

A Study of AI's Impact on Education: Evaluating the Economic Sustainability and Demand for Traditional Tutoring Services In the US

Aaryan Kumar
aaryank.me@gmail.com

ABSTRACT

With the rapid development of artificial intelligence, the tutoring industry faces immense disruption, some of which might be impossible to rebound from. Students in the United States increasingly turn to ChatGPT and Khanmigo for support, reducing the interest in traditional tutoring traditions. While some previous research leans on student engagement and learning outcomes, how AI impacts the economic sustainability and demand for tutoring services in the US has not been examined. This paper explores how this disruption affects the sustainability and demand for tutoring services. Additionally, it displays the threat of AI to services that flourished in the past, while also describing the adaptability of tutoring an AI to create a more usable AI model. The study used a mixed-method approach, combining case studies and surveys. A literature review was also used in the paper to establish the theoretical context on which the research is built. With these approaches, the paper explores different factors such as personalization, adaptability, pricing, and trust, which are necessary to shift tutoring to AI. It debates the future of education by describing how AI can reshape and discuss how it can disrupt different long-lasting business models. The paper includes insights into market and student behavior, allowing it to educate others on how the education system is being reformed. The findings of the paper suggest that while AI presents obstacles for traditional tutoring, it also promotes innovations for hybrid approaches. The long-term sustainability of tutoring services may depend on their ability to effectively adapt to AI.

INTRODUCTION

As artificial intelligence develops in society, it inevitably alters our lives, including in the context of education. In the United States, tutoring jobs such as private academic coaching, test preparation, and homework help have been facing steady transformation. Companies, including Varsity Tutors, have been implementing tutoring services to assist students, yet new and accessible tutoring services utilizing AI have taken off. This technological shift raises urgent questions about the impact on the economic sustainability and demand on companies combating AI-tutoring. Understanding this technological shift is essential for companies adapting to the harsh tutoring climate. This study aims to answer the question “How are AI-based tutoring services affecting the economic sustainability and demand for traditional human-based tutoring services in U.S schools?” In this paper, the phrase economic sustainability refers to

a corporation's ability to maintain stable revenue, market demand, and employment after technological disruption. This relates to whether a company can stay relevant in times of adaptability.

This research is based on two theoretical frameworks: Christensen's Disruptive Innovation Theory (Christensen, 1997), which explains how new technology may cause disruptions by being more affordable, and the Technology Adoption Model (Davis, 1989), which highlights how a product's usefulness and perception both determine user acceptance. This study aligns with ongoing research regarding the intersection of AI and schooling by questioning the extent of the inverse relationship between the economic sustainability of human-based tutoring services before and after AI-tutoring services. It aims to discover whether increased use of AI tutoring tools like Khanmigo and ChatGPT directly correlate with the demand for human-based tutoring services. By combining case studies, surveys, and literature reviews, this research allows new information to be attributed to the field of technology concerning AI. It is essential due to our steadily growing society. This research presents pedagogical information and addresses the financial sustainability of tutoring services after the rise of artificial intelligence. The contribution this paper allows for new research is solely empirical.

While most past research on AI-tutoring focuses on learning outcomes, it fails to address the impact on the economic sustainability of human tutoring. Studies such as L  tourneau et al. (2025) have glossed over the personalization and learning outcomes related to AI-based tools but fail to encapsulate how this new form of tutoring is reshaping the economics of human tutoring. Furthermore, studies often overlook students' perceptions of the cost and value of both human and AI-tutoring. With this knowledge, this empirical insight may reform the tutoring landscape.

The findings of this research are highly significant to tutoring businesses, teachers, and students alike in the US, where the technological adoption is very high. As we are on the uprise of artificial intelligence, it is natural for tasks to be increasingly adopted by AI. For example, tutoring companies may need to adapt their models to meet increasingly high student demands. On a similar note, schools can use this research to reform learning. Students may like AI to help with schoolwork more than a tutor, which can increase test scores.

As society develops technologically, it is substantially important to realize the changes AI brings not only to education, but also to our economy. This research helps traditional tutoring services thrive in our new economy, as their long-standing models face collapse in the face of modern, AI tutoring. Researching how they can adapt to change supports resilience in demanding educational ecosystems. Additionally, the study touches on digital equity; it mentions how AI can facilitate academic support.

METHODOLOGY

The methodology leveraged in this paper consists of both qualitative and quantitative approaches. The primary source of my research is by case study analysis, which seeks out comparisons between human and AI-tutoring. Specifically, the paper expounded on the trend of human tutoring before and after the ascent of AI use.

The case studies were selected by categorizing the corporations by their business model. While Chegg demonstrates a very traditional tutoring business model, Khan Academy represents a nonprofit adapting to AI integration, and Varsity Tutors displays a hybrid tutoring model, bridging human and AI instruction.

Furthermore, a survey was implemented to capture the opinions of the public. The sampling method used in the survey was a convenience sampling method, surveying a wide age group with 100 total responses. Questions were molded specifically for my research question, adapting some from other studies such as Keshtkar et al. (2024). It was structured around key concepts such as affordability, personalization, trust, accessibility, and preference, so the results could show trends and comparisons between AI tutoring and Human Tutoring. Different samples of students were selected to ensure a diverse population, and the survey strived for the largest sample size with the least margin of error. All of the survey participants were from the United States, reflecting the study's focus on the economic trends in the U.S. The survey was conducted using students from different grade levels and educational backgrounds. Questions honed in on students' opinions on the cost, effectiveness, and preferences of the two tutoring services. This information permits analysis and combines different data.

