



EduTech Innovators

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Our Team

Our team spans 3 countries and includes a diverse range of skill sets, including experience in computer science, tutoring, and research. We are connected by a shared passion for education and understanding AI's impact in the field of education.



Audrey Lee



Ahmed Yusuf



Pradyun Thumar



Riley Taylor



Saisha Siram



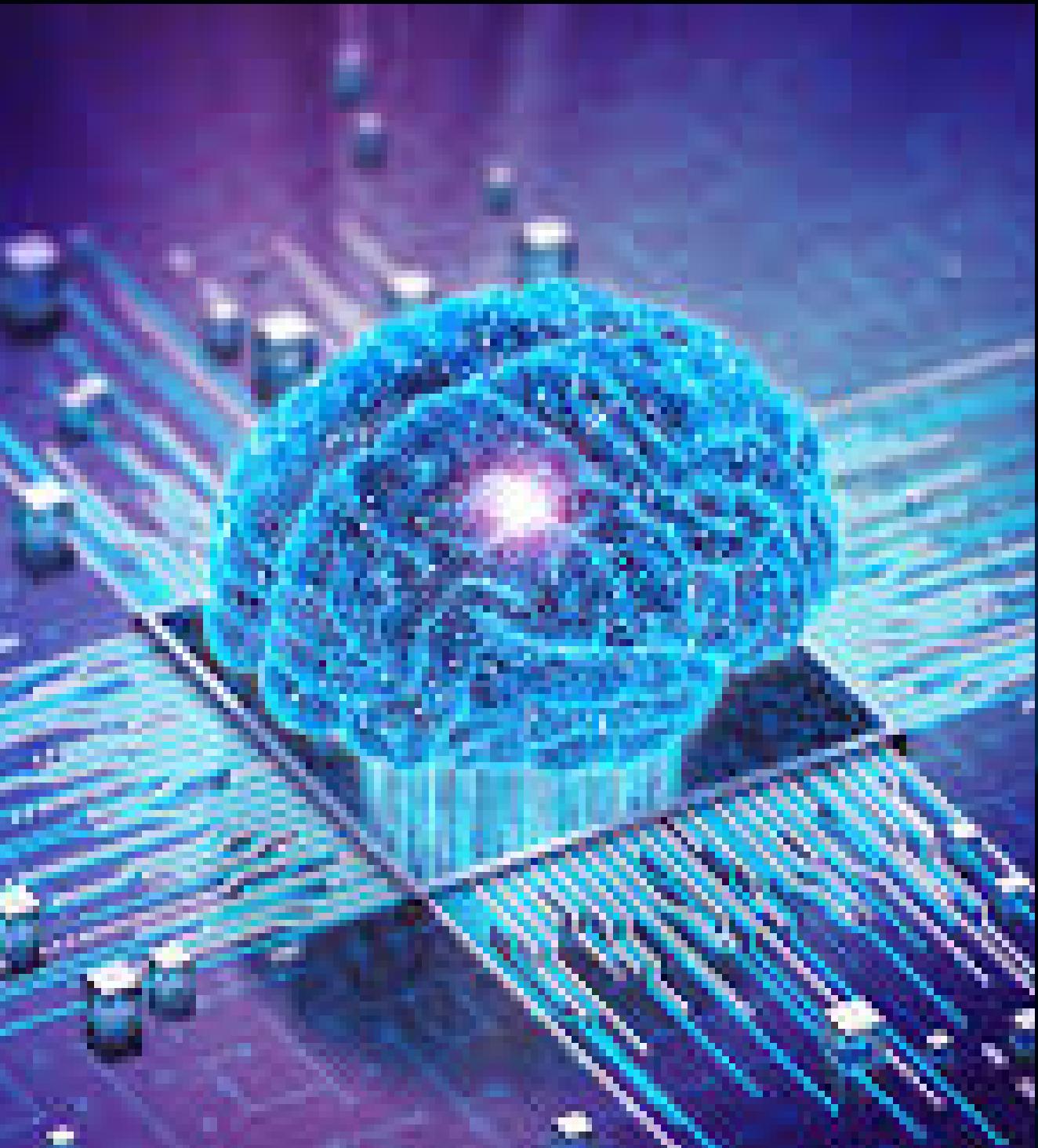
Shreyas Rajaram



Introduction

AI poses innumerable challenges in various aspects of society. Many of these issues are tied back to a common thread: ethical concerns. Currently, the ethics of using AI in fields from finance to education are ambiguous and professionals often grant dissimilar weight to ethical concerns in their work.

A key field of interest for our group, and for many individuals worldwide, is the impact of **AI in education**. While some educators are optimistic about **AI and Large Language Models enhancing opportunities for enrichment**, others are worried about detrimental impacts on students' learning and motivation. For this reason, our group sought to address the ambiguity surrounding AI in the education sector.





