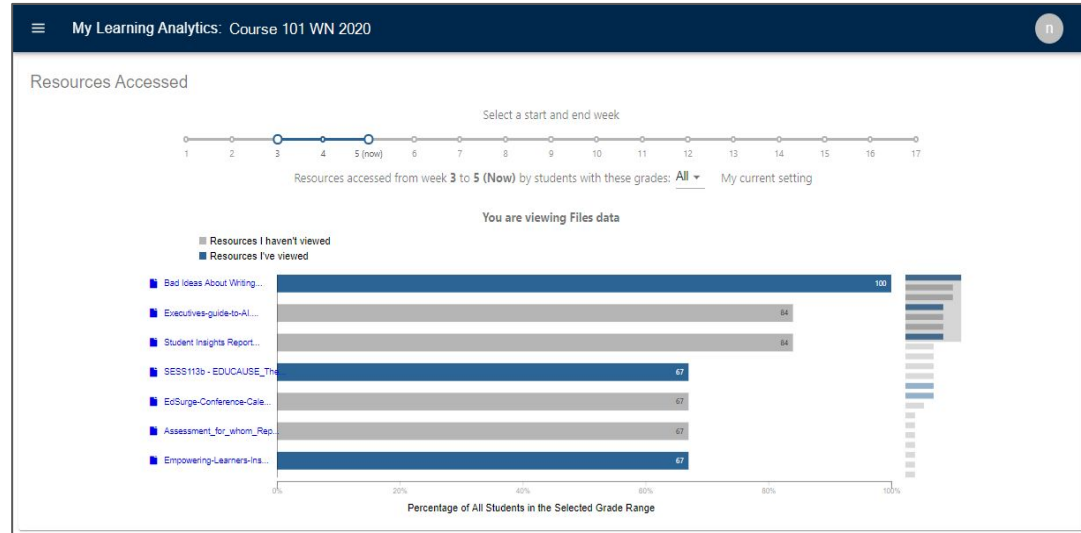
Resources Accessed Tool

Purpose: Supports **metacognitive monitoring** and **control** during the learning process.

Review Learning Materials:

Students can access and download course materials (lectures, readings, videos)

Students can explore different scenarios with the **LearnCoach**:
What strategies should I use to complete Assignment X?



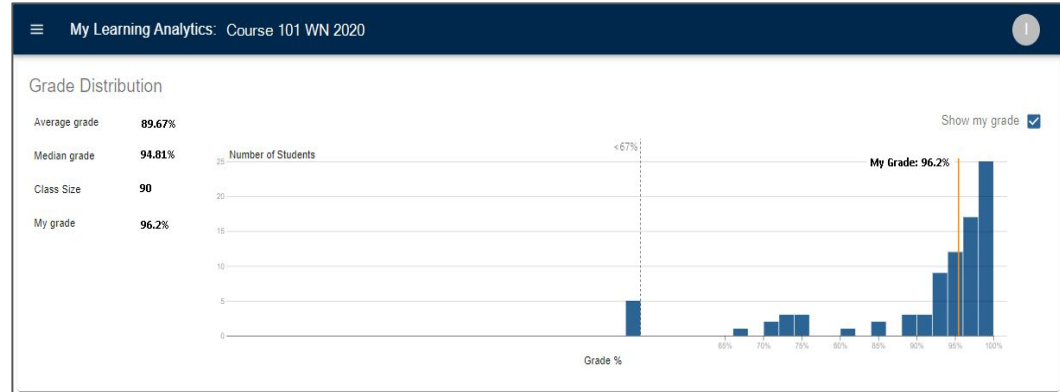
Grade Distribution Tool

Purpose: Understanding of their own academic standing.

Self-Reflection and Feedback Loop

Contextualized Performance: Students can interpret their grades within the context of the class distribution.

Students can explore different scenarios with the **LearnCoach**:
Based on my grades, are there any specific areas where I can improve?



Hands-On Activity 2

<https://padlet.com/fatemehsalehiankia/celebrate-learning-week-workshop-may-8th-62nam4cfgam4ef2n>



As a group, identify the following and post on the padlet board:

1. What sources of **student data can be embedded** in the Large Language Model (LLM) to enhance the engagement of the advanced AI chatbot with students in My Learning Analytics Tool?
2. If student data, such as some progress indicators, is not accessible through Canvas LMS, what **diagnostic questions** can the *LearnCoach* ask students to better understand their learning needs and optimize engagement with the AI chatbot in our Learning Analytics Tool?

In the dynamic landscape of education, John Dewey's emphasis on cultivating **critical thinking through inquiry** stands as a beacon, illuminating the transformative power of questioning assumptions and exploring unforeseen connections.

Yet, as we navigate the integration of generative AI, with its swift delivery of conclusions, how do we **preserve the space for inquiry** amidst the allure of immediate conclusion, ensuring that education remains a process of exploration and discovery?

Connect with Us

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