

Breaking the AI Taboo in Education: Strength, Weaknesses, Opportunities, Threats

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Abstract: OpenAI revolutionized the world. Rolled out in late 2022, ChatGPT based on OpenAI immediately became a success for solving everyday tasks by a broad spectrum of internet users. Access to sophisticated decision-making power and analysis of internet content became a creative destruction over the classical search engine, but also human labor power. As a classical market innovation, ChatGPT is expected to revolutionize many domains and markets. This article concerns AI use in academic teaching. First, the historical advent of OpenAI and ChatGPT is outlined. Second, empirical evidence is summarized on the use of AI in education with particular attention to user experience and market transformation capacity. Third, the strengths and weaknesses as well as opportunities and threats in using AI for teaching will be discussed and the polarizing acceptance of a tool that serves as decision making aid in educational settings thematized. Fourth, practical implications and recommendations are given. Fifth, the future of AI in teaching but also the ethical boundaries of an adoption of AI in education will be outlined.

Keywords: Artificial Intelligence (AI), Behavioral Economics, Behavioral Insights, Digitalization, Digi-Disruption, Economic Growth, Market Disruption, Public Policy, Teaching, Technology, Technological Changes

Introduction

ChatGPT is based on the GPT (Generative Pre-trained Transformer) models, developed by OpenAI. ChatGPT started in late 2022 and was released by OpenAI and is based on GPT-3.5. It was fine-tuned specifically for dialogue using a technique called Reinforcement Learning from Human Feedback (RLHF). ChatGPT became a sensation almost overnight because it could have natural, helpful conversations with people. ChatGPT is believed to take over decision making power from human task accomplishment, guiding on a broad range of everyday life choices and implementing tasks.

Like classic innovation adoption models would predict, innovation adoption is normally distributed in society (Rogers, 1962). We can therefore expect the variety of adoption propensity and ChatGPT use to be prevalent in innovation-prone groups. Use of ChatGPT has been found to improve emotional well-being in corporate settings (Rand, 2025). It is expected that those who do not adapt and adopt ChatGPT may struggle staying in the workforce in the near future (Rand, 2025). Mandatory ChatGPT use at work seems to improve the work of underperformers and curb the outperformance of overachievers, which makes it appear as the ultimate decision-making quality equalizer within society (Brynjolfsson, Li & Raymond, 2025).

In educational settings, however, the use of AI and ChatGPT seems to polarize. In teaching, AI seems to have become a crucial factor of competitive strength for future employability. The most recent U.S. White House executive order to advance AI Education for American Youth underlines this sentiment of action for integrating AI use in education (The White House of the United States, 2025).

Based on Rogers (1962) innovation diffusion model, it is expected that parts of society will be more prone to innovation adoption. For instance, younger generations have a natural propensity to be more risk seeking and exploratory in adopting new tools and ways of thinking. The new generation upcoming is in particular interested in creative use of technology and better versed than any other generation to find the right tools online to solve

problems and make digitalization useful for everyday life decision chores. Now the question arises how to teach this generation, given the advent of AI?

The following article discusses the strengths and weaknesses as well as opportunities and threats of AI use in teaching and learning. First, the article starts with the historical emergence of OpenAI and ChatGPT. Second, empirical evidence is summarized on the use of AI with particular attention to user experience and market transformation capacity. Third, AI in teaching will be debated and the polarizing acceptance of a tool that serves as decision making aid thematized. The strength and weaknesses as well as opportunities and threats are discussed. Fourth, practical implications and recommendations are given. Fifth, the future of AI in teaching but also the ethical boundaries of an adoption of AI in teaching will be outlined.

