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# Empowered to Adapt: Building Resilient Learners through Flipped Education

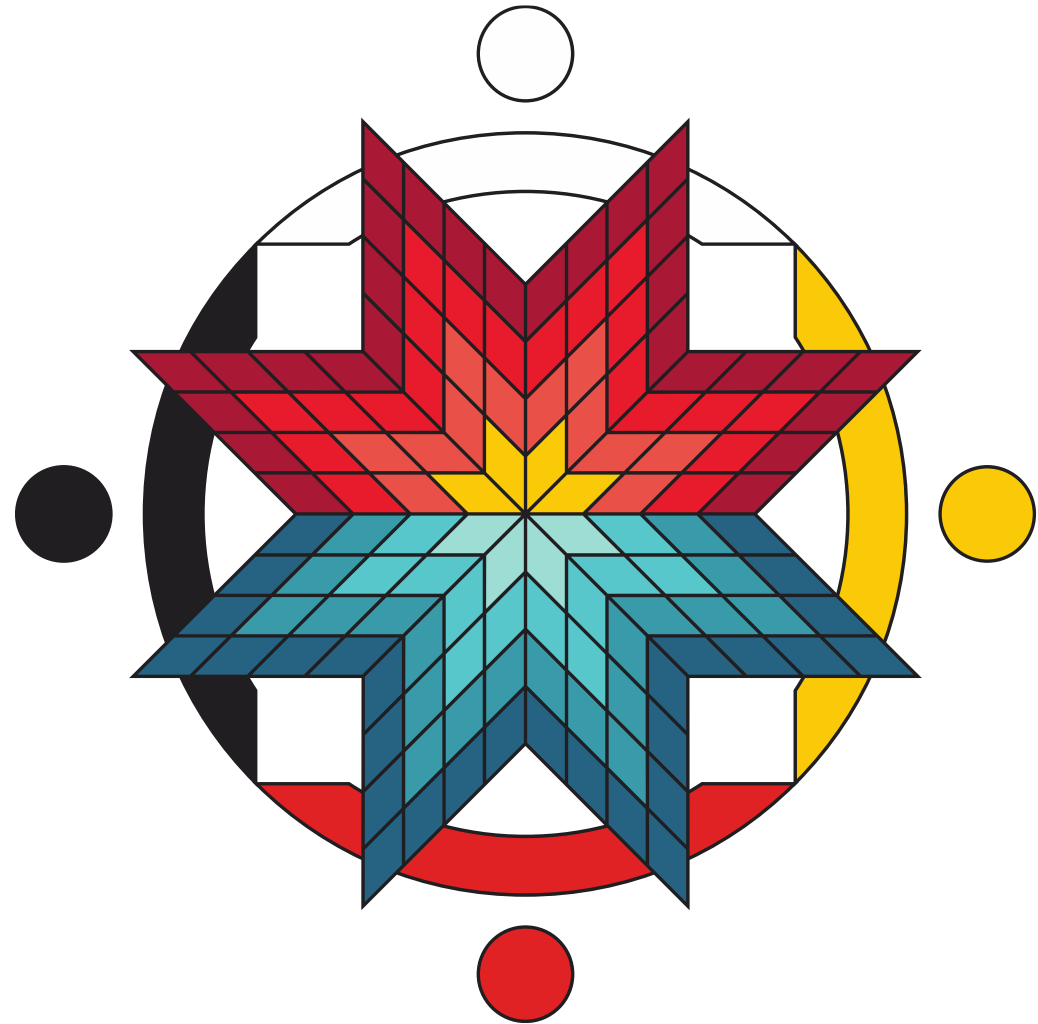
Dr. Viji Vibhu Prakash

# Land Acknowledgement

George Brown Polytechnic is located on the traditional territory of the Mississaugas of the Credit First Nation and other Indigenous peoples who have lived here over time.

We are grateful to share this land as treaty people who learn, work and live in the community with each other.

