

EduSense

*Feasibility Presentation
Team Emerald 07/10/25*

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Elevator Pitch

ChatGPT and Grammarly have become everyday companions for students. There's a growing risk that we're letting AI do too much thinking for us, leading to weaker critical thinking, creativity, and problem-solving skills.

Recent studies show AI can boost writing quality and save time, but students who rely too heavily on AI understand less in the long term. That's why we're building a mobile/web application that will encourage users to think first with features like reflective prompts, challenge modes, and usage tracking.

Our app will empower students and teachers to harness the benefits of AI while still building the independent skills that matter most for lifelong learning.

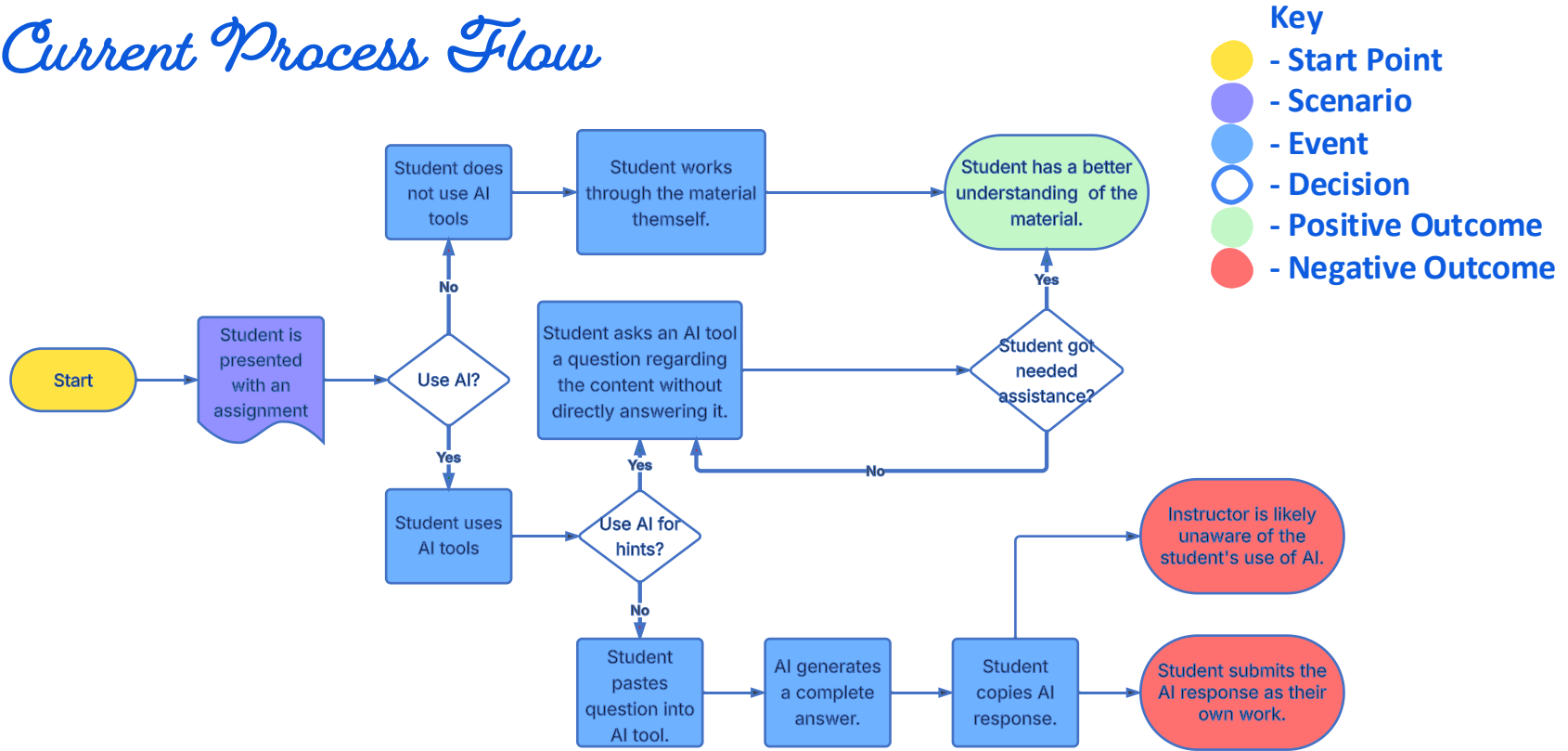
The Societal Problem

As ChatGPT, Grammarly, and AI search engines become more popular, many users, especially students, have begun to rely on them too much. Instead of using them for support, users are asking these AI tools to do their thinking for them. While that may seem helpful in the moment, it could cause long-term issues in developing critical thinking, creativity, and problem-solving skills.

