



DialogEduShift: Transforming Higher Education Teaching and Evaluation Approaches in the Era of AI ChatTools

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Introduction

When did the first considerations of artificial intelligence actually appear? As early as 1641, Thomas Hobbes published *Leviathan*, presenting a mechanical theory of cognition based on combinatorics. He wrote: "...reason is nothing but calculus."

During the same period, Blaise Pascal invented the mechanical calculator, the first digital calculating machine. Gottfried Leibniz improved on earlier machines, creating the Graduated Numerator, which could perform multiplication and division. Leibniz also invented the binary number system and independently developed differential calculus (independently of Newton). However, he was beginning to envision a universal calculus of reasoning (the alphabet of human thinking) through which arguments could be resolved mechanically. At the extreme, Leibniz

In the second half of the 17th century, philosopher and scientist Rene Descartes anticipated that at some point machines would be capable of making decisions and acting intelligently. Although he argued that robots would never attain the ability to speak like humans, his views were the seeds for the field we today call artificial intelligence (AI, artificial intelligence). In this text, Sophie Hand, manager of UK-based automation equipment provider EU Automation, describes the history of AI, highlighting important milestones.

Alan Turing is one of the most influential figures in the history of computer science. During World War II, his work on breaking the Enigma cipher, used by the German armed forces to transmit messages securely, laid the groundwork for machine learning technology. Turing suggested that machines, like humans, could draw logical conclusions when solving problems or making decisions. In 1950, he described a method for assessing machine intelligence - the "Imitation Game." The Turing test, which requires a human, a machine and a participant trying to determine who is who, is designed to test a machine's intelligence. A machine will pass the test if it can carry on a conversation with a human, who will not realize he is talking to a machine. However, Turing and other pioneers encountered the limitations of the computers of the time, which were expensive and had insufficient operating and storage memory. Therefore, they were available only to the largest companies and universities.

Thanks to the significant advances made between 1956 and 1973, this period was referred to as the "era of the rise of artificial intelligence." Researchers' predictions about the future of AI were



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optimistic, with computers demonstrating an increasing ability to perform a variety of tasks - from speaking English to solving complex algebraic equations.

In response to these early achievements, considerable resources were invested in AI research and development. Unfortunately, computers at the time still did not have enough computing power to use the technology effectively. For example, a program analyzing the English language was limited to processing only 20 words. The period between 1974 and 1980 was referred to as the "winter of artificial intelligence," as funders decided that research progress was not meeting expectations, resulting in the withdrawal of financial support.

In 1981, the discovery of the potential to use artificial intelligence for commercial purposes emerged, prompting a resurgence of investment in the field. Ed Feigenbaum and other researchers developed a new type of artificial intelligence known as expert systems. Instead of focusing on general intelligence, expert systems focused on using a set of rules to automate specific tasks and make specific decisions in the real world. The first successful example of this type, known as RI, was introduced by Digital Equipment Corporation to configure orders and improve accuracy. Japan also invested heavily in AI-enabled computers, and soon similar steps were taken by the UK and the rest of Europe.

Unfortunately, all this enthusiasm quickly turned to disappointment. Apple and IBM introduced general-purpose computers with much more computing power than those used to support artificial intelligence, which contributed to the decline of the AI industry. Investment in artificial intelligence in America was halted, as was Japan after the failure of a flagship project.

The development of artificial intelligence accelerated significantly in the 1990s, mainly due to increases in computing power. One notable event was the achievement of a victory in 1997 by a computer program called Deep Blue over chess champion Garry Kasparov.

The history of artificial intelligence is a story marked by peaks and valleys, both in terms of interest and funding. Despite a challenging journey, artificial intelligence is now steadily gaining popularity, entering a new phase of development.