Lastly, the paper includes a literature review detailing academic papers, industry reports, and previous research to solidify my knowledge. This assists in providing background information on the rise of AI and its impact on traditional tutoring services. Combined, these methods allow for an accurate assessment of the rapidly evolving tutoring landscape in the United States.

LITERATURE REVIEW

This literature review aims to connect existing research on the impact of AI-tutoring on education with its economic implications, providing context on how previous research bridges the gaps between the transformation from traditional AI-tutoring. Combining existing research with ongoing research allows a more complete understanding of the topic.

Previous research on AI in schooling builds a foundation for how this research can be significant to the masses. Previous research surrounding AI usually entails how an Intelligent Tutoring System (ITS) aids students, especially with personalization. Furthermore, most research relies on infrastructure, engagement, and learning outcomes. The review sources materials from academic papers, local reports, and surveys to ensure an unbiased result.

Study	Methods	Country	Factors	Findings
Létourneau et al. (2025)	Quantitative	USA	<ul style="list-style-type: none"> ● Learning outcomes ● Engagement ● Design of the AI ● Teacher's support 	<ul style="list-style-type: none"> ● Similar results were obtained. In some cases, ITS outperformed

				<p>humans, but in others, it was the opposite.</p> <ul style="list-style-type: none"> • ITS can personalize learning experiences. • The effectiveness of an ITS can also depend on the student's prior knowledge and cognitive ability. • ITS cannot replace a teacher, but can enhance overall learning.
Stritto et al.(2023)	Qualitative	USA	<ul style="list-style-type: none"> • The school's willingness • Technological access • Trust in AI • Capabilities of the specific AI 	<ul style="list-style-type: none"> • Many students were found not using AI for classes, but for personal and professional contexts • Most used it for brainstorming and generating content • Students at Oregon had mixed feelings about integrating their courses with AI
Arundel (2024)	Quantitative	USA	<ul style="list-style-type: none"> • Student trust in AI • Reliance on technology • Tutor's readiness to adopt new methods 	<ul style="list-style-type: none"> • Using an AI-assisted tutor to curate their teaching style for each student. • Tutors who used the AI helped students gain 4% more on tests than students whose tutors did not. • If the student answers a

				question incorrectly, the AI helps the tutor narrow down and ask similar questions to correct the student.
Keshtkar et al. (2024)	Mixed Methods	United States	<ul style="list-style-type: none"> • Student perception of tutoring services • The extent of personalization • Specific intent to use AI 	<ul style="list-style-type: none"> • Students tend to have positive opinions regarding using AI as a tutor • Students envision tutoring using AI to be personalized for their strengths and weaknesses.
Danielle et al. (2024)	Quantitative	United States	<ul style="list-style-type: none"> • Learning outcomes • Income • Hybrid tutoring • engagement 	<ul style="list-style-type: none"> • Hybrid human and AI models significantly improved learning and proficiency, especially for lower-achieving students. • AI support also reduced the total workload
Wang et al. (2024)	Quantitative	United States	<ul style="list-style-type: none"> • Tutor productivity • Cost • scalability 	<ul style="list-style-type: none"> • Students who had tutors who were AI-assisted were 4% more likely to score higher than students with human tutors • AI helped tutors specify areas of work, and helped to correct mistakes faster,

				which increased overall speed
Kestin et al. (2024)	Quantitative	United States	<ul style="list-style-type: none"> • Learning efficiency • Time saved • engagement 	<ul style="list-style-type: none"> • Students who used AI tutors learned twice as much in less time than students in an active learning class. • When using an AI tutor, students also felt more engaged and motivated than students in a class.
Berdik (2024)	Qualitative	United States	<ul style="list-style-type: none"> • Engagement • Hybrid • AI Vs Human 	<ul style="list-style-type: none"> • AI can assist teaching by answering questions and providing easy access to resources, but it is unable to replace teachers fully. • AI enhances teachers and is not ready to replace them, especially in a complex classroom setting.

Table 1: Selected Literature

AI tutoring systems generally positively impact students (Létourneau (2025); Keshtkar, (2024)). It is shown that students perceive AI as helpful to their academic goals, with the main positive as personalization. The AI model could personalize based on the strengths and weaknesses of the students, and in many cases was seen assisting teachers. Létourneau (2025) was shown to focus on academic success and student personalization, while Keshtkar (2024) was seen to hone in on student perception of AI. Due to this, the conception can be made that personalization is not the only guarantee for adoption, yet other factors concerning user trust and perception also matter.

Studies like Arundel (2024) and Stritto (2023) explored how students and schools perceive AI more. Arundel focused on academic excellence and stated that students who used AI to prepare for tests generally had higher scores than students who did not. Meanwhile, Stritto explained how students used AI for content creation, and a few used it for school. The majority of students were using it for professional contexts. Arundel's findings demonstrate AI correlating with enhanced grades, while Stritto's findings demonstrate hesitation to utilize the service.

More recent research (Danielle et al., (2024), shows that hybrid tutoring models can also improve proficiency, especially for lower-achieving students, where help is needed. This relates to Wang et al. (2024), who emphasized that AI can assist tutors in pinpointing mistakes at a faster rate and that AI also improves grade percentages. The studies correlate by showing that hybrid models also improve percentages and reduce the overall workload of human tutors and teachers.

AI tutors are more time-efficient, with students learning twice as much material in less time than in an average classroom (Kestin et al. 2024). However, Berdik (2024) underscored AI's inability to replace teachers in complex classroom settings, stressing its role as an enhancement tool rather than a replacement. This contrast shows that AI currently needs more work to fully take the role of a teacher, as teachers may have irreplaceable characteristics that help students thrive.