Vision & Mission

Vision

Our vision is of greater clarity of appropriate and inappropriate uses of AI in education. As in numerous sectors, advances in technology can be immensely beneficial for education. We hope that our ideas and solution will shed light on these benefits and limit detrimental effects of AI usage. Ultimately, we foresee an LLM built to feature insights and uses informed by our research.

Mission

Our mission is to decrease the ambiguity in regulations on AI in the education sector. Through creating a list of guidelines, we believe that we can help schools to better handle the impact of AI advancements in the future. Ultimately, this template can be extended to other sectors leading to more ethical usage of AI across industries.



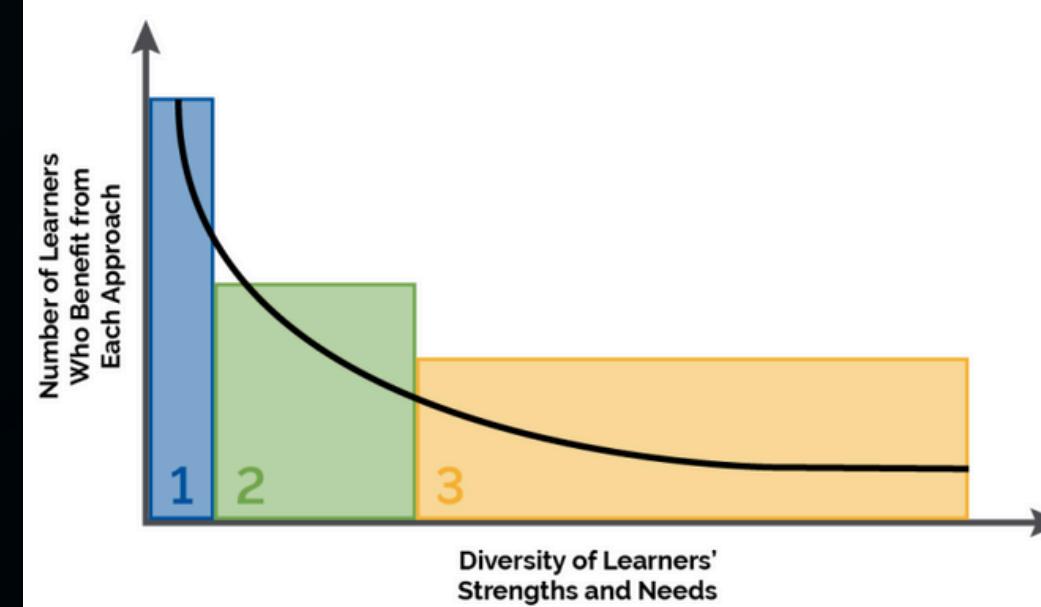


Background

Cheating, lacking student ingenuity, and biased results. These represent a just few of the common comments revolving AI in the education field. Artificial Intelligence has faced intensifying pressure as companies rapidly aim to capitalize on student learning, advertising their new models as an avenue for students to find shortcuts for tasks. However, that doesn't mean we can't reshape how we see AI. In fact, AI's scope can be applied to multiple industries, across multiple nations.