The evolution of artificial intelligence (AI) represents a watershed moment that is affecting various spheres of our lives. One area where modern technology is playing a key role is education. The role of artificial intelligence raises many questions and discussions regarding its impact on



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teaching methods, the role of teachers and student creativity. One of the most promising trends is the use of artificial intelligence as part of education, based on practical experience, for example, through problem solving (Problem Based Learning) or project implementation. We can already see that at some programs at Lazarski University, for example, PBL is becoming a reality. Through it, students work together to solve problems, conduct research and integrate theory with practice, using the knowledge and skills gained to develop real-world solutions to specific problems. This approach not only strengthens knowledge retention, but also develops critical thinking skills. AI opens up new horizons for students themselves, giving them the opportunity to create problems and projects even in areas that may be unfamiliar to them, and then carry out these tasks. The fascinating world of interdisciplinary research and experimentation, currently available only to a narrow group of experts with multiple areas of expertise, can become accessible to a wider range of people.

Despite the increasing penetration of artificial intelligence into today's world, many professions still require unique human competencies that artificial intelligence cannot replace. Therefore, despite the ubiquity and potential of AI, the importance of the presence of teachers and mentors in the education process remains. Nevertheless, it can be predicted that the traditional role of the lecturer as the sole carrier of knowledge, often referred to as the "talking head" (AI), will rapidly change and gradually lose its importance.

Lecturers and trainers are becoming guides and entertainers, actively supporting students in developing skills that will inevitably become crucial in the era of artificial intelligence. Their task will increasingly focus on developing critical thinking skills, interpersonal skills and problem-solving abilities, areas in which humanity still excels. However, artificial intelligence, along with technological advances, will play a complementary role, supporting educational processes and opening up new opportunities for students.

The current state of higher education systems is at the intersection of significant technological advances and innovative teaching methods. The emergence of artificial intelligence (AI) chat tools marks the beginning of a revolutionary new era in education. These tools, which enable interaction with AI through chat rooms, are becoming key elements, revolutionizing previous educational standards.

With the development of AI tools, teaching processes are taking on a new dimension, allowing students to learn interactively with artificial intelligence systems. The aforementioned tools not



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only make it possible to acquire knowledge in an interactive way, but also open up new perspectives in creating personalized learning paths tailored to the individual needs of each student. This evolution represents a breakthrough in the way knowledge is acquired, moving away from traditional teaching methods to dynamic, interactive learning experiences.

It is worth noting that AI chat tools are just the tip of the iceberg in the technological development of education. Their implementation is setting the course for the future of teaching, transforming existing paradigms and improving the quality of teaching processes. This is just the beginning of changes that have the potential not only to change the way we learn today, but also to shape the future of education.

State-of the-art desk research of current situation in Poland

Poland's higher education system reflects a drive to modernize and improve teaching methods, seeking to combine traditional values with a modern approach to education. For years, Polish universities have focused on developing attractive study programs, while integrating international teaching standards with national educational needs.

The Our Future Foundation last year published the results of its survey in a report, which was prepared in cooperation with Kozminski University. A large majority of students expressed the view that universities should allow the use of new technologies in the educational process, provided that clear regulations for their use are in place.

When studying for exams or preparing papers required to pass a course, more than half of Polish students, about 52%, use tools based on artificial intelligence, such as ChatBots or systems using large language models (LLMs). In addition, nearly 63% of students state that ChatBots significantly speed up solving academic problems and allow them to quickly find the information they need.



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According to Kamil Tomkowicz, a board member of Our Future Foundation, young people are using AI en masse, mainly in the area of homework, to quickly take notes or organize class materials. He said that the flexibility of AI applications carries significant implications for the current educational system.

Rector of Kozminski University, Professor Grzegorz Mazurek, stressed that the future requires a responsible and critical approach to technology. The academy was one of the first in Europe to develop recommendations for the use of tools based on artificial intelligence to support responsible and ethical development of students' knowledge. The survey found that more than half of the students surveyed recommend introducing regulations on the use of AI at universities, while addressing concerns about evaluations of work and projects done using AI technologies. Concerns about the impact of artificial intelligence on the labor market were expressed by more than 60% of students, fearing the consequences for their future career path. Jakub Bartoszewski, a member of the Our Future Foundation council, noted that it is necessary to develop digital skills so that future employees can effectively adapt to changing technological realities. The study found that the rapid development of artificial intelligence has created a competency gap among students that universities have not yet managed to answer. Only a small percentage of students have access to relevant courses on using large language models, while the majority express a desire to improve their AI-related skills.