This study fits into the existing body of research as it adds an economic aspect to research about AI. The studies in the literature review mainly focus on academic performance or student perception, but economic trends are only considered in hindsight. Given AI's rapid prominence, it is necessary to understand the financial aspects it brings to other businesses. This paper brings unique research that can assist companies needing reform after the AI-tutoring surge.

Despite the extensive research on AI in schools, there is limited research on the economic sustainability and demand for traditional tutoring services. Most studies have focused on learning outcomes because of AI and have not evaluated the impact of AI on other services. Future studies should investigate the effect on employment after AI tutoring and assess how such technology is reforming the education landscape.

CASE STUDY

Chegg

Founded in 2005 to be a textbook rental site, Chegg quickly reformed due to society's transformation. Textbooks were going digital, and profits began to shrink. What's the solution? Start tutoring students. Chegg began to offer homework help, Q&A's, writing assistance, and exam prep resources. Chegg saw profits increase, as the stock rose from April 2020 to March 2020. From March 2020 to February 2021, Chegg's stock was at its peak. With millions of students working remotely, Chegg saw increased use of tutoring help substantially grow. The pandemic solidified it as one of the most prominent tutoring services. In late 2021, more students were transitioning to in-school learning, and Chegg saw its stock drop (Kruppa, 2024).



When ChatGPT launched, the Former CEO of Chegg, Dan Rosensweig, publicly acknowledged ChatGPT's impact on his service. "Since March, we have seen a significant spike in student interest in ChatGPT. We now believe it's affecting our new customer growth rate." Stock dropped around 48% in one day, which erased billions in valuation (Novak, 2023). Meanwhile, student behavior also mimicked this shift. Growth Memo surveyed that only 30% of college students planned to use Chegg, down by an additional 8%. At the same time, 62% of students planned to use ChatGPT instead (Kruppa, 2024).

In April 2023, they unveiled their new A. I have to combat the uprising of CheggMate. Partnered with OpenAI's GPT-4, CheggMate was designed to integrate personalized learning pathways and specifically tailored quizzes into its already comprehensive 150,000 human tutors. Rosensweig emphasized that combining Chegg's knowledge with GPT-4 would make the most potent "study companion" (Chegg, n.d.). The company's primary goal is to use its already robust library of answers to create a new hybrid that doesn't have hallucinations, like ChatGPT. When polled, testers of the latest model showed that 77% were excited about the newest AI model, but 85% were more eager when they learned it would be backed with human verification (Ghosh, 2023). Some named the announcement of the hybrid as too late, as stocks only rebounded 7%, after a significant 40-50% loss (Online Education, 2023).

Reflecting, the once-prominent tutoring service Chegg was obsolete in the face of ChatGPT. Its experience with AI highlights the threat that AI poses to tutoring services. The student migration displays how they find instant, personalized, and free responses more valuable. The surveys showed Chegg's steep decline, as more students tended to leave the service for ChatGPT. Despite proclaiming the launch of CheggMate, some critics think it is too late for the service to prosper. This case underscores how AI is reforming the economic tutoring landscape, translating to the scarcity of relevance.

Khanmigo

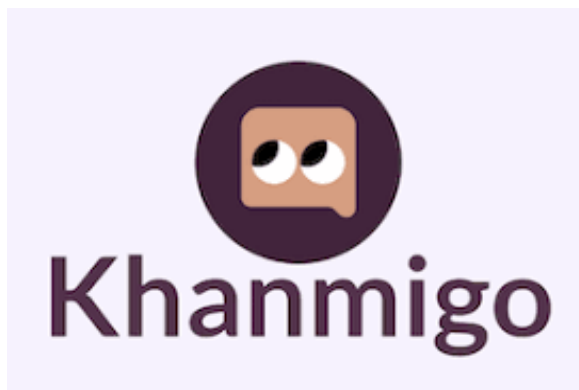
Khan Academy is a nonprofit organization founded by Sal Khan in 2006. The platform is meant to have tutoring videos and exercises available worldwide. It utilizes mastery to display one's skill on the material and has content from K-12 subjects and standardized testing. Before using AI, Khan Academy was a beacon of free and self-guided tutoring (Boryga, 2024). Khanmigo was founded for the sole purpose of revolutionizing education and providing personalized tutoring. This is much cheaper for \$4 a month than the other AI tutoring competitors (Axios AI+, n.d.).

Khanmigo is an AI-driven personalized tutor built with GPT-4. It directly integrates with Khan Academy's wide selection of videos and offers a wide range of help, including problem-solving and step-by-step instruction. For educators, Khanmigo more efficiently creates lesson plans and handles

administrative tasks, allowing more time for teachers to engage with students. Unlike chatbots like ChatGPT, it has a direct source for every one of its answers (Khan Academy, n.d.).

Khan Academy clarifies that Khanmigo complements human tutors, as it doesn't directly give students answers. Instead, it focuses on helping the student learn the process and make advancements, leading them to finish the problem. Sal emphasizes that the new AI should not be used as an answer key, but as a tool to assist learning. Additionally, he mentions that AI should not be used as a replacement for educators, but instead to assist them with teaching (Perkel, 2025).

Khan Academy's AI Model, Khanmigo, shows how AI can coexist with teachers and tutors and enhance human tutoring. By decreasing the load off teachers, the AI makes it easier for teachers and tutors alike to work with students. Khanmigo supports a framework where teachers and AI can work together to amplify the effect on the student. This study shows that when used thoughtfully, AI tutoring can positively affect the human tutoring economy, and instead of replacing tutors, it redefines tutoring roles (Harvey Mudd, 2025).