[Learn more about our land acknowledgement.](#)



# Agenda

The design

Implementation

Classroom use of the Flipped Learning Companion GPT

A custom generative AI tool intentionally engineered as a workflow-locked pedagogical companion rather than a general-purpose assistant



# Beginnings – Where it all started

AI as an unrestricted tutor or content generator - The idea was to designing a workflow-locked Generative AI Companion to support Flipped Learning: An Experiential Scholarship of Teaching and Learning Study

Developed to support a flipped classroom model, the GPT guides students through a structured sequence of pre-class learning activities

- Resource engagement
- Student-generated questioning
- Question-quality evaluation
- Formative assessment
- Performance reflection
- Faculty analytics

The design prioritizes learner accountability, critical thinking, and evidence-based assessment while constraining AI behaviors that could undermine learning.

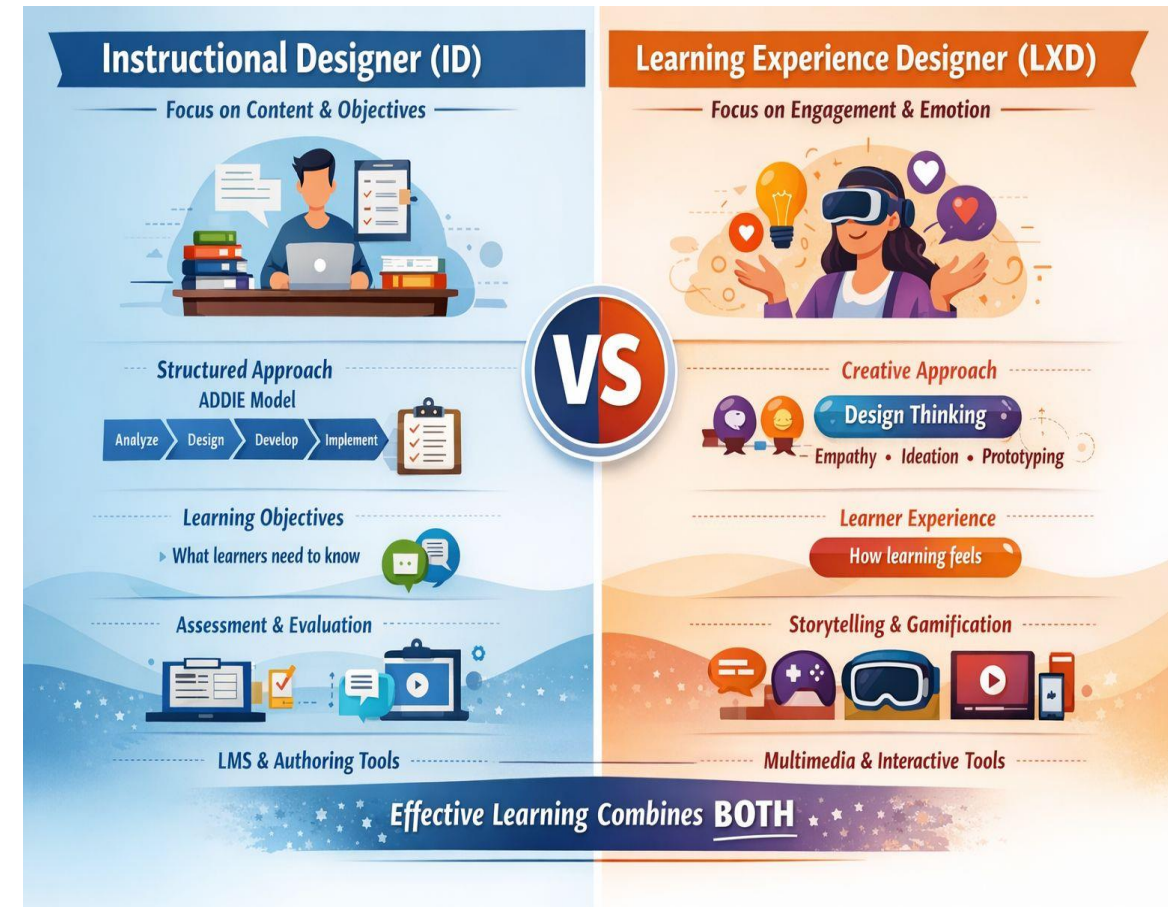
Drawing on classroom implementation experiences, this project helps examine how the GPT supports student preparation, self-regulated learning, and instructor insight into student understanding.