The conclusion is the need for universities to understand the importance of AI in academic transformation and the need to strike a balance between its integration in the educational process and the development of students' critical thinking skills, Prof. Grzegorz Mazurek, rector of Kozminski University, pointed out again.



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Analysis of survey results

Survey Development

The survey's framework was crafted collaboratively among partners, initiated by a collective virtual meeting where the overall design was discussed. To conduct the survey, partners initially engaged in a comprehensive review of literature focusing on the integration of AI Chat tools in higher education teaching and assessment methods within their respective countries. This included identifying prevalent issues, established practices, and existing policies in the educational frameworks of each country. Subsequently, the collective findings from these six countries were assessed, leading to the formulation of survey questions that encompassed common aspects across all regions. The detailed compilation of responses gathered from these six countries, pertaining to the standardized survey questions, is elaborated in the subsequent sections.

Research Questions

The research study was designed to address the following research questions:

- **Demographic questions:** Country, age, gender, education level and position.
- **Area 1:** Are you familiar with the concepts such as Artificial Intelligence (AI), Generative AI, data science, machine learning and AI chatbot? Besides one more open-ended question about to collect detail information on Artificial Intelligence knowledge and understanding.
- **Area 2:** Have you used or encountered these AI tools in your daily life such as AI chatbots, Image generator, Image/ video editor, Video generator, Sound and music generator and Computer vision? Besides one more open-ended question in order to gather information about the usage situations and ways.
- **Area 3:** What AI chatbots do you use such as ChatGPT, Google Bard and Bing Chat?
- **Area 4:** Do you think AI technologies could help improve the study process in higher education? Besides two more open-ended questions 1) How could AI technologies, in your opinion, help improve the study process in higher education? 2) Could you provide examples or share experiences when AI tools were helpful or necessary in study process? (Only for academicians)



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- **Area 5:** There are six statements regarding AI in the education process with 5 Likert scale which are below:

Do you use AI tools in the assessment process? (Only for academician)
Do you use AI tools to create personalized learning approaches? (Only for academician)
Do you have sufficient knowledge and skills for the use of AI technologies in the study process? (Only for academician)
Do you feel the need to enhance your knowledge and skills in using AI technologies in the study process if they were available? (Only for academician)
Do you agree that AI creates opportunities for the improvement of the education/study process?
Do you agree that AI poses challenges to the education/study process?

- **Area 6:** There is a SWOT analysis in order to analyse the strengths, weaknesses, opportunities, and threats that the participants believe AI can create in the higher education studying process.

Description of Data Collection

The survey was conducted in Poland and included 5 interviews with academics and 5 administrators at the University of Warsaw. The survey was conducted in Poland and included 5 interviews with academics and 5 administrators at the University of Warsaw. All interviews were performed in national languages.



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Findings

The findings of the study are categorised under three main headings according to the positions of the participants in higher education institutions. The results for the three main groups of participants are as follows:

➤ Findings of Academicians

Demographics:

The participants predominantly consist of women, making up 60% of the respondents, and all hold doctoral degrees. When considering the age distribution, there is notable diversity, with a significant concentration in the age group of individuals in their 40s, (see Figure 1 and Figure 2).