Varsity Tutors

Varsity Tutors is a tutoring service that offers live online tutoring for test prep and academic courses. Built for students, the company emphasizes one-on-one and small group instruction. In 2025, the company launched its Live + AI platform. This integrates AI tools into live tutoring. Like hybrid tutoring, the AI is used to lessen employee workload, automatically matching students to tutors based on learning styles. Additionally, the platform automates lesson prep and displays analytics during sessions (Lawler, 2025). Live + AI ensures alignment with mandates by offering scalable and policy-compliant tutoring to schools (Varsity Tutors, n.d.).



Over 1,000 school districts have partnered with Varsity Tutors, significantly reducing teacher workload (Stone, 2025). Varsity Tutors is just one of the many cases where hybrid tutoring enhances human instruction instead of replacing it. As AI tools continue to be integrated into society, platforms utilizing AI and Human instruction may be necessary to maintain relevancy.

Varsity tutor's case restates a trend in society: companies that integrate AI into their tutoring service remain sustainable. It uses a hybrid method of AI and traditional tutoring, which allows it to remain integrated into society. With this, it is possible to make tutoring more accessible while increasing staff efficiency. As tutoring services struggle to adapt, Varsity Tutors differs and shows the others an example of effectively adapting to AI pressure.

LAYOFFS

After the uprising of AI, several edtech and tutoring companies in the U.S. have been making significant layoffs. Chegg, a tutoring company, laid off 22% of its workforce in May 2025 due to ChatGPT's impact on the service (Reuters, 2025). From January 2023 to December 2024, there were over 40,000 layoffs in the broader sector, which decreased the overall number of employees by 18% (DigitalDefynd, 2023).

The layoffs are linked to pandemic market corrections and AI disruption. During COVID-19, companies like Chegg saw a surge of users, which spiked their revenue. When learning in schools, companies saw decreases in revenue. At the same time, the rise of generative AI directly influenced the edtech industry. Offering free, instant, and personalized help, this is precisely what students were looking for. Subsequently, the funding for edtech decreased: \$17.3 billion in 2021 to \$3 billion in 2024 (Criddle, 2024). With less funding and overall sales decreasing, companies needed to reformat. For example, Chegg closed several offices to save "between \$45 million and \$55 million in 2025" (Vaziri, 2025). While AI isn't the entire catalyst for layoffs, it has accelerated the need to manipulate edtech companies.

The layoffs and restructuring of companies suggest that AI is steadily replacing the need for human tutors or, in other cases, supporting them. In one instance, Paper, an edtech startup, has also been undergoing cutoffs as it eliminates many tutor roles. Declaring COVID-19 the leading cause of their loss of funding, the edtech industry, facing staff cuts and funding freezes, illustrates the instability of jobs for tutors.

COMPARITIVE ANALYSIS

The case study highlights the economy's vulnerability to traditional tutoring models and how AI models have changed them. As students prefer the new and personalized AI solutions, companies that rely on human tutors are seeing reduced income and financial instability, resulting in layoffs. This underscores the need to properly examine the economic sustainability and demand shifts in tutoring services, as companies in the past have been rendered unstable due to their new and instant AI counterpart. See Table 2 for the comparative analysis across AI tutoring companies' case studies.

Case / Company	Model	AI Impact	Human interaction	Economic Impact
Varsity Tutors	1:1 tutoring, Hybrid	AI matches students, plans lessons, etc.	Tutoring is still stable, actively teaching	Educator workload reduced
Chegg	Textbook, online tutoring	AI chatbot integration	ChatGPT caused a significant disruption	Stock dropped about 50%, and layoffs took place
Paper	Chat-based live tutoring	AI assists with tasks	Tutors still assisting with live responses	Model balances AI with human chat
Layoffs	Varied (primarily online)	AI replaced tasks previously done by tutors	Tutor displacement	Job losses among private companies
Khanmigo	Free education platform, paid AI add-on	AI add-on supports recorded videos and practice	AI helps the tutoring instruction	Stable, higher efficiency

Table 2: Comparative Analysis Across AI tutoring companies in the US

With the case studies of Chegg, Varsity Tutors, Khan Academy, and Layoffs in the edtech industry, one thing becomes clear: companies that fail to adapt to the new and emerging AI face demand and financial performance declines. On the other hand, companies like Khan Academy, which have adapted to AI, tend to experience sustainability. Varsity Tutors maintains stability, as they have utilized AI for scheduling and matching students, while also still relying on tutors. Layoffs in the industry demonstrate that companies that did not change their business models for AI were prone to post-pandemic market disruptions. Adaptability and AI integration were key factors for determining sustainability in the tutoring industry.

The demand for traditional tutoring has not disappeared, but has more likely been reformed. For example, students now prioritize instant access, cost, and convenience; AI tutoring outperforms traditional tutoring. Due to its instant responses, surveys show that 62% of college students prefer ChatGPT over Chegg.

Additionally, the shift to AI is not just based on convenience, but also on personalization. Khanmigo demonstrates the need for human verification and AI to create a feasible tutoring business, suggesting that hybrid models, which combine AI efficiency with human expertise, may be necessary in our developing society.

The case studies show that traditional tutoring services may undergo immense challenges unless they adapt to AI technology. AI is replacing tutoring and reinventing what is in its best interest. While Chegg's late action on collaborating with AI shows the risk, Khanmigo's success shows that AI can enhance tutors rather than replace them. This provides insight into my research question by highlighting that adaptation is needed to maintain the economic sustainability of traditional tutoring rather than compete with AI.