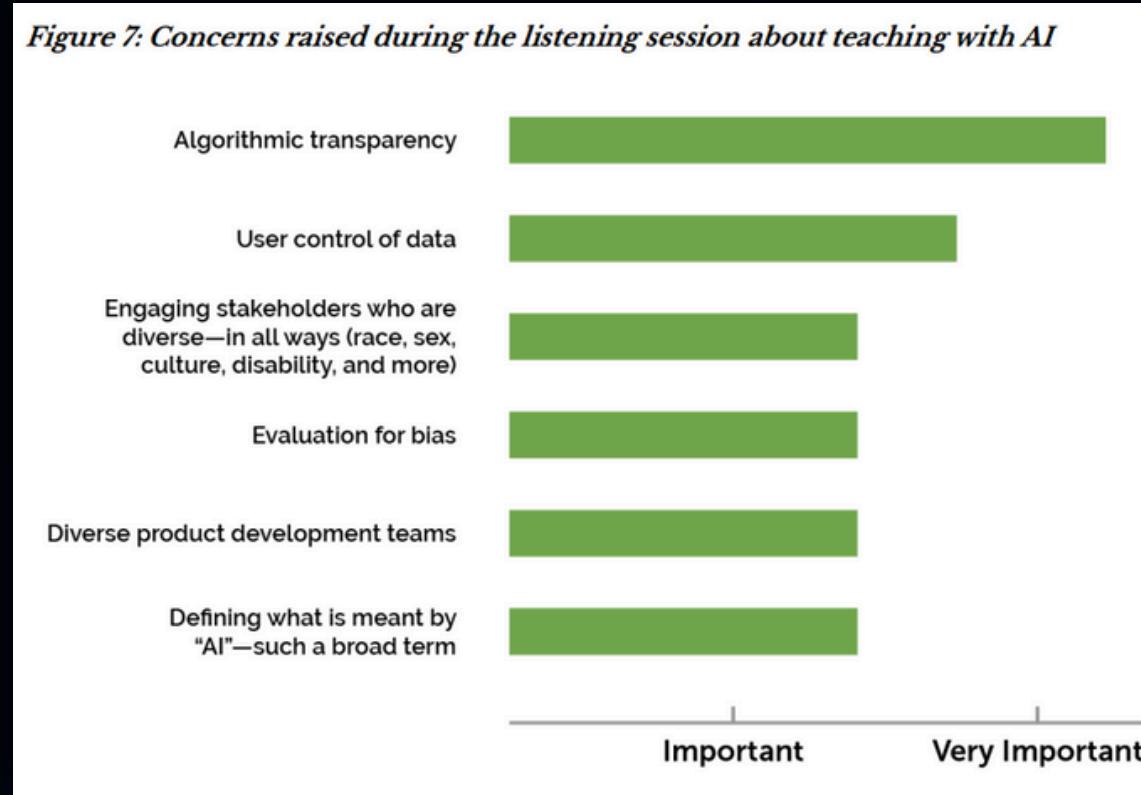
According to the U.S Department of Education, the application of AI in an educational setting is inevitable. Yet, its ambiguity doesn't necessarily correlate to it being a technology to shy away from. The USDE defines AI as "automation based on associations" detailing the risks of this technology, but also its untapped potential in positively impacting student learning.

Figure 13: The long tail of learner variability



The positive application of AI is limitless. For example, one type of AI-enabled technology is an Intelligent Tutoring System that can handle differing educational priorities. As seen in the graph to the left, there is ample variation in students' learning that isn't always sufficiently addressed in a classroom setting. Our current structure for learning is incredibly standardized, singling out the learning of those who fall under categories 2 or 3. In this case, AI's leverage comes in its adaptability i.e. its ability to create personalized and targeted learning for each and every student. When harnessing adaptability, it is important to take an asset-oriented rather than deficit-based approach to learning (as coined by the U.S. Department of Education). In other words, focusing on a student's ability to expand their knowledge, rather than hyperfixating on what they don't know. This advance in AI could rewire our mindset on AI in education.

Figure 7: Concerns raised during the listening session about teaching with AI



Initial Data Collection: Student/Teacher Survey

STUDENTS

I have used generative AI in my learning *

1 2 3 4 5
Never Often

Generative AI tools make it easier for me to understand difficult topics *

1 2 3 4 5
Strongly Disagree Strongly Agree

Generative AI tools help me save valuable time. *

1 2 3 4 5
Strongly Disagree Strongly Agree

I use generative AI the most in subjects such as *

- Humanities (visual arts, history, language, literature, etc.)
- Social science (economics, geography, philosophy, etc.)
- Natural science (biology, physics, chemistry, etc.)
- Formal science (computer science, mathematics, etc.)
- Applied science (engineering, environmental science, medicine, etc.)
- I do not use AI
- Other...

Generative AI opens my perspectives rather than narrowing them *

1 2 3 4 5
Strongly disagree Strongly agree

I feel guilty after using generative AI *

1 2 3 4 5
Strongly disagree Strongly agree

I wish I had more freedom in using generative AI for schoolwork *

1 2 3 4 5
Strongly disagree Strongly agree

Generative AI is unreliable/biased *

1 2 3 4 5
Strongly disagree Strongly agree

TEACHERS

I have used AI in my teaching *

1 2 3 4 5
Never Often

My students have used AI in their learning *

1 2 3 4 5
Never Often

I am not sure if my students have used AI in their learning *

1 2 3 4 5
Strongly Disagree Strongly Agree

I am most concerned about student use of generative AI because of the: *

- Risk of misinformation or inaccuracies in AI generated content
- Risk of academic dishonesty in students
- Student decline in problem solving and creative thinking
- I am not concerned
- Other...

The most positive outcome of students using AI tools in their learning is the: *

- Access to instant support
- Assistance with research and idea generation
- Opportunity to explore complex topics independently
- Development of digital literacy skills

I would find the following AI guidelines fair: *

- Using AI to get ideas but not complete answers
- Disclosing AI use in assignments
- Limiting AI use to specific subjects
- Other...