Findings suggest that carefully constrained AI systems may offer a promising approach to integrating generative AI within flipped learning environments while preserving pedagogical integrity and promoting active learning.



# The Meaningful Difference and Dependence

Instructional Design focus on structure and clarity	Learning Experience Design, on the other hand, focus on human experience
What should learners know, and how do we measure it	How does learning feel, and how do we make it meaningful
Strong emphasis on objectives, assessments, and outcomes	Approach is more creative and user-centered—leveraging storytelling, empathy, and design thinking to build engagement



Adapted from LinkedIn

“proving a difference” ? No

Focus is more about using the lens to design more intentionally

# The Flipped Classroom Companion

Flipped learning has become a widely adopted instructional approach in higher education

It reallocates lower-order learning activities to pre-class preparation while reserving class time for active learning, collaboration, and application.

Despite its demonstrated benefits, instructors frequently encounter challenges related to student preparedness, uneven engagement with assigned materials, and limited opportunities to monitor pre-class learning processes.

Simultaneously, the emergence of generative artificial intelligence has created new opportunities and tensions within higher education. While AI tools can provide immediate support and personalized learning experiences, concerns remain regarding academic integrity, overreliance on AI-generated content, and the potential erosion of critical thinking skills.

To address these competing realities, the Flipped Learning Companion GPT was developed as a purpose-built educational intervention.

Beyond an unrestricted chatbot

GPT operates through a tightly controlled instructional workflow aligned with flipped learning principles

The design intentionally restricts AI behaviors that could bypass learning processes while encouraging active student engagement with course materials



# Design Innovation 1: A Workflow-Locked AI Learning Companion

- 1) Upload assigned course materials
- 2) Generate two original questions demonstrating engagement with the content
- 3) Receive evaluation of question quality based on critical thinking, clarity, and relevance
- 4) Complete a five-question formative quiz derived exclusively from the uploaded materials
- 5) Receive performance-based scoring and feedback
- 6) Generate an individual performance summary
- 7) Contribute anonymized learning analytics that inform instructional planning



## Step 1 - Upload assigned course materials

## Step 2 - Generate two original questions demonstrating engagement with the content

Flipped Learning Companion ▾



### Flipped Learning Companion

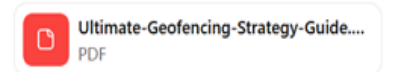
By Viji Vibhu Prakash 🇮🇳

To get started please upload the open educational resource shared by your professor

+ Ask anything



Flipped Learning Companion ▾



Thank you for uploading the assigned material, *Ultimate Guide to Building the Perfect Geofencing Strategy*.

#### Step 2: Student Question Creation

Please create **two thoughtful questions** based on the uploaded material.

Your questions should demonstrate:

- Critical thinking
- Clarity
- Relevance to the topic

Submit **exactly two questions**. After you provide them, I will evaluate each question separately.

... Sources



## Step 2 – Generate two original questions demonstrating engagement with the content

## Step 3 – Receive evaluation of question quality based on critical thinking, clarity, and relevance

Flipped Learning Companion ▾

Q1) What is the impact of Geo Fencing? Q2) What are the benefits and challenges of Geofencing in Training and Development within multinational companies that have a global presence?

### Question 1

Score: 6/10

**Feedback:** The question is relevant to the uploaded material because geofencing impact is discussed throughout the guide, including marketing performance, targeting, and campaign outcomes. However, the question is broad and does not encourage deeper analysis of specific factors, strategies, or outcomes presented in the material.

### Question 2

Score: 3/10

**Feedback:** The question is clear, but its relevance to the uploaded material is limited. The guide focuses on geofencing as a marketing and advertising strategy, not on training and development within multinational companies. While geofencing is the topic, much of the question extends beyond the content covered in the document.

**Next Step:** To continue the workflow, ask me to create the quiz by saying:

"Create 5 multiple choice questions."

📄 👍 🗨️ ...



# Step 4 - Complete a five-question formative quiz derived exclusively from the uploaded materials

Flipped Learning Companion ▾

Create 5 multiple choice questions



## Quiz: Geofencing Strategy

### Question 1

According to the guide, what is the first step in developing an effective geofencing strategy?