SURVEY

For a better understanding of the impact of AI on tutoring services, a survey was distributed online with Google Forms during a week in July 2025. The survey had responses from 100 participants and included all multiple-choice questions. The study's respondents were students, educators, tutors, and older people. This was chosen to fully encapsulate the opinions of AI from a wide age range. The goal of the survey was to gather data on how people are adapting to AI tools, and whether it has changed their or someone they know's reliance on human tutoring.

The questions in the survey focused on the frequency of AI use, preferred platforms, and opinions on cost. They honed in on whether they believed AI was replacing the need for human tutors, and how speed, personalization, and price were reflected in their answers. The primary goal focuses on stakeholders' widespread choices to stray from or rely on human tutoring. Other questions relied on opinions on the future of AI.

Ethical considerations were taken seriously in the survey. It was anonymous, meaning no data was extracted except for the responses, and no information was collected. All participants answered voluntarily and honestly and acknowledged that their responses were only used for academic purposes. The survey questions were worded objectively to minimize bias in participant responses.

The questionnaire consisted of 14 multiple-choice questions, designed to measure perceptions of AI, affordability, and prevalence. The structure of the survey was adapted from past studies, such as Keshtkar et al. (2024). A trial-and-error process was conducted before the official survey, ensuring the validity.

Hi, my name is Aaryan Kumar. I am a rising senior working on a research paper project. With the results of this survey, I aim to understand the reasons for how AI tutoring services affect traditional tutoring services. The goal is to understand the reasons behind shifts in tutoring practices driven by technological advancements. The collected data will be allocated to serve research to answer the question of "How are AI based tutoring services affecting the economic

sustainability and demand for traditional human-based tutoring services in U.S schools? “I will ensure that your responses are confidential and only used for educational purposes. Thank you!”

Survey Questions	Response Options	% Response
1. Have you ever used an AI tutoring tool? (Ex. ChatGPT, Khanmigo)	<ol style="list-style-type: none"> 1. No 2. Yes 	<ul style="list-style-type: none"> ● 2% ● 98%
2. How often are you using AI for academic help?	<ol style="list-style-type: none"> 1. Weekly 2. Monthly 3. Annually 	<ul style="list-style-type: none"> ● 75% ● 25% ● 0%
3. When was the last time you worked with a human tutor?	<ol style="list-style-type: none"> 1. 1-2 Months ago 2. 3-4 Months ago 3. 5-6 Months ago 4. Over 6 Months 5. Never 	<ul style="list-style-type: none"> ● 20% ● 18% ● 16% ● 26% ● 20%
4. Which type of tutoring do you prefer?	<ol style="list-style-type: none"> 1. Human tutoring 2. AI tutoring 3. A mix of both Human & AI tutoring 4. None 	<ul style="list-style-type: none"> ● 5% ● 48% ● 40% ● 7%
5. I feel like an AI tutor would help me better than a human tutor	<ol style="list-style-type: none"> 1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree 	<ul style="list-style-type: none"> ● 2% ● 25% ● 28% ● 18% ● 27%
6. I would feel more confident about improving my grades using a human tutor	<ol style="list-style-type: none"> 1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree 	<ul style="list-style-type: none"> ● 1% ● 30% ● 18% ● 30% ● 21%
7. A human tutor would be more personalized for me than an AI tutor.	<ol style="list-style-type: none"> 1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree 	<ul style="list-style-type: none"> ● 0% ● 26% ● 22% ● 22% ● 29%

8. Which one would you think is more affordable?	<ol style="list-style-type: none"> 1. Human tutoring 2. AI tutoring 3. None 	<ul style="list-style-type: none"> ● 2% ● 97% ● 1%
9. In which subjects do you use tutoring for?	<ol style="list-style-type: none"> 1. Math 2. History 3. Science 4. English 5. Foreign language 6. Test prep (SAT, ACT) 7. Other 8. None 	<ul style="list-style-type: none"> ● 45% ● 42% ● 57% ● 36% ● 37% ● 53% ● 55% ● 1%
10. What are your main reasons for AI tutoring?	<ol style="list-style-type: none"> 1. 24/7 availability 2. Instant doubt resolution 3. Low emotional connection 4. Adaptive explanations 5. Limited critical feedback 6. Creativity boosters (e.g., brainstorming prompts) 7. Mistrust in complex tasks 8. Fun, gamified formats 9. Not Using AI 	<ul style="list-style-type: none"> ● 41% ● 40% ● 41% ● 32% ● 33% ● 40% ● 32% ● 33% ● 1%
11. Which of the following factors might lead to challenges in accessibility and affordability for AI tutoring?	<ol style="list-style-type: none"> 1. Device/internet divide 2. Paid tool barriers 3. Awareness gaps (rural/low-tech areas) 4. Free vs paid AI access 5. Language limitations 6. High perceived value (urban/tech-savvy users) 	<ul style="list-style-type: none"> ● 53% ● 43% ● 54% ● 49% ● 42% ● 42%
12. What factor seems most important for making AI tutoring more adaptable?	<ol style="list-style-type: none"> 1. AI feedback loops 2. Hybrid learning models 3. Tech training for tutors 4. Customization flexibility 5. Platform fatigue 6. Switching resistance 	<ul style="list-style-type: none"> ● 13% ● 19% ● 19% ● 14% ● 20% ● 15%
13. What do you think has been the most important economic impact of AI tutoring?	<ol style="list-style-type: none"> 1. Decline in private tutor hiring 	<ul style="list-style-type: none"> ● 19% ● 17% ● 11%