If I could design an AI tool for school I would want it to: *

Short answer text

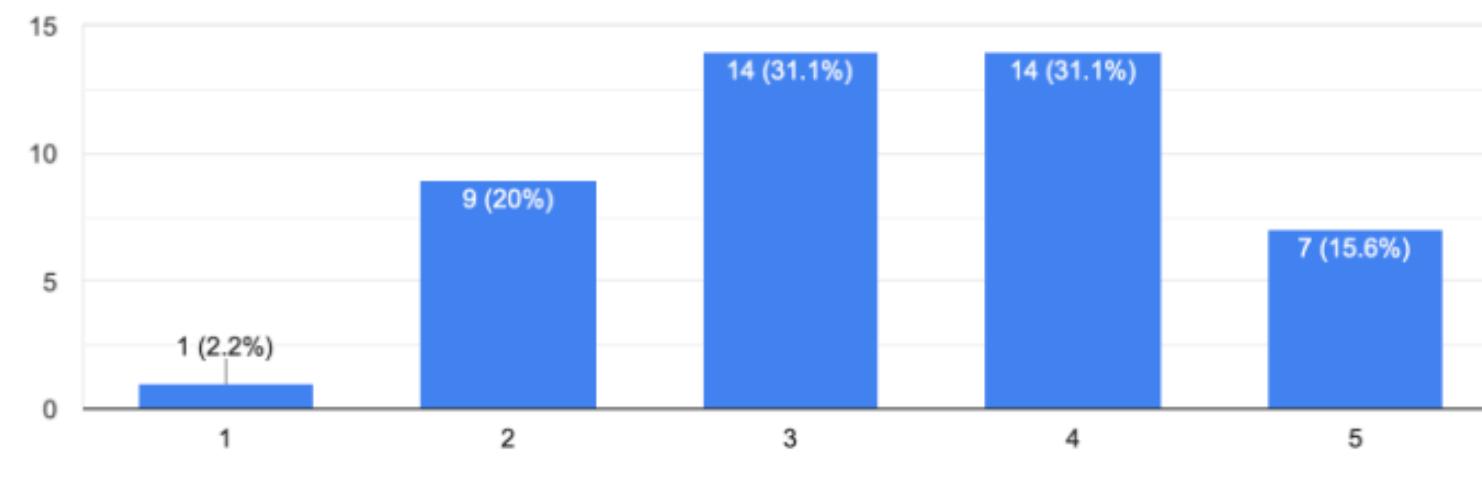


Initial Data Collection: Student/Teacher Survey Responses

STUDENTS

I have used generative AI in my learning

45 responses

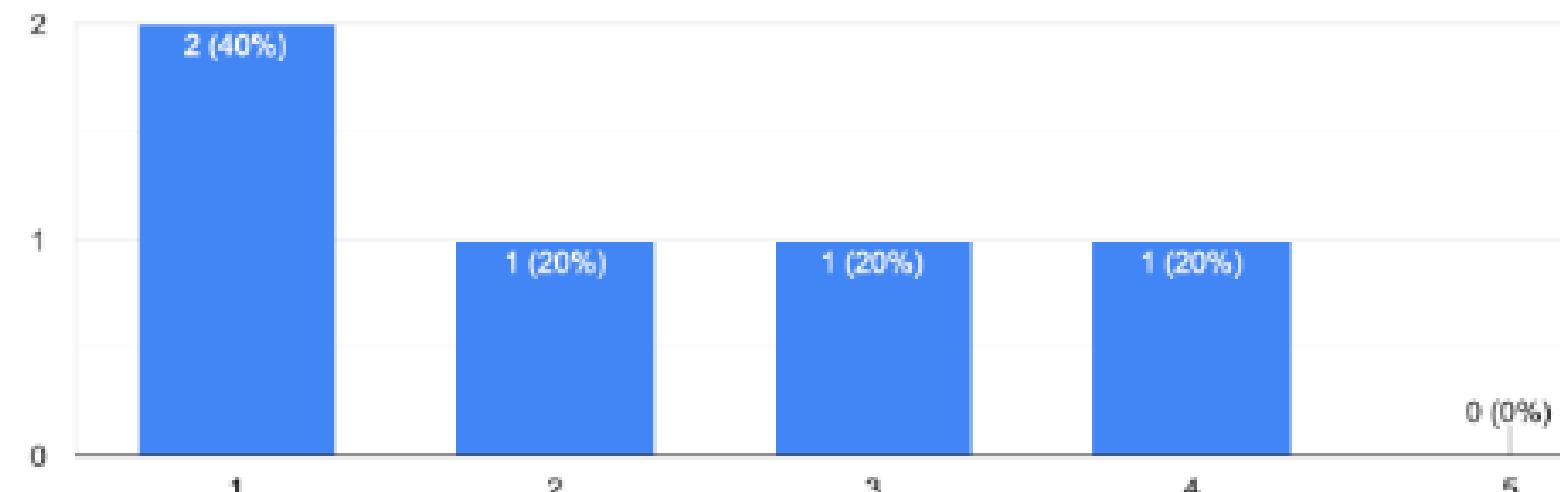


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TEACHERS

I have used AI in my teaching

5 responses

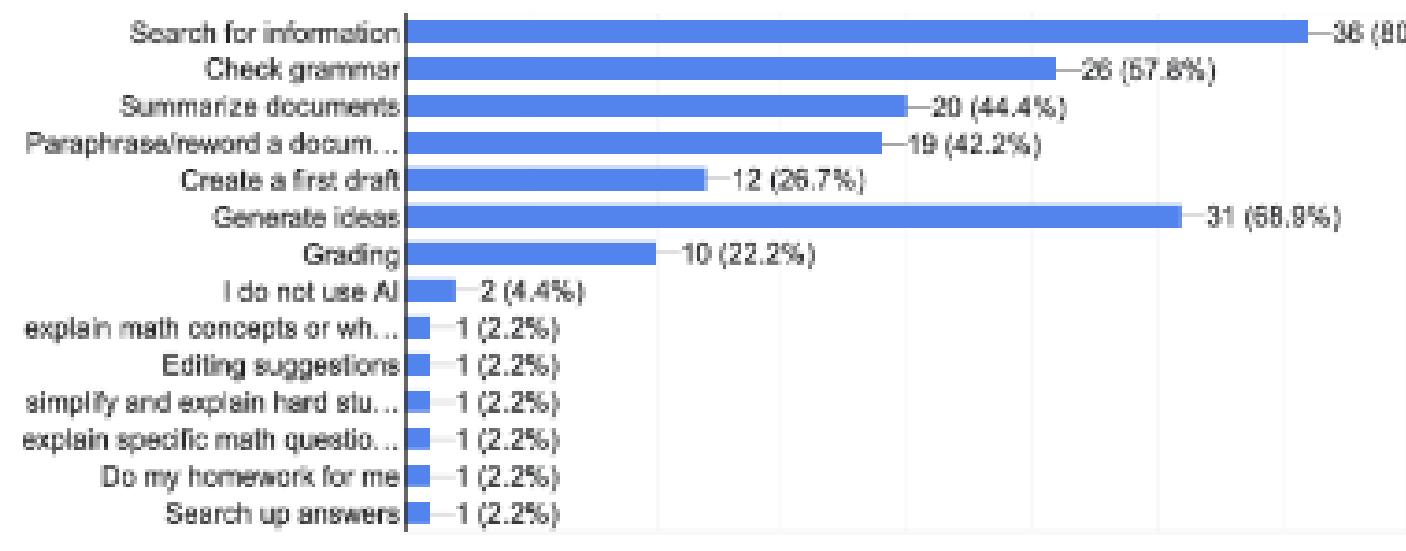


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I mainly use AI to:

45 responses

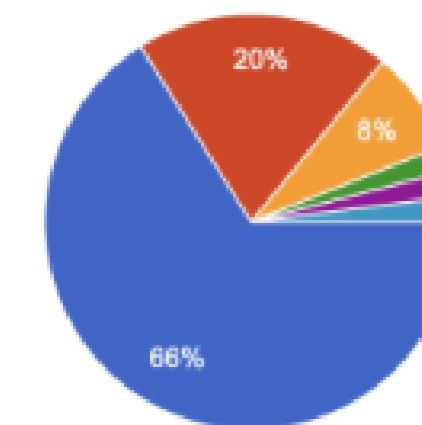
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I would find the following AI guidelines fair:

50 responses

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- Using AI to get ideas but not complete answers
- Disclosing AI use in assignments
- Limiting AI use to specific subjects
- I agree with both one and two
- None. AI is a tool that should be open to use for all different subjects and necessities.
- Not using AI for creative work, writing, and art. Although brainstorming ideas...



Hypothesis

If the limitations of AI in school were based on specific universal standards, then effective implementation of AI has the potential to positively impact student development and learning rather than be detrimental. Through our research, we hope to demonstrate this by devising a list of universal norms on AI usage and applying this to a custom-built model for education. Ultimately, we hope to remove the ambiguity regarding AI policy and leverage AI to enhance education.

Methodology

Literature Review

Real World Data

Design Development

Testing + Next Steps

Solution

Our solution aims to tackles 3 main issues

1. Cheating/Lack of Critical Thinking

Problem: Students use AI as a tool to do work for them, or search up answers.

Solution: Create limitations on the AI's responses. Create an AI that provides resources and questions rather than answers.

2. Transparency

Problem: Teachers are hesitant to let student's use AI because they are unsure how it's being applied.

Solution: Teachers are able to interact with students via the platform to get a better understanding of their learning.

3. Accessibility

Problem: Large discrepancies in educational resources exist.