Problem Characteristics

- According to Qirui Ju, a study conducted on a group of students found that those who fully relied on AI for their school assignments scored almost 20% lower during a writing assignment than those who don't. (Ju, 2025)
- A systematic review found that excessive reliance on AI dialogue systems significantly impairs students' abilities in critical thinking, decision-making, and analytical reasoning. (Zhai et al., 2024)
- Many users rely on AI responses without checking them, often because of mental shortcuts and cognitive biases. (Vasconcelos et al., 2023)

Current Process Flow

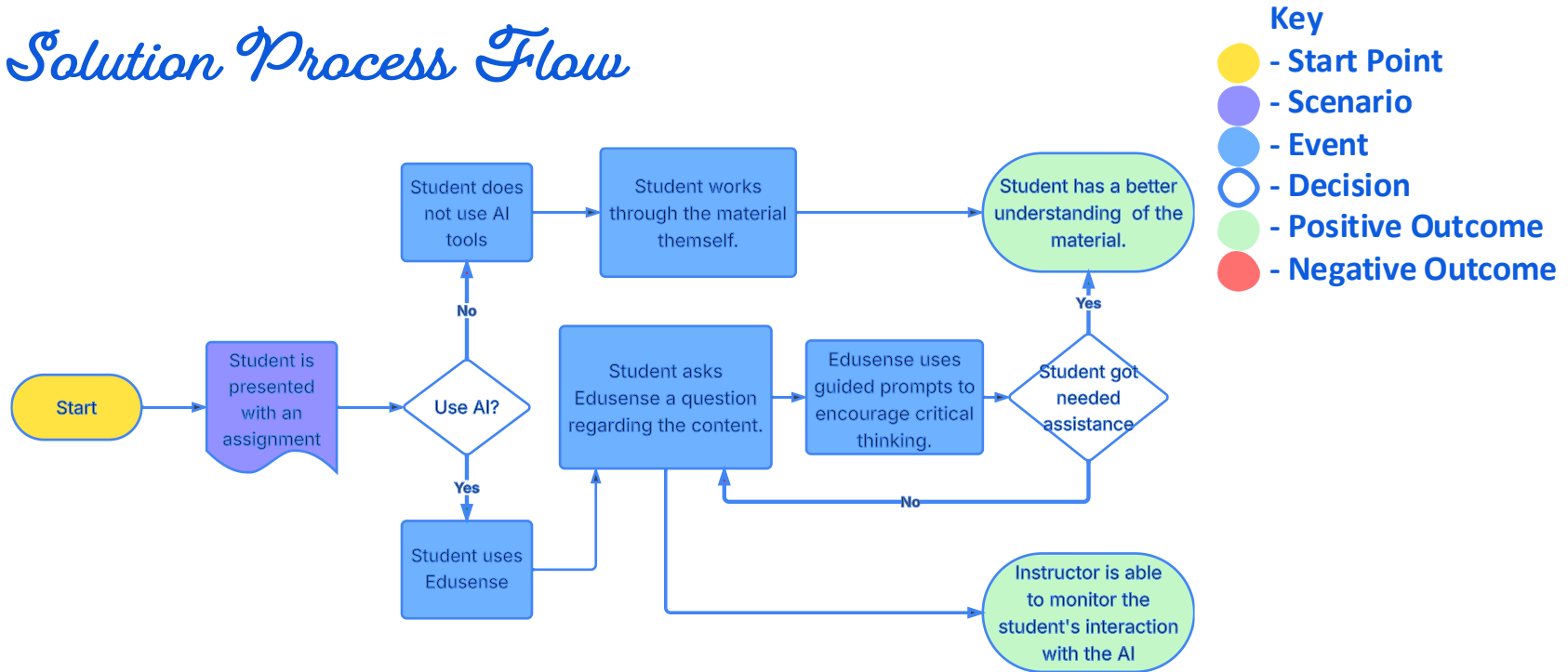


Solution Statement

Our goal is to build EduSense, a mobile app and web application that helps students and educators use AI tools more intentionally. Instead of giving direct answers, the app will encourage users to use their own thought process first with the help of guided questions, reflective prompts, and challenge modes that limit or delay AI input. The end goal is to help students better understand the material.

The student's usage history will also be accessible to educators. This will allow them to identify problem areas in student comprehension and improve their lesson plans. Including integration with Canvas so that it can recognize the context of student questions.

Solution Process Flow



This Process Flow assumes that a student does not plan on letting AI tools solve their problems.