	<ol style="list-style-type: none"> 2. Revenue shifts (human → AI firms) 3. Edtech investment surge 4. Tutor job losses 5. Subscription-based pricing models 6. Emergence of new AI-related roles 	<ul style="list-style-type: none"> ● 22% ● 10% ● 21%
14. What outcomes do you expect for the future of AI tutoring?	<ol style="list-style-type: none"> 1. Higher short-term test gains 2. Improved engagement (e.g., shy learners) 3. Limited deep learning 4. Weak metacognitive growth 5. Student tool preference divergence 6. Increased independence, reduced scaffolding 	<ul style="list-style-type: none"> ● 52% ● 46% ● 41% ● 50% ● 47% ● 41%
Age	<ul style="list-style-type: none"> ● Below 18 ● 18-25 yrs ● 25-35 yrs ● 35-45 yrs ● 45-60 yrs ● 60 and above 	<ul style="list-style-type: none"> ● 23% ● 17% ● 12% ● 14% ● 17% ● 17%
Gender	<ul style="list-style-type: none"> ● Male ● Female ● Other ● Prefer not to say 	<ul style="list-style-type: none"> ● 42% ● 29% ● 5% ● 24%

Table 3: Survey Questionnaire and Responses

The survey results capture the evolving tutoring landscape. By capturing both educators and students, the data helps form an accurate response about attitudes to AI services and these educators' trust, perceptions about cost, and demand for human-tutoring services.

Analysis of Survey

The survey results demonstrate patterns in how AI is transforming the tutoring landscape. A diverse group easily reflected educators' and tutors' opinions. Three themes stood out from others: affordability, preference, and efficiency.

Most respondents favored AI tutoring or a hybrid of AI and human tutoring. This indicates a major societal shift in the perspective on tutoring, with many people favoring 24/7 availability, personalized

explanations, and instant feedback over human interaction. These features underscore the importance of flexibility in the steadily transforming edtech industry.

Affordability plays a substantial role in favoring AI tutoring over human tutoring. 97% of participants thought tutoring with AI would be more affordable than tutoring with a human being. Since traditional tutoring can be expensive or inaccessible, AI can be used as a rebound by offering wide-access and free services. This assists communities that are under-resourced and lack willing educators.

Even though AI was seen as efficient and accessible, many felt human tutors still had an edge over AI tutoring. For example, 51% of participants agreed that human tutoring would improve grades, while 49% believed AI tutoring would improve grades. Additionally, 51% of respondents also thought that a human tutor would be more personalized for them. This shows that AI tutoring is not a complete replacement for human tutoring, as the latter still has advantages that some students may look for when studying.

In sum, the data shows that stakeholders are open to AI tools in education, primarily because of their convenience and affordability. Consequently, for AI to truly encapsulate all the public's needs, it is essential to improve personalization and trust. Students and educators still believe that human tutoring would increase their knowledge further, which shows that there are more areas for AI tutoring to cover in the future.

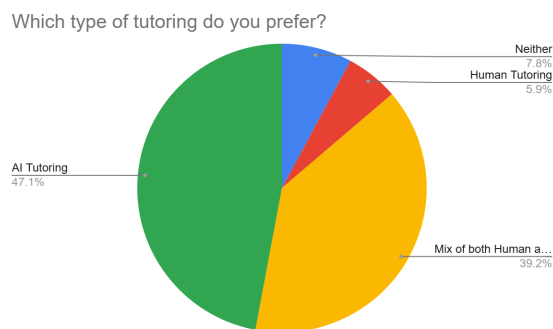


Figure 1: Type of Tutoring

Figure 1 chart represents responses to the question “Which type of tutoring do you prefer?” Choices include AI Tutoring, Human Tutoring, Mix of Human and AI Tutoring (Hybrid), and Neither. The most preferred option out of the four was AI Tutoring (47.1%), followed by Hybrid (39.2%), then Human Tutoring (5.9%), and lastly Neither (7.8%). This demonstrates that the leading choice is AI tutoring, with many participants also leaning towards a blended option with a mix of the two.

The least picked option was Human Tutoring. This suggests an unseen decline of human tutoring, with participants opting for no tutoring over human tutoring. The high percentage of stakeholders opting for Hybrid tutoring shows that they might still value human interaction, but only when combined with AI benefits such as speed, adaptability, and convenience.

The data supports that AI is not just an uprising tool; it is taking over the academic industry. It displays attitudes about changing values, such as more reflective opinions about social trends. All of these tie into the question about AI's role in changing the economic sustainability of traditional tutoring.

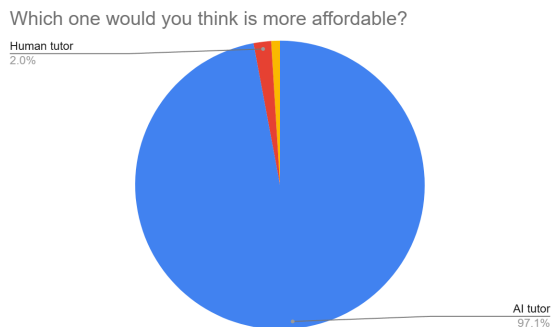
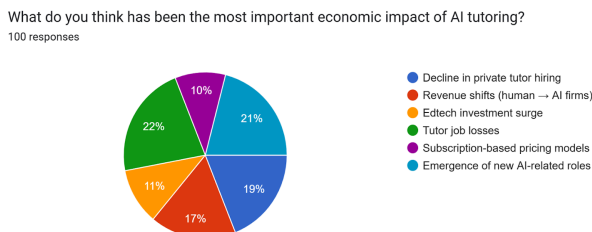
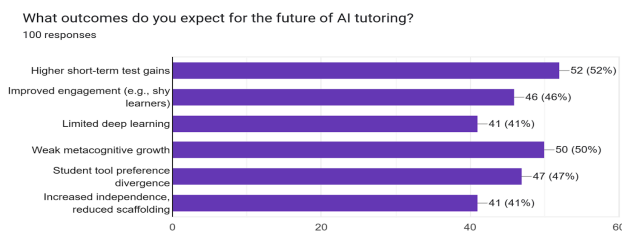