Solution: While our platform is unable solve gaps in digital resources, our platform's simple user interface will serve as a easy and cost efficient research tool.

Our Idea

Create an online AI platform for schools that follows a set of a certain **rulebook** that is in adherence with school guidelines, that allows students to explore AI and a student's creativity and critical thinking to improve. Essentially creating an interactive, adaptable (to the student's knowledge) AI chatbot that complies with the norms and regulations of a school setting.

This platform that is **designed by students for students** allows them to employ AI for educational purposes - to spell check essays, develop practice problems, create study guides, create flashcards, etc (more change to come once we have more responses to feedback form).



AI Rulebook Guideline

To address worries of cheating with the use of AI, we have created a rulebook that our AI model will follow. This comprehensive rulebook takes into consideration a multitude of school regulation spanning from New York school districts the region across the globe in order to make our app a universal application.

As shown, some key area we will target in our AI model is restrictions in AI for testing, plagiarism, and student support (guided learning)

AI Rule Book for School Use

1. Introduction

Purpose of the Rule Book
Importance of Regulating AI in Education
Scope of the Rules

2. Definitions

Key Terms and Definitions (AI, Machine Learning, Generative AI, etc.)
Types of AI Tools Commonly Used in Education

3. Guidelines for Educators

Permitted Uses of AI in Teaching and Learning
Guidance on Assigning AI-Related Work
Monitoring and Evaluating AI Use in the Classroom
Strategies for Teaching AI Ethics and Digital Literacy

4. Guidelines for Students

Acceptable Use of AI in Assignments and Projects
Restrictions on AI for Test-Taking and Assessments
Encouraged Skills: Critical Thinking Over AI Reliance
Responsibility in AI-Generated Content

5. Prohibited AI Uses

Unauthorized Use in Exams, Quizzes, and Graded Activities
Plagiarism and AI-Generated Work
Misuse of AI for Academic Dishonesty (e.g., Homework Bots)
Any AI Use Violating Privacy Policies

6. Privacy and Data Security

Data Protection Standards for AI Tools
AI Compliance with Student Privacy Laws (e.g., FERPA)
Security Protocols for Data Storage and Use

7. Ethical Considerations and Digital Citizenship

AI and Academic Integrity
Encouraging Responsible AI Behavior
Consequences of Misuse and Penalties for Violations

AI's Role in Promoting Equity and Accessibility

8. AI Usage in Research and Projects

Guidelines for AI in Research-Based Assignments
Disclosure Requirements for AI Assistance in Work
Acceptable and Non-Acceptable Uses of AI for Innovation

9. Teacher Training and Support

Professional Development on AI Integration in Education
Resources for Staying Informed on AI Advances
Workshops on Ethics, Privacy, and Digital Responsibility

10. Parent and Community Involvement

Communicating AI Policies to Parents
Addressing Parent Concerns about AI in Education
Collaborating with the Community on AI Literacy

11. Future Updates and Revisions

Review Cycle for AI Regulations in Schools
Feedback Mechanisms for Policy Improvements
Staying Adaptive to Emerging AI Trends

12. Appendices

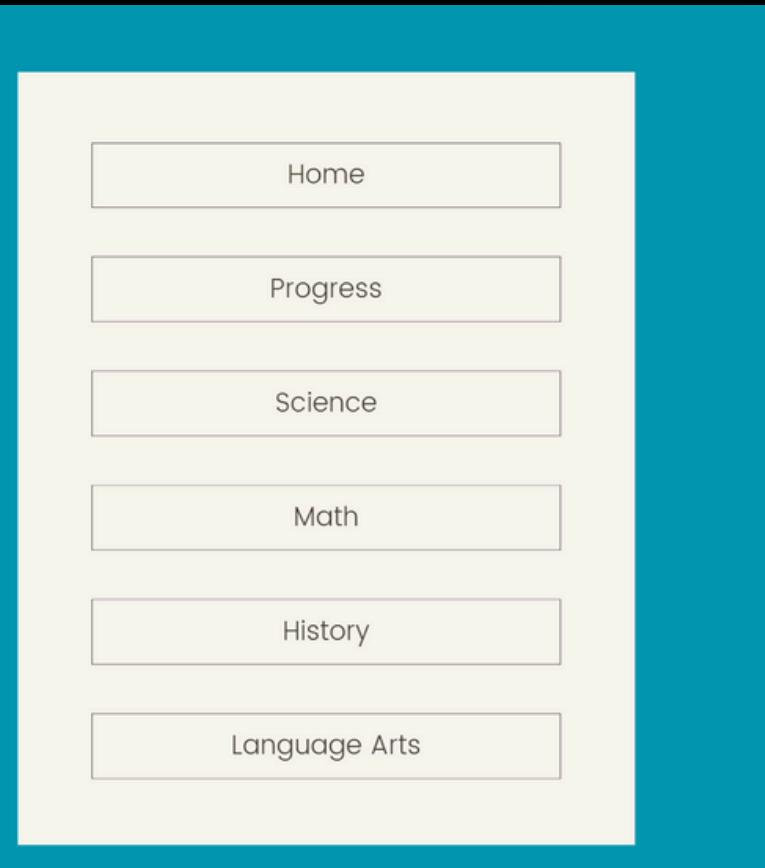
Examples of Approved AI Tools and Applications
Case Studies of AI Use in Education
Resources on AI Literacy for Educators and Students