- A. Selecting ad delivery times
- B. Understanding your customer journey and objectives
- C. Choosing the largest possible geofence
- D. Setting a monthly advertising budget

### Question 2

Which factor refers to how long a user remains within the audience pool before being removed?

- A. Geofence Size
- B. Layering Data
- C. Recency
- D. Ad Delivery Schedule

### Question 3

According to the guide, why is geofencing considered valuable for retailers and restaurants?

- A. It guarantees sales conversions
- B. It eliminates the need for other marketing channels
- C. It allows measurement of foot traffic and targeting of nearby consumers
- D. It only targets existing customers



Flipped Learning Companion ▾

### Question 4

Which additional marketing channel is specifically mentioned as working effectively alongside geofencing?

- A. Direct Mail Only
- B. Facebook Advertising
- C. Radio Only
- D. Newspaper Advertising Only

### Question 5

Which of the following is listed as a KPI for evaluating geofencing campaigns?

- A. Employee Satisfaction
- B. Inventory Turnover
- C. Click Through Rate (CTR)
- D. Manufacturing Output

Now the quiz is here answer it. Please provide your answers in the format:

1. A
2. B
3. C
4. D
5. A



# Step 5 - Receive performance-based scoring and feedback

Flipped Learning Companion ▾

1.C / 2. A / 3. C / 4. A / 5. C

You have completed **Attempt 1**.

**Question 1:** Incorrect.

Attempts used: 1 of 3.

**Question 2:** Incorrect.

Attempts used: 1 of 3.

**Question 3:** Correct.

**Question 4:** Incorrect.

Attempts used: 1 of 3.

**Question 5:** Correct.


Please answer **only Questions 1, 2, and 4** again.

Format:

1. [A/B/C/D]




2. [A/B/C/D]

3. [A/B/C/D]

**Next Step:** Submit your second attempt for Question  2, and 4.

Flipped Learning Companion ▾

Microsoft commits to helping 25 million people acquire new digital skills needed for the Covid-19 economy  
<https://news.microsoft.com/skills/>

   ...

B, C, B

## Attempt 2 Results

**Question 1:** Correct.

**Question 2:** Correct.

**Question 4:** Correct.

You have now completed the quiz.

## Quiz Grading

### Scoring Logic Used

- Correct on 1st attempt = Full credit
- Correct on 2nd attempt = Partial credit
- Correct on 3rd attempt = Minimal credit
- Incorrect after 3 attempts = No credit

### Your Performance

- Question 1: Correct on 2nd attempt
- Question 2: Correct on 2nd attempt
- Question 3: Correct on 1st attempt
- Question 4: Correct on 2nd attempt
- Question 5: Correct on 1st attempt

**Final Quiz Score:** 8.0/10

### Feedback

- **Strengths:** You demonstrated a solid understanding of geofencing applications, campaign measurement, and business value.
- **Areas for Review:** Review the foundational elements of geofencing strategy development and audience configuration concepts discussed in the guide.

**Next Step:** If you would like the final summary, explicitly type:

"Generate my performance summary."

   ...



Generate my performance review



## Student Performance Summary

### Average Question Evaluation Score

- Question 1: 6/10
- Question 2: 3/10

Average Question Evaluation Score: 4.5/10

### Quiz Score

Quiz Score: 8.0/10

### Strengths

- Demonstrated good understanding of key geofencing concepts covered in the guide.
- Successfully identified the value of geofencing for businesses and campaign measurement.
- Correctly answered all quiz questions by the second attempt or earlier.
- Showed persistence in revisiting and correcting initial misunderstandings.

### Areas for Improvement

- Question quality could be strengthened by focusing more closely on topics explicitly covered in the uploaded material.
- Some confusion was evident regarding foundational strategy components and audience configuration terminology.
- One submitted question extended beyond the scope of the assigned resource, reducing its relevance.

### Specific Actionable Recommendations

1. Review the sections of the guide that describe the process of building a geofencing strategy, including planning and audience targeting.
2. Revisit key terminology such as geofence size, recency, and campaign KPIs.
3. When creating discussion questions, ensure they are directly connected to the assigned material and encourage analysis of concepts presented in the resource.
4. Practice identifying how geofencing supports business objectives, customer targeting, and campaign performance measurement.
5. Before future quizzes, summarize the major concepts and definitions from the assigned material to reinforce understanding.