What It Will Do

- Provide instructor with the ability to upload assignments to the platform.
- Provides the student with access to an LLM while completing their assignment.
- Integrate with learning platforms such as Canvas to better guide students.
- Guides the student's questions with leading prompts to help them arrive at the answer.
- Provides the instructor with the student's user history.
- Help students develop critical thinking and problem-solving skills

What It Won't Do

- Diminish the guardrails put in place by the LLM's originator.
- Provide direct answers to assignment questions.
- Replace the need for student effort and critical thinking.

Competition Matrix

Function	EduSense	Chegg	ChatGPT	Google's AI Overview
Explains how the solution was achieved	✓	✓	✓	✓
Saves user history for review	✓	✓	✓	
Integrates with learning platforms to better assist students and instructors	✓			
Provides external links to more information	✓		✓	✓
Guides the user with leading prompts based on the desired answer	✓			
Improve Student Problem-Solving and Critical Thinking	✓			

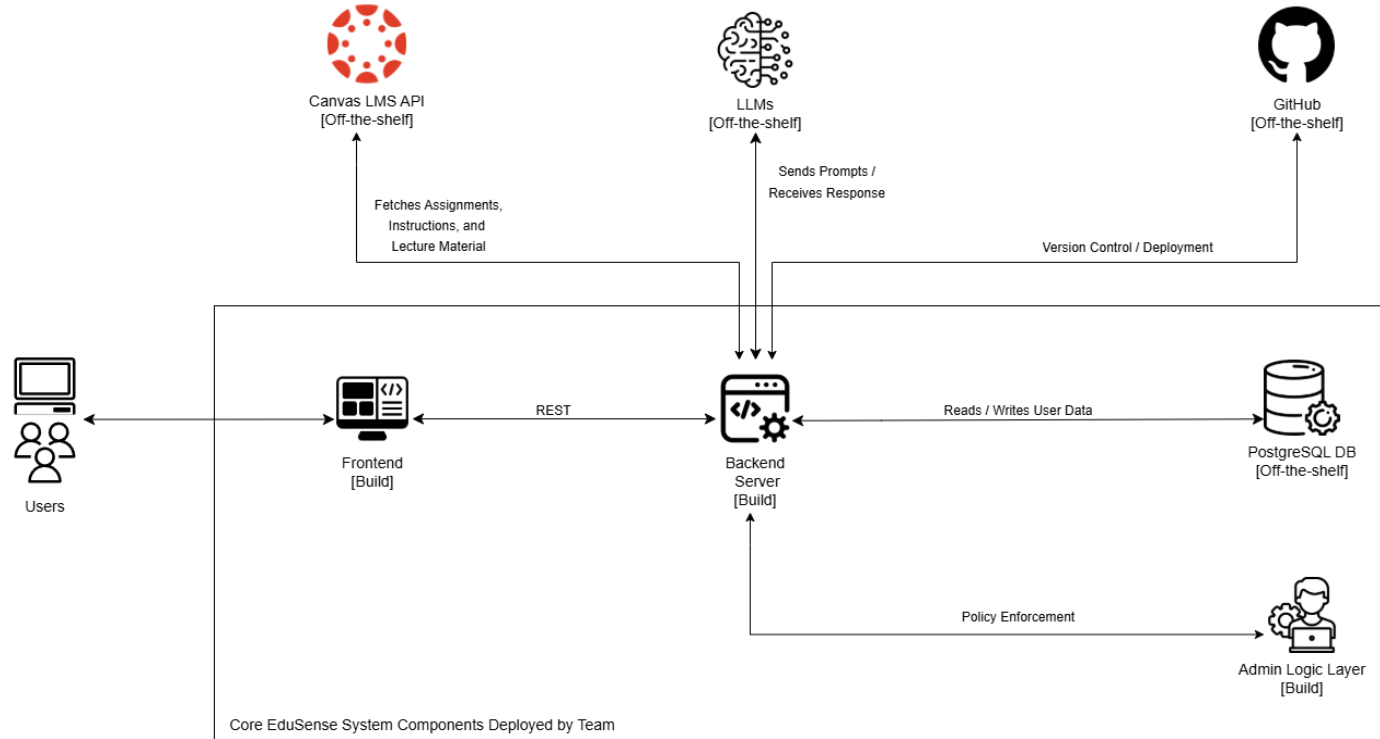
Development Tools

Development Space	Tool
Frontend	HTML, CSS, JavaScript and React
Backend	Python (Django)
Database	PostgreSQL
Testing Framework	PyTest (Python), Jest (JavaScript)
Documentation Tool	Pydoc (Python), JSDoc (JavaScript)
LLM Integration	OpenAI GPT, Claude, Gemini, or LLaMa
Version Control / CI-CD	Git, Github, Github Actions, Github Workflows