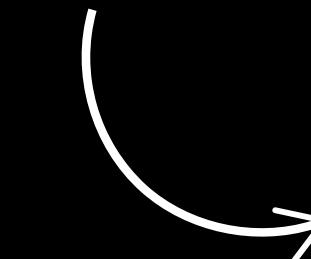
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ETHICAL AI PLATFORMS



Users can interact with AI via Chatbox - AI will respond with leading questions and research to support learning



Platform Features

1. Resources Based on Core Subject: Language, Math, Science, English, and History.

Math

ETHICAL AI PLATFORMS

What is the limit of $(\cos x - 1)/(e^x - x - 1)$ as x approaches 0.

Let's go over the steps in finding the limit of a function!

Method 1: Plug in the value x is approaching

You'll notice in this method, you'll get 0/0 which is an undefined value. However, if you notice, this meets the requirements of L'Hopital's Rule.

Method 2: L'Hopital's Rule

In order to solve this problem, we encourage you to research L'Hopital's Rule using the following resources.

<https://www.khanacademy.org/math/ap-calculus-ab/ab-diff-contextual-applications-new/ab-4-7/v/introduction-to-l-hopital-s-rule>

Check answer with teacher



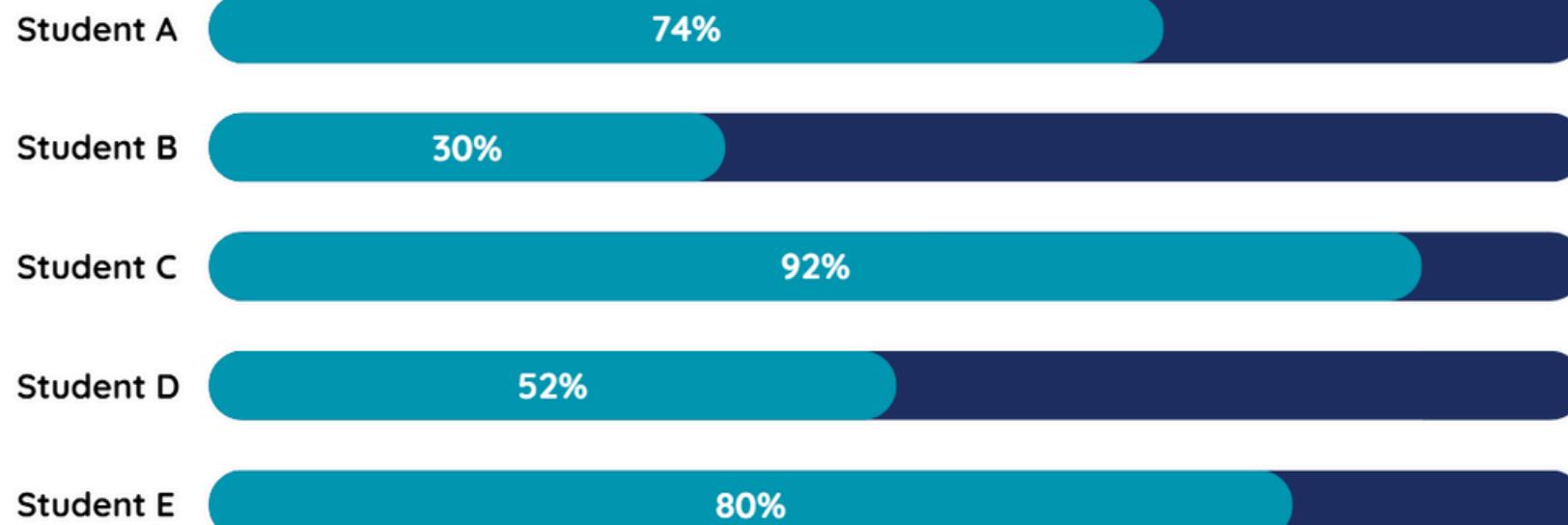
Platform Features

Users are able to generate resources to support learning and track weekly progress

Teacher View

Class Period 2
Advanced English

New Message from Student A!



Weekly Progress

You have completed 70% of your available study material. Keep at it!