Figure 2: Affordability

This pie chart addresses the question “Which one would you think is more affordable?” A staggering portion of responses favor AI tutoring, with 97.1%. Only 2% think Human tutoring is more affordable. This overwhelming result rates affordability as one of the driving factors for the AI industry to take over edtech. This is a key concern for students and educators alike, especially in our technology-focused society. Accordingly, it is essential to acknowledge that this may not be a preference. Access can play a huge role in affordability, as some people cannot access human tutoring and have to opt for the free and instant AI tutoring.

These two graphs demonstrate that affordability is among the most critical factors behind the preference for AI tutoring. While users still value human interaction, survey responses show that the benefits of AI outweigh the preference for traditional tutoring services. These findings reinforce the argument that AI is reforming the tutoring landscape and better aligning with user demands about affordability.



DISCUSSION

This framework was developed after a survey, literature review, and multiple case studies. Each box in the diagram represents a key recurring theme that emerged when referring to different methods. The student perceptions were developed from literature reviews and later added to the surveys. The center of the framework shows the cause and effect with accessibility, perception, and adaptability leading to economic impact and outcomes. This also indicates that AI tutoring is not just one topic, but is a branch of different issues all connecting to one idea, with set outcomes built on it.

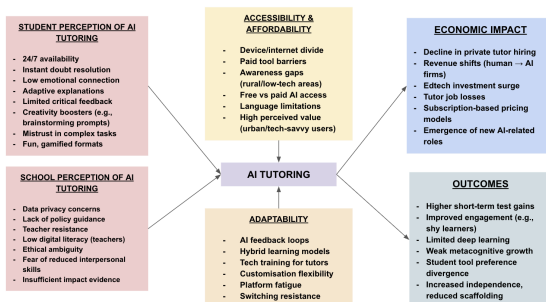


Figure 1: Process Framework for Factors affecting AI tutoring and the outcomes

The framework in this paper organizes the themes into five categories seen in all the methods used to answer the research question: student perception, school perception, accessibility and affordability, adaptability, outcomes, and economic impact. While the majority of these categories also guided the survey design, they were also supported with trends from the literature review and case studies. Together, these accurately represent the findings from the research and display the key themes that influence AI Tutoring. These were not chosen randomly, but were derived in the literature reviews and evidence in the case studies. The arrows in the framework relate to how each part is used in AI tutoring and how it is transferred to the outcomes, including economic impact.

The results show that AI tutoring is not replacing human tutoring, but instead reforming it. Some educators are hesitant to implement AI into learning, as it is in its early stages, yet students show enthusiasm to incorporate AI (Keshtkar et al. 2024). This displays that tension is evident when debating the use of AI in schooling, and it needs further work to be integrated. Hybrid tutoring, blending human and AI, suggests a trend where AI can be used at its strongest when bundled with human tutoring, as it's not supposed to replace it. Meanwhile, economic impacts like layoffs point towards how AI disrupts the edtech industry; this is seen in the case study.

This framework assists edtech companies, teachers, and tutors in questioning where they need support to adopt AI. For example, helping teachers understand how to incorporate AI into teaching can help close the adaptability gap and raise test scores (Wang 2024). Understanding these categories can help companies strategize on key features to build in their company to ensure their AI tutoring models evolve sustainably.

Students tend to view AI tutoring positively due to its instant responses and infinite availability. It has adaptive responses and is used for generational content. Consequently, they also show concern for low emotional connection and limited critical feedback. These factors are inevitable, as no human guides you through problems or practice. This perception directly affects trust and usage, as it influences tutoring outcomes. As students are the majority of the academic AI user base, their opinion is the most valuable.

School administrators are shown to be wary of integrating AI into their schools. They highlight data privacy, lack of policy guidelines, and their fear of reduced skill development. Teachers may feel they are not capable of using AI due to low digital literacy. This hesitation in use reflects the schools' perception of using artificial intelligence. With more use and interference with the new AI, schools may be seen increasingly integrating it into their classes, but they must overcome barriers before it can return positive outcomes.

While AI has instant responses and quick thinking, boundaries still limit access—for example, limited internet access, paid tool barriers, and awareness gaps. Even though ChatGPT and other AI services might be completely free, the environment one lives in affects the accessibility to these tools. These limitations directly impact economic impact, as companies that fail to address these barriers may have trouble scaling their products worldwide.

The dominance of AI tutoring relies on its adaptability. It includes AI feedback loops, hybrid learning models, and customization flexibility. However, tutors need training to use AI in a hybrid model. While platform fatigue and inherent unfamiliarity limit adoption, adapting further bridges the gap between concerns, and it will highlight how dominant AI will be in the future, especially across different landscapes.

The outcomes of AI vary in terms of benefits and concerns. It was shown that AI had higher short-term gains and weak metacognitive growth. Students are shown to have increased test scores and more engagement, but also have limited deep learning. As AI progresses, it is natural to have a divergence in use. These results directly mirror the influence of school and student perception, adaptability, and affordability.