ChatGPT

In recent years, the way we interact with technology has undergone a quiet revolution. At the center of this transformation stands ChatGPT, a remarkable artificial intelligence developed by OpenAI. ChatGPT is not just another tech gadget or app—it represents a major leap in how humans and machines can communicate with each other and solve complex tasks together. ChatGPT is a conversational AI—a computer program designed to talk with people in natural, flowing language. Whether answering questions, writing poems, helping solve math problems, or even generating code, ChatGPT can carry on a conversation that feels surprisingly human. Behind the scenes, ChatGPT is powered by a complex machine learning model called a Generative Pre-trained Transformer (GPT). It is trained in a vast range of text from books, articles, websites, and other sources, giving it a broad understanding of how people use language. What makes ChatGPT special is its ability to generate text that is grammatically correct, but also context-aware, creative, and adaptive to the person it is talking to.

GPT-1 was introduced in 2018. It showed that a transformer model pre-trained on lots of text could perform well on language tasks. GPT-2 came in 2019, much bigger and more powerful. It was initially considered too dangerous to be released fully because of concerns about misuse and uncensored results. GPT-3, released in 2020, was a major leap with 175 billion parameters including writing essays, code, poetry, and human-like conversations. GPT-3 showed that with enough scale, language models could perform tasks they were never specifically trained for. In November 2022 OpenAI launched ChatGPT, based on GPT-3.5. It was fine-tuned for conversations, making it more polite, helpful, and interactive. Within days, millions of people started using it. In 2023 OpenAI released GPT-4, a more capable model, powering ChatGPT Plus, a paid subscription version. During 2024 to 2025, ChatGPT continued evolving, now featuring memory as it can remember facts about users over time and multimodal abilities handling text, images, and even voice.

At its core, ChatGPT works by predicting the next word in a sentence. Given a prompt or a question, it generates a response word-by-word, based on patterns it learned during training. Pre-training occurs as ChatGPT reads massive amounts of text from the internet to learn how language works—grammar, facts, styles, emotions, and more. This is followed by fine-tuning, which is then refined using conversations where human trainers teach it better ways to respond—to be more factual, respectful, and safe. It is estimated that about 80% of the algorithm of ChatGPT is targeted at filtering and adapting the response to a more human tone. ChatGPT benefits from reinforcement learning to further improve through feedback loops. These iterative steps help ChatGPT to learn which answers users find more helpful or satisfying. ChatGPT thereby directly draws on its training to generate the most likely and contextually appropriate responses. The ChatGPT experiment is still unfolding. Currently, the most prominent features of ChatGPT use include answering questions, creative writing, language translation and summarization, coding help, tutoring and studying and professional business support. ChatGPT is used by a broad variety of populations, ranging from school

children to lawyers and CEOs. ChatGPT's emergence marks a new era in human-computer interaction. It makes information and communication more accessible, creative work more collaborative, and productivity tools more powerful.

AI market transformation

AI is currently encroaching the workplace (Kelly, 2025). The AI market transformation is driven by rapid advancements in machine learning, increased data availability and growing demand across various sectors. Businesses are leveraging AI to optimize operations, enhance customer experience and create new revenue streams, resulting in exponential market growth. While taking over simple repetitive tasks and large language modeling as well as part of human decision making, creativity and emotional passion are believed to remain a prerogative of humans (Wingate, Burns & Barney, 2025).

According to a report by Grand View Research (2023), the global AI market size was valued at USD 136.6 billion in 2022 and is expected to expand at a compound annual growth rate (CAGR) of 37.3% from 2023 to 2030. The proliferation of AI applications – ranging from healthcare diagnostics to autonomous vehicles and financial services – illustrates its disruptive potential and long-term impact of OpenAI on the global economy (McKinsey & Company, 2023). These developments are not only reshaping competitive landscapes but also prompting discussions on ethics, regulation, and workforce adaptation in the AI-driven era.

In the workforce, AI is meant to help with all sorts of tasks and decision-making outsourcing. Those who are not ready to adapt and embrace AI are believed to struggle at work and will likely face problems holding onto employment soon (Rand, 2025). At work, the use of AI promises to equalize worker performance, curbing excessively outstanding performance but also uplifting underperformers and compensating for natural ability deficits, such as language barriers or cognitive impairment (Brynjolfsson, Li & Raymond, 2025).