Please indicate your gender

5 odpowiedzi

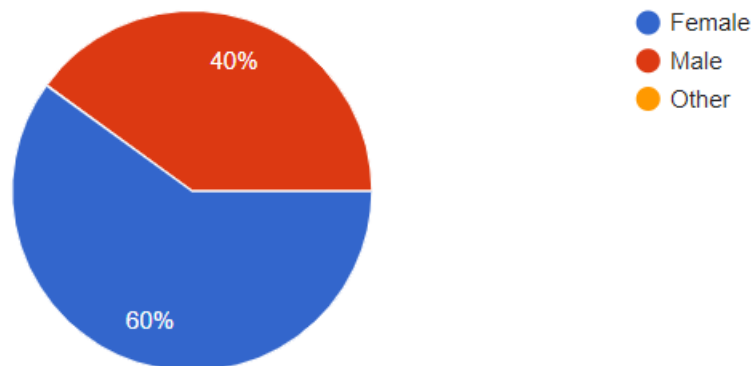


Figure 3: Gender of Participants



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What is the highest level of education you have attained or the degree you have earned?

5 odpowiedzi



Figure 4: Education Degree of Participants

Area 1: Awareness and Understanding of AI:

Generative AI: Four out of five respondents confirm their familiarity with generative artificial intelligence. This result suggests that while most respondents have a general awareness of artificial intelligence, their understanding of more specialized and specific areas, such as generative artificial intelligence, may be somewhat lower.

Data Science: Out of five participants, three have some understanding of data science. The field of data science encompasses a variety of methods for evaluating and interpreting information. Considering that most respondents have this knowledge, it is likely that these academics will be exposed to or use data-driven methods in their daily work or research.



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Machine Learning: Of the five people surveyed, as many as three expressed familiarity with the area of Machine Learning (ML). Machine Learning is a part of artificial intelligence that helps machines learn from data. It's a special type of learning. This suggests that most respondents have some understanding of this area, suggesting that they may be familiar with the applications and practices of machine learning in their field of work or research.

AI Chatbot: Among the survey respondents, a significant number of individuals, namely eighty percent, possess a comprehension of chatbots that employ artificial intelligence. Chatbots are a practical application of artificial intelligence, commonly used in various sectors to provide customer service, search information and perform many other functions. This deep understanding of the subject suggests that these academics aren't just conversant with AI in a theoretical sense, but also with its practical implications, perhaps even as a part of their everyday duties or research. It is suggested that they are more interested in the practical aspects of artificial intelligence, which may include potential implications for the educational or scientific field.

Area 2: Utilization of AI Tools:

Most academics have used or interacted with artificial intelligence tools in their daily life. Eighty percent of those surveyed confirmed direct interaction or experience with AI tools, indicating their widespread utilization in the academic sector.

Interdisciplinary Nature: A significant number of participants underscored AI's multidisciplinary nature, emphasizing its concentration on algorithms and computational models that replicate human intelligence.

Emulation of Cognitive Functions: A prevalent viewpoint among professionals is that AI involves the emulation of human cognitive functions, encompassing learning, reasoning, problem-solving, and perception.

Adaptive Learning: Numerous responses shed light on AI's capacity to learn from experiences, adapt to new inputs, and undergo evolution over time.

Focus on Machine Learning: A few academics specifically pointed out machine learning as a foundational method within AI, signaling an awareness of the technologies propelling AI advancements.



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Ethical Reflections: An individual contributor delved into the ethical dimensions of AI, emphasizing its potential benefits and risks contingent on its applications.

Area 3: The Most Used AI chatbots:

80% participants stated that the AI tool they use the most is ChatGpt.

Area 4: Perceptions on AI in Higher Education:

80% participants have expressed the belief that AI technologies can play a pivotal role in enhancing learning and teaching processes within higher education. In addition, the responses to open-ended questions are as follows:

Enhanced Study Processes: Respondents are optimistic about the potential of AI to revolutionize higher education. They anticipate benefits such as personalized learning experiences, improved accessibility to resources, assistance in econometric modeling, quick access to academic studies, support in research endeavors, and the automation of administrative tasks.

Real-world Examples & Experiences: Several participants shared practical instances of AI implementation, citing its use for academic support, coding assistance, aiding foreign students, crafting course content, and optimizing research processes.