Functional Components

- User Authentication (students & educators)
- Assignment Management (upload, assign, track)
- AI integration (prompts, challenge modes, LLM access)
- Copy/paste restriction layer
- Admin controls (Educators toggle certain features by assignment)

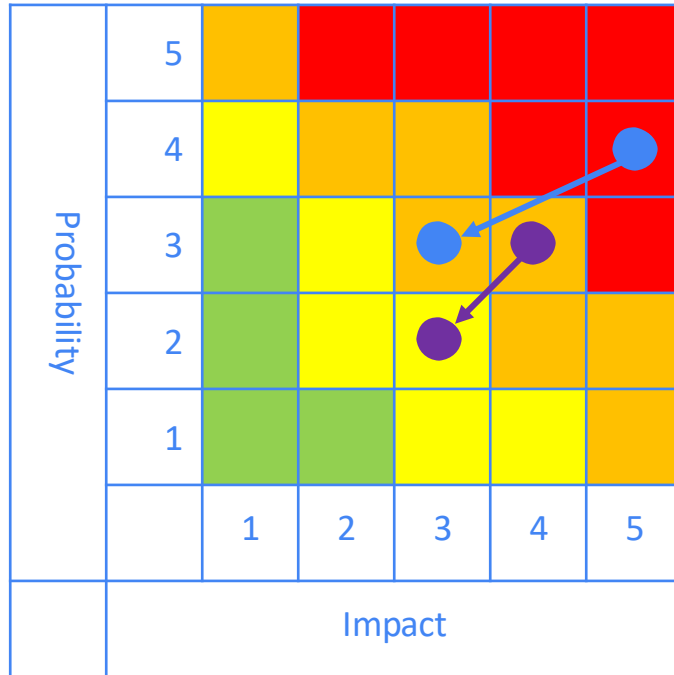
Major Functional Components Diagram



Risks Overview

- Bypassing Guardrails: Students may still find workarounds.
- Privacy concerns: Tracking usage must comply with FERPA/GDPR.
- Technical complexity: integrating restrictions and analytics.
- User adoption: Educators and students may resist new workflows.

Risks - Customer & End User



- **Risk: Students Bypass Guided Prompts**

- Probability: 4; Impact: 5
- Mitigation: Employ gamification and reward users to keep them engaged.
- Expected reduction: Probability: 3; Impact: 3

- **Risk: Students Find the Platform Cumbersome**

- Probability: 3; Impact: 4
- Mitigation: Our platform will remember what concepts users have already mastered, bypassing unnecessary prompts in future sessions and incorporating periodic knowledge checks to ensure users don't forget what they've already learned.
- Expected Reduction: Probability: 2; Impact: 3

Risks - Technical

Probability	5					
	4					
	3					
	2					
	1					
		1	2	3	4	5
Impact						

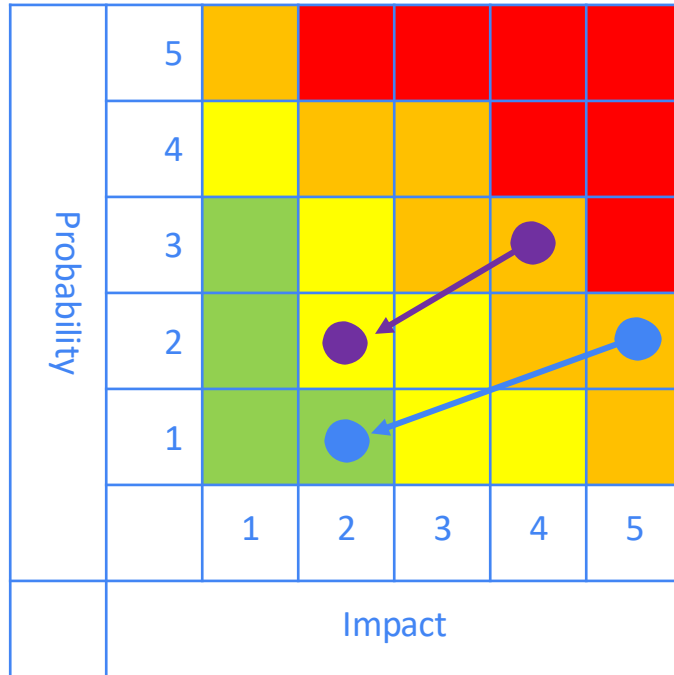
- **Risk: Prompt Guidance Fails**

- Probability: 3; Impact: 5
- Mitigation: Employ extensive testing with diverse special cases and include 'backstep/undo' options to revert to a previous state should a prompt fail to guide the student.
- Expected reduction: Probability: 2; Impact: 2