In the educational sector, AI promises many advantages – like 24/7 tutoring with individualized memory bots, instantaneous big data summary functions and creating uplifting experiences to users, who tend to feel empowered after ChatGPT use (Brynjolfsson, Li & Raymond 2025). This is clearly contrary to customer experience detected after social media use, which can be emotionally draining (Brynjolfsson, Li & Raymond 2025).

AI in education strengths and weaknesses

AI is increasingly being integrated into educational settings to enhance classroom experiences and make learning more meaningful. There are strengths and weaknesses but also opportunities and threats from the implementation of AI in educational settings.

Strengths

Recent studies have explored various applications of AI in education, demonstrating its potential to improve student engagement, motivation and learning outcomes. For instance, a study published in *Computers & Education* investigated the effects of AI-enabled personalized video recommendations in a flipped classroom setting. The research found that students who received personalized video suggestions based on their learning profiles showed significant improvements in engagement and learning performance compared to those who did not receive such recommendations (Huang, Lu & Yang, 2023).

Another study examined the integration of AI into science lessons, focusing on teachers' experiences and perceptions. The findings indicated that incorporating AI tools into science education not only enhanced students' understanding of scientific concepts but also fostered greater interest and motivation among learners (Park et al., 2023).

Furthermore, a systematic review in *Research in Science Education* highlights the positive impact of AI on students' academic performance in science subjects. The review concluded that AI applications consistently led to higher test scores and a better

understanding of complex scientific topics compared to traditional teaching methods (Almasri 2024). These studies underscore the transformative potential of AI in creating more personalized and effective learning environments. By tailoring educational content to individual student needs and providing interactive learning experiences, AI can play a crucial role in enhancing the overall quality of education.

Weaknesses

Critical arguments against the use of AI in education contain of passive learning and unreflected copying of information for generating solutions and assignment text. As a shortcut to the hard work of learning or bypass of effort, the risk is that the young generation loses the ability to sit with uncertainty as convenient AI use may weaken the capacity for original thought and trade intellectual character for convenience. Creative thinking but also building knowledge and shaping insights through social interaction may get lost, which may crowd out reinvention skills. For one, AI and ChatGPT are not there yet to think like human beings. AI cannot self-reflect or understand the world and social spheres with empathy like human beings do. For another, students may also miss the struggle to come up with purely fresh and novel ideas. In this passivity with content, the relationship with learning itself erodes, which challenges the status quo with creative thinking.

As for all these features of OpenAI, ChatGPT advises using itself boldly and wisely. It should be a collaborator, not a crutch. It should spark ideas, not invite to steal them or help pretend or cheat with them. The journey of learning should not be eroded by ChatGPT but lifted up in the creative interaction between artificial and human intelligence.

AI in education opportunities and threats

Opportunities

The new mode of information generation online and production of text as well as decision-making outsourcing and problem-solving capabilities online all contribute to opportunities to rethink classical teaching methods.

Innovative digital tools are likely fostering pressure to create enriching social moments in classrooms. Socratic style teaching is prospected to become more important during live classes, while asynchronous assignments at home will focus on online information gathering and sharing insights with peers via innovative technology. The classroom settings should thereby engage in a lively dialogue without AI use, in which students, together with professors, hone their negotiation skills. Students can challenge professors in Socratic teaching, but important attention should be paid to constructive and diplomatic dialogue between students. Asynchronous assignments should use AI, but more focus should be placed on the individual learning journey than just unreflected information gathering. Asynchronous assignments should be structured according to the individual questioning the relation of the individual to the learning subject at hand and the group. Questions, such as ‘what is my personal learning journey’ could be answered transparently in creating learning diary assignments, open to everyone to see in order to breed empathy, cross-pollination as well as social moments and enhance the quality of submissions. Switching from passive narrative assignments to personally-meaningful tasks or social exposures is meant as a way to enrich the learning journey socially and lastingly.