Assessment & Personalized Learning: A significant majority reported utilizing AI tools for assessment purposes, implementing personalized learning approaches, and expressing confidence in their knowledge and ability to leverage AI effectively in educational settings.

Balancing Opportunities and Challenges: While all participants acknowledge the myriad opportunities that AI presents for enhancing the educational landscape, opinions on the challenges are more varied. Concerns were raised regarding ethical considerations, the potential for misuse, and the perceived risk of substituting human interaction with AI solutions. This diverse perspective underscores the need for careful consideration and ethical implementation of AI in higher education.



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Area 5: AI in The Education Process:

40% of the participants confirmed that they incorporate AI tools into their evaluation procedures, while affirming that they possess sufficient knowledge and abilities when it comes to employing AI tools. At the same time, they realize that these technologies can pose challenges in the learning process.

60% of the participants indicated that they utilized artificial intelligence tools to tailor their learning experience.

Importantly, 80% of those surveyed acknowledged the need for further education to enhance their understanding and abilities when it comes to employing artificial intelligence technologies. Collectively, they emphasized that AI technologies represent an important opportunity for learning and teaching processes. The unanimous acceptance of this action demonstrates a willingness to actively participate in the rapidly evolving field of AI, while also acknowledging the need for ongoing advancements in this area.

Area 6: Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis:

Strengths: AI's strengths lie in its ability to personalize learning experiences, streamline administrative tasks, optimize processes, and provide valuable data insights. It also facilitates easier learning, aids teachers, and introduces new study approaches.

Weaknesses: On the flip side, concerns are raised about the potential perpetuation of biases, limitations on critical thinking skills, and privacy risks. AI's drawbacks include the possibility of not fully understanding, making mistakes, and not respecting privacy.

Opportunities: AI presents opportunities by enhancing accessibility, fostering innovation, facilitating global collaboration, making learning more enjoyable, offering additional support, and connecting students globally.

Threats: The threats associated with AI encompass the potential for job displacement, ethical dilemmas, and the widening of educational disparities. There's also the risk of AI making wrong choices and not working well for everyone. In essence, while AI brings significant strengths and opportunities, it necessitates vigilant management to address potential weaknesses and threats, ensuring its positive impact on education.



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➤ Findings of University Administrations

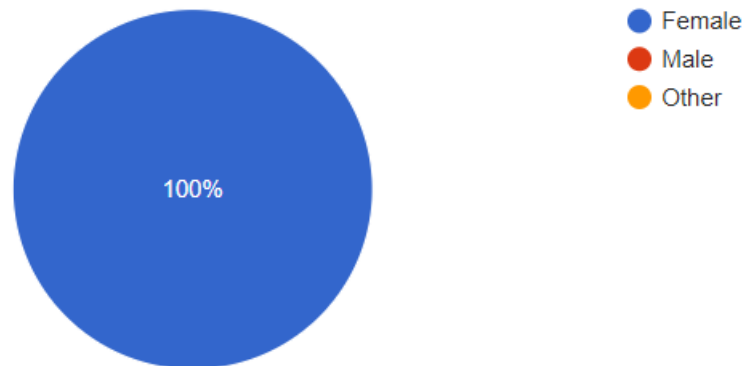
Demographics:

The survey included 5 respondents from Poland, from the university administration sector. The age of the participants ranged from 28 to 57. Only women (Figure 1) with a master's degree (Figure 2) participated in the study.

Figure 1: Gender of Participants

Please indicate your gender

5 odpowiedzi





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Figure 2: Education Degree of Participants

What is the highest level of education you have attained or the degree you have earned?

5 odpowiedzi



Area 1: Awareness and Understanding of AI:

80% of participants admitted that they knew what Artificial intelligence - AI, data science and AI chatbot - was all about. However, only 60% knew what machine learning was all about. Respondents did an excellent job of giving a definition of AI, showing a positive view of artificial intelligence