- **Risk: LLM Quota Limits**

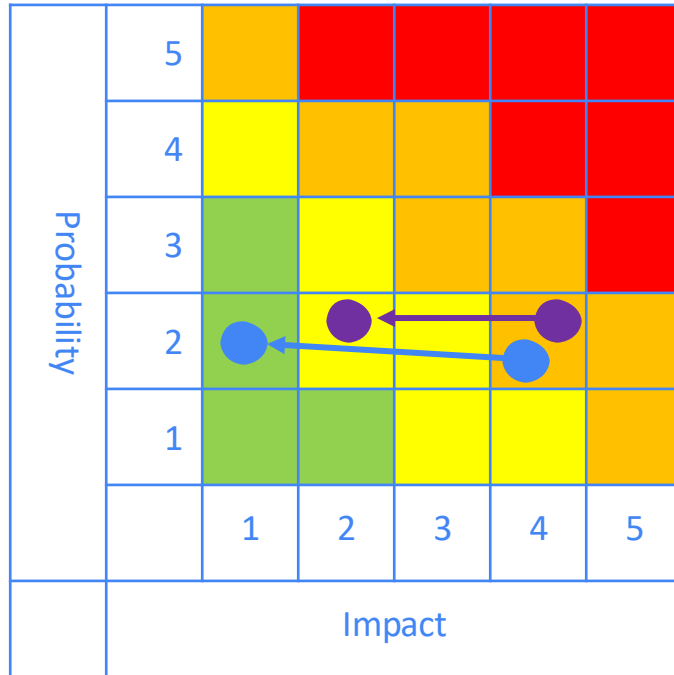
- Probability: 4; Impact: 5
- Mitigation: Utilize several LLMs to ensure there are always options to fall back on and minimize the amount of platform to LLM API interaction.
- Expected reduction: Probability: 4; Impact: 3

Risks - Security



- **Risk: User Inputs Confidential/Personal Information**
 - Probability: 2; Impact: 5
 - Mitigation: Add filters to detect certain keywords and display warnings as well as a confirmation prompt forcing the user to confirm their input.
 - Expected reduction: Probability: 1; Impact: 2
- **Risk: Users Try to Access Harmful Content**
 - Probability: 3; Impact: 4
 - Mitigation: Add filters to detect certain keywords and display warnings as well as block certain prompts.
 - Expected reduction: Probability: 2; Impact: 2

Risks - Legal



● Risk: Plagiarism

- Probability: 2; Impact: 4
- Mitigation: Provide disclaimers and guidance on ethical AI use as well as encourage citation of AI assistance. The platform will provide MLA / APA citations of source material in this case.
- Expected reduction: Probability: 2; Impact: 1

● Risk: Copyright Infringement (e.g. user uploads textbook excerpts)

- Probability: 2; Impact: 4
- Mitigation: Add a user content policy that prohibits copyright violations and automatically detect and reject copyrighted materials.
- Expected reduction: Probability: 2; Impact: 2

Conclusion

- Large Language Models like ChatGPT and Gemini have become pervasive in education.
- Students and Educators need a tool that help them better engage with an LLM.
- EduSense will apply ethical AI use and the socratic method of teaching to fulfill this need.

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Appendix

Real World Product

vs.

Prototype

1. Scalable
2. Robust security
3. Full analytics & integration with LLM
4. Polished UX/UI
5. Proprietary LLM

1. Low Scalability
2. Basic Security
3. Limited analytic functionality
4. Basic UX/UI
5. Reliance on non-proprietary LLM

Glossary

- Artificial Intelligence (AI): Ability for a computer or machine to perform tasks that typically require human intelligence. Ex. Problem solving, languages, or understanding languages.
- Canvas LMS: A learning management system used by educators to manage course content, assignments, and communication with students.
- Challenge Mode: Setting that encourages learners to try on their own before getting help. It limits access to answers to encourage thinking through the assignment first.
- Guided prompts: Targeted questions or hints created to help students think critically and come up with their own solution.
- Large Language Model (LLM): An advanced AI system trained on massive text datasets to understand and generate human-like language
- MFCD (Modified Functionality Component Diagram): A diagram showing the major hardware and software components of the product and how they interact.
- Usage Tracking: The process of recording how users interact with the system, such as which features they use or how they engage with AI prompts.