Taking control over the class assignment outcomes can be enacted by using online documents that are edited together. For instance, hivemind tasks solved together that use online resources for creating information overviews could be edited together by all class participants and leave the class community with valuable information that can be reflected upon creatively. As smartness in the new upcoming generation is measured in finding the right tools online and orchestrating them as well as making sense of the online search space, this kind of shared information task promises to give access to online tools and knowledge

that can make sense through complex human reflection in class meetings. Throughout the class, files should be created that are useful for everyone made by everyone – including the teacher and the school administration, who could use this kind of information sourcing as a survey of specific topics of interest – e.g., newest market trends, interest of students, career sourcing...

Threats

The new mode of digital information generation and common production of text as well as decision-making outsourcing and problem-solving capabilities online all contribute to opportunities to rethink classical teaching methods. As for self-determined AI use in class, class policy norm establishment could be enacted. During first class all participants could vote on the class preference for use of AI like ChatGPT. One could highlight potential of AI innovation, like equalizer for language barriers via assigned AI tutor assistants for all students whose first language is not English, but also mind for its risks, such as passive intake of information, outsourcing creativity, decision making etc. If the class decides 100% of AI use, one should adopt AI fully and restructure assignments more focused on students (e.g., that highlight their personal skills, personal learning journey diary including trial-error-learning). Student interaction with each other could track their performance based on transparent personal diary notes, interaction in a commonly-shared platform, e.g., via document history...If the student group's preferences for AI use is lower than 100%, one could allow use up to % based on group standard, thereafter deduct from the grade any use of AI. For example, for paper assignments, if a class votes 70% in favor of using AI/ChatGPT, then one could allow AI use up to this threshold. For example, if a student submits work that is graded with 100% but AI detector (like Quillbot) deems the submission with 100% AI-generated, allow up to 70% being AI generated but deduct 30% from grade, hence student grade equals 70%. If it is a final exam, run answer through AI detector and establish a % that is allowed, below then cut-off. For example, establishing 15% AI generated content is tolerated, if student has 20%, deduct 5% of exam grade. Give students the opportunity to object their grade but then give them only the chance of remedial exams written on paper.

AI implementation in higher education

Applications for higher education teaching with AI may include Asynchronous Activities that are to be done individually at home. In those assignments, a harmonized skeleton structure for several classes could then be modified to put an emphasis on class-specific aspects. Such Asynchronous Assignments could start even before the class begins and then students could present themselves online to each other, including links to online social media etc. Possible assignment prompts could include where students come from (e.g., location, background, studies, hobbies...), what made them come to the specific university (one could also use this information for recruitment as admission asset survey). Information about internet presence could be collected (social media, homepage...) and this information could be used for university recruitment as backtesting if those with social media presence are performing better and if so in what programs or classes? This would help target recruitment and foresight about student trajectories. Fun facts could be woven in, such as something that is really unique and memorable about them, which also helps teachers to have an anchor to remember students better from the first class on. Class specific information could be addressed, such as e.g., have they had any subject of relevance education before? Future career questions could be asked upfront, like 'where do they want to work upon graduation?' which would help to create groups of students with similar interests and goals upfront.

Another way of Asynchronous Activities could be a common online spreadsheet creation with dream industry and job insights that could help gather information collectively to be shared. For instance, how to enter the job market would be a shared interest that could be turned into an Asynchronous Assignment task. This kind of shared group assignment tasks

could include questions like ‘where to find information about an industry, e.g., starting salary, fluctuation, market leaders, durability...,’ ‘Where to find job postings?,’ AI application screenings buzzwords, insider information/online groups etc. The teacher would track in the document history student contributions and one could even install student voting up and down of content based on relevance to organizing spreadsheet information but also use relevance based on group voting for grading. The top-rated contributions get A, middle upper mentions B, middle down mentions C, lowest relevance D. One would need to control for double and self-voting.