Study Resources

Generate AP Exam Problem

Guided Lesson

More Practice Problems

Test Review

Teacher can track student use of AI + Interactive Interface

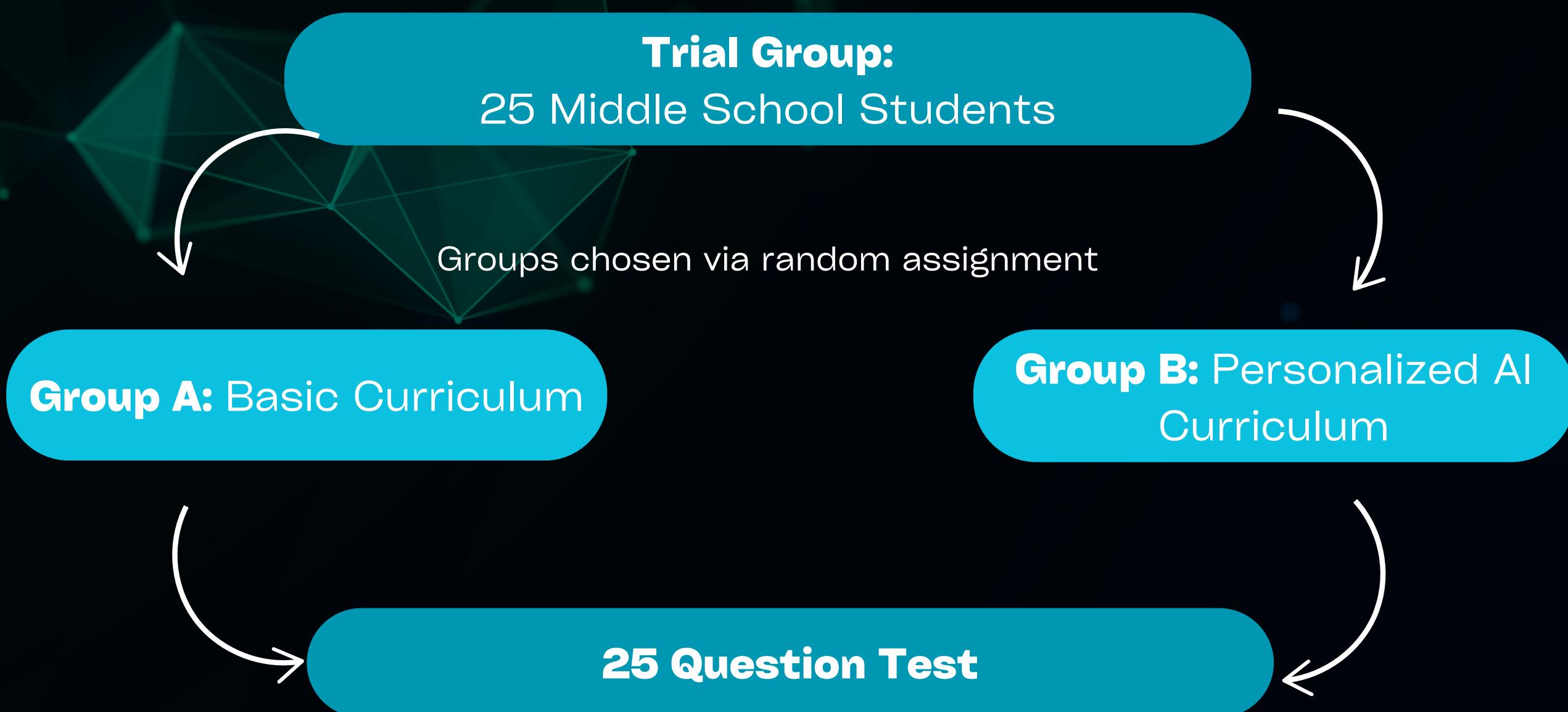
Testing - Application in Teaching Environment



To put our solution to a practical use, we incorporated it within a personalized teach environment. We conducted an experiment where we had 2 groups of middle-school students. Group A was taught all together with a basic curriculum while Group B was taught the same information specialized to their learning strengths. Then a 25 question test was given over the information.



Experiment Overview



Results

After analyzing the results, we saw that Group B scored on average **5 points higher** than group A on the test, indicating the use of AI had a real beneficial impact of their learning.

Future Growth

Our team doesn't want our product to end as just a simple app, as AI has the capacity to make a much bigger impact. Here are a couple of our future goals in expanding our products scope

- **Expand to Various Regions**
- **Include New Features to Improve Accessibility (e.g. Text-to-Audio)**
- **Expand to New Industries**

Thank You!

Huge thanks to the New York Academy of Science for allowing us this opportunity to innovate and collaborate, and our mentor Christos Liambas for his support.

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