With job losses, declining private tutor hiring, and revenue shifts, AI tutoring has reformed the economic landscape. The service is taking away from traditional tutoring services, sometimes bankrupting them. Adaptation is needed for survival, especially economically. New AI roles and subscription models further entail how disruptive the feature is for the economy. This is due to factors such as student perception, affordability, and accessibility, as these shape whether AI gets funding or human tutoring goes out of the picture.

These findings align with Christensen's Disruptive Innovation Theory, showing how AI in the edtech market has destabilized traditional tutoring services. Additionally, this research also resonates with the Technology Adoption Model, as it shows how preference, by students, drives the adoption of the AI.

These theories, when linked together, display how the adoption of AI directly correlates with economic disruption and the dismantling of sustainability.

LIMITATIONS AND FUTURE DIRECTIONS

Acknowledging this study's limitations is crucial to encouraging future work to build on them. While this research has meaningful insight into how the tutoring industry is changing, it is still bounded by data constraints, the scope, and methodological limitations. Recognizing these limitations is crucial for deeper exploration in this field.

First, one of the limitations in this paper lies in its survey-centered design. Even though 100 responses from various age groups were collected, it still remains immensely small compared to the huge scale of the U.S. tutoring population. Because the survey was online, the respondents had a chance to be already biased towards AI. In addition, while the survey had past and current educators and students, it failed to include business owners and bystanders. This is crucial to encapsulate a wide opinion fully, but this was impossible due to time constraints. It also did not count relevant stakeholders, such as random parents. Parents can arguably be the most knowledgeable stakeholders, considering they have seen the market for many years. Future research that conducts mixed-methods studies should include interviews, focus on larger groups, and collect data on a larger scale.

Second, the study focuses on AI tutoring solely in the U.S., primarily in the K-12 and college sectors. While this wide range allows for precise data, it also limits the findings to not include international systems, where AI can vary widely. The research also focuses on popular countries like Chegg, Varsity Tutors, and Khan Academy, which may not reflect the trends among smaller businesses or tutoring services that AI also affects. Future research should include a comparison across countries to consider a wide range of AI impacts. Understanding new regions can improve understanding of economic impact and uncover new and unique advantages.

The data on the survey had self-reported responses, which can contribute to certain limitations. For example, survey respondents may have tailored their responses to be socially acceptable, or they might have had confusion with some of the questions due to keywords. The survey also focuses on preferences, opinions, and future choices rather than precise data, which changes the aspects in which the survey data is collected. While the survey specifically prioritized clarity, there were some limitations because of the multiple choice questions being more exploratory and open ended rather than statistical. Future research could address this by adding different data sources: analytics from schools, or analytic performance on students from teachers. Having institutions' input on the data would also allow researchers to have more accurate responses by having concrete data. This can better evaluate the long-term influence of AI tutoring by researching the past vs. the present.

CONCLUSION

This study aimed to investigate how artificial intelligence is reshaping the tutoring industry and how the economic sustainability and demand for traditional tutoring services have changed over time. This was conducted with a lens on student and school perception, affordability, accessibility, and adaptability. Through a mixed-methods study approach, which included a survey, literature review, and case study, the research focused on how AI services are changing the edtech industry.

From the study, the findings display how the way tutoring is perceived has changed. AI tutors are not taking over human tutoring but changing how it functions. Students from the survey and literature review showed that they preferred AI tutoring and hybrid tutoring. They highlighted preference for personalization, affordability, and overall convenience as the main factors for their choice. Case studies such as Varsity Tutors and Chegg helped convey the different economic impacts. For Chegg, AI completely ruined their financial sustainability and led to their downfall. Varsity Tutors opened a new perspective, showing a more adaptable model that includes AI, which helps in scheduling, formatting, and matching. Their hybrid model demonstrates the duality of perception and shows that adapting to AI is crucial. Stakeholders from the survey show that while some users trust AI for academic help, human tutoring still offers greater personalization.

The findings from this research show that the tutoring industry is transforming. The rise of hybrid tutoring underscores that AI is most effective when paired with human instruction rather than replacing it. Platforms that have incorporated AI into their models, such as Khan Academy and Varsity Tutors, have seen unprecedented benefits. Meanwhile, companies that fail to adapt to the AI uprising are shown to face economic decline, as seen in Chegg.

However, the study was also limited as it only covers the United States, so it may not fully encapsulate global tutoring trends. Furthermore, the scope of K-12 and early college-level tutoring models may also limit the general data, as the study only covers a portion of academic levels. Another limitation was the self-reported responses, which may include bias due to societal trends or socially desirable answers.

Further research can widen the scope of economic sustainability and demand and experiment globally or in a country with an economy much different from the U.S. Studies similar to this can provide better insight into how tutoring has changed over time, while research comparing different tutoring models, such as hybrid, AI, and human, can measure total efficiency.

This research offers information for remodeling tutoring services to adapt to AI. In the edtech industry, companies that tried to withstand AI drowned, and companies that adapted survived. They should consider hybrid tutoring platforms that combine AI efficiency with human experience and personalization. It also shows how training in schools is needed to bridge the gap in adaptability, and tutors should reconsider whether their income would be stable based on AI interference.

In conclusion, AI is not taking over human tutoring or eliminating it; it is evolving it. As AI use increases and students lean towards instant, 24/7 responses, hybrid tutoring will likely be the center of it all. This

study addresses both challenges and opportunities and paves the way for new edtech models to take steps toward adaptation.

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