Other Asynchronous Assignments could include creating an online persona or finding advanced career-related information online to help students develop a professional internet appearance based on standardized instruction sheets that help to set up instructions for professional accounts with social media, join strategic online communities, set up homepages and Search Engine Optimization (SEO) information. Strategic online advice should comprise of mindfulness of social online media use (e.g., for cultural differences, tracking, discount future implications of unfavorable information, mental health...).

Another option for Asynchronous Assignment tasks would be to find advanced information online, which could serve as an option especially for students who need online privacy. This assignment would prompt students to find career related listservs, groups online to subscribe and join online. This information should be collected in a commonly-shared spreadsheet. AI buzzwords to get one into certain professions but also standard information about professional societies online (e.g., Glassdoor, Blind, Rendezpoint) could be obtained and presented in a common-shared and edited spreadsheet. Online tools to be used could comprise of ChatGPT Data Analyst and Data Extractor, AI use of cases, Jupyter, Julia Programming, Statistics Kingdom, Machine Learning for complex datasets with ChatGPT, AI as research assistant, ChatGPT for PhD students, interactive graphs and charts as well as the Unqork development platform.

Asynchronous Activities for finance and business-oriented students could include online portfolio tracker simulators (e.g., snowball-analytics), of which different variants could be used for different courses. Teachers could give standard test allowance to practice value creation in different market dynamics in the portfolio simulation. Teachers should also keep track of students via weekly 1-page diary entries on their strategies, learnings and outcomes and make the learning journey diary visible to all classmates. At the end of class, the class could feature presentations about strategies, outcomes and learning to allow for live peer feedback and voting on top asynchronous projects via interactive slides, such as offered via Mentimeter. One could have a final assessment video recording about financial advice in the current market climate based on self-paced asynchronous learning.

Discussion

The paper presented a timely and thought-provoking exploration of AI, particularly ChatGPT, in the context of higher education. AI's impact promises to enhance learning experiences and its potential to disrupt traditional educational values. By situating ChatGPT within the broader narrative of technological innovation and diffusion (Rogers, 1962), the article framed AI tools as a democratizing force that may bridge gaps in educational equity. At the same time, the AI market revolution also raises ethical and pedagogical questions.

The paper presented a nuanced evaluation of the strengths and weaknesses of AI in education. Empirical studies demonstrate the capacity of AI tools to personalize learning, boost engagement and improve performance (e.g., Huang et al., 2023; Park et al., 2023). These benefits position AI as a potentially transformative element in teaching, particularly in asynchronous learning environments where individualized support and data-driven feedback are valuable. However, the paper also warns of the dangers of over-reliance on AI, including diminished creativity, loss of social learning and the erosion of students' intellectual

character. This tension underscores the importance of thoughtful integration rather than wholesale adoption of AI tools. The opportunities and threats section was designed to be forward-looking. It calls for a shift in educational models to embrace AI as a collaborative tool rather than a crutch. Innovative classroom engagement strategies were introduced – such as hive-mind assignments, transparent group work and learning diaries – that personalize the educational journey while retaining a social and ethical foundation. Such pedagogical adaptations aim to preserve critical thinking and creativity in an AI-enhanced classroom.

Moreover, the proposal for adaptive class policies—including collective agreements on AI use and assignment designs that reflect individual and group contributions—offers a practical blueprint for institutions grappling with the ethical use of AI in assessments. This acknowledges the heterogeneity of student preferences and the necessity of setting clear boundaries around AI integration.

Ultimately, the paper positions AI not as a threat to human educators but as a catalyst for pedagogical reinvention. It urges institutions to align AI tools with the core mission of education: cultivating critical, creative and socially responsible yet critical thinkers. The strength of AI lies in its balance between technological optimism and ethical vigilance, offering both strategic guidance and a philosophical reflection on the evolving nature of teaching in the digital age.

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For the time waiting until a standard in academia how to cite and credit the use of AI for research and writing is fully declared, this article is co-authored by ChatGPT since the tool was used for writing. The co-authorship gives full credit to the decision-making power of ChatGPT contributing to this article. All omissions, errors and misunderstandings in this article are shared with ChatGPT.

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