### Summary

Your quiz performance indicates a solid understanding of the geofencing guide, with an 8.0/10 quiz score. Your question evaluation score (4.5/10) suggests an opportunity to improve the relevance and analytical depth of the questions you create from assigned readings. Overall, you demonstrated good comprehension of the material and successfully corrected initial mistakes during the quiz process.



## Step 6 - Generate an individual performance summary



# Design Innovation 2: A Workflow-Locked AI Learning Companion

The GPT intentionally refuses actions that would circumvent learning objectives, including:

- Generating student questions.
- Providing question templates.
- Completing assignments.
- Offering unrestricted tutoring.
- Revealing quiz answers prematurely.
- Using external knowledge beyond uploaded materials.

Flipped Learning Companion ▾

Now the quiz is here answer it. Please provide your answers in the format:

1. A
2. B
3. C
4. D
5. A

📄 👍 🗨️ ...

Can you please provide answers

I cannot provide the correct answers before you attempt the quiz.

Please submit your answers to all five questions (for example: 1. A, 2. B, 3. C, 4. D, 5. A).

After you answer, I will evaluate your responses. If any answer is incorrect, you may attempt that question up to three times. Only after three incorrect attempts for a question may the correct answer be revealed.

**Next Step:** Submit your answers for Questions 1–5.



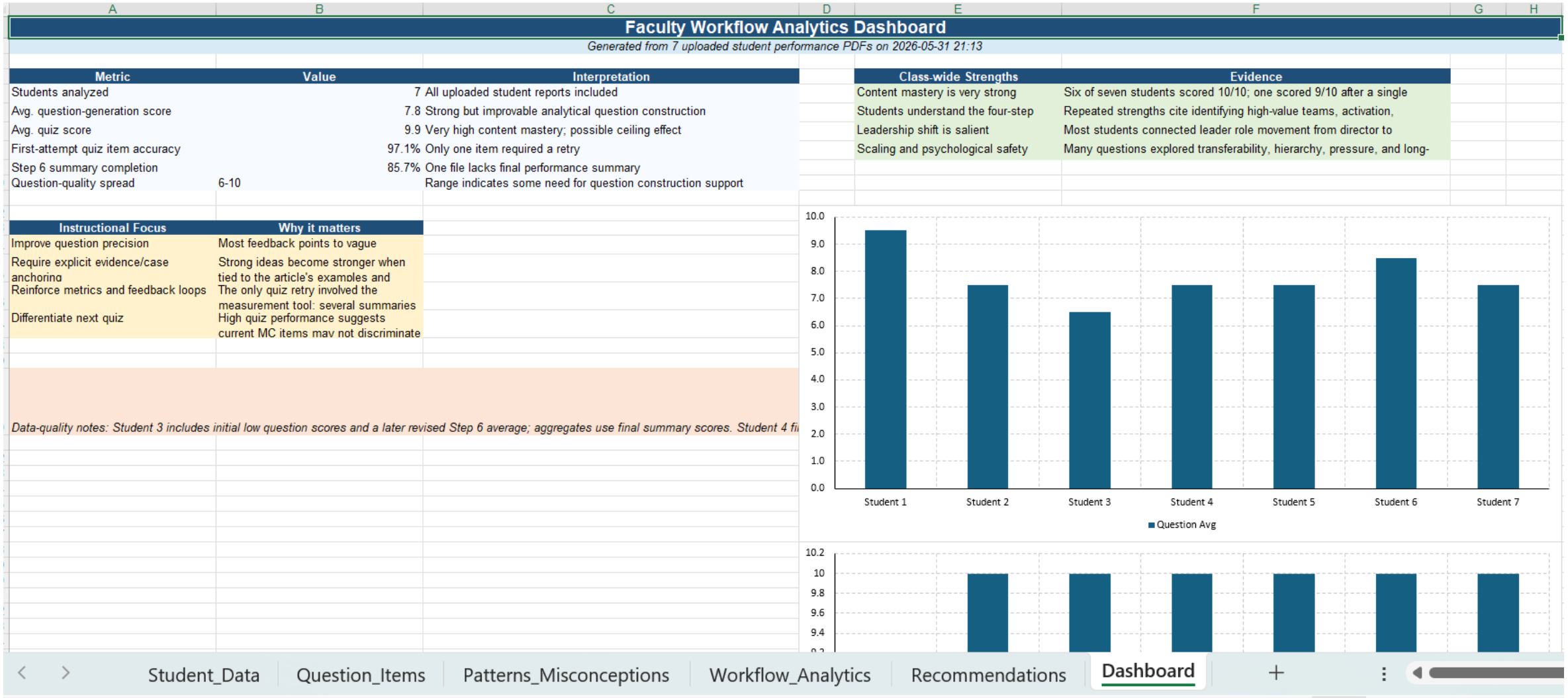
# Scholarship of Teaching and Learning (SoTL) – Evidence

Number of students using the GPT - 35 Students

Number of pre-class sessions completed - 45

Metric	Result
Students analyzed	7
Total student-generated questions evaluated	14
Average question-evaluation score	<b>7.79/10</b>
Median question-evaluation score	<b>7.5/10</b>
Average quiz score	<b>9.86/10</b>
Students scoring 10/10 on quiz	<b>6 of 7</b>
First-attempt quiz item accuracy	<b>34 of 35 = 97.1%</b>
Final quiz score range	<b>9–10/10</b>
Question-score range, final-summary view	<b>6–10/10</b>
Step 6 performance-summary completion	<b>6 of 7 files = 85.7%</b>

# Step 7 - Contribute anonymized learning analytics that inform instructional planning



# Pedagogical Rationale

Several design decisions distinguish the Flipped Learning Companion GPT from conventional AI-supported learning tools.

- Requiring students to formulate their own questions shifts responsibility for meaning-making to the learner. Student-generated questioning has been associated with deeper cognitive processing and improved comprehension.
- Restricting the GPT to uploaded course materials strengthens alignment between AI interactions and instructor-designed learning outcomes.
- Delayed answer disclosure and multiple quiz attempts encourage productive struggle and formative learning rather than answer seeking.
- Faculty analytics create opportunities for evidence-informed teaching by surfacing patterns in student understanding, misconceptions, and question quality prior to classroom instruction.
- Collectively, these design choices position the GPT as a pedagogical intervention rather than a technological novelty.



# Student reflection quotes

Article Reading - 15 mins

Flipped Learning Companion - 12-15 mins

I liked the experience as a pilot program

It has the potential to ensure that students do get something from the readings as they go through them.

I liked that we got instant feedback as well as a broader perspective of what I could have included to fit the criteria better.

I liked that questions tested the material in the article we uploaded only, but at the same time it felt limited when most of our coursework asks us to connect our readings to broader themes relevant to the class or subject matter.

Another thing that I greatly appreciated about this experience was the constructive and specific feedback based on my own answers.

I liked that it wasn't an extensive and exhaustive process. It was short and concise with clear evaluative methods in place.

I felt like it reinforced the concepts/ideas from the reading and helped reduce irrelevant clutter (thoughts) with regards to the assigned reading

It could also make it easier to connect it to concepts introduced in class without having to parse through everything the article could relate to.

I found it to be a really enjoyable way to complete readings. I used the audio reader function in D2L to go through the article for this.

I found it very interactive and engaging.

I especially appreciated the immediate, on-the-spot feedback. It helped me understand my mistakes right away and learn through constructive guidance. I believe this approach is very helpful for students, as it allows us to reflect and improve our understanding in real time.



# Potential Research Questions

- How does a workflow-locked GPT influence student engagement with pre-class learning materials?
- How does requiring student-generated questioning affect learner preparation and critical thinking?
- What patterns of learning and misconception emerge from GPT-generated analytics?
- How do students perceive the value and limitations of a constrained AI learning companion?

## Future of learning

- Effective learning isn't just about delivering content.
- It's about designing moments where people understand, connect, and apply what they learn in real life
- In today's world—especially in communication, education, and professional development, we don't just need instruction.
- We need experiences that actually change behavior



# Q & A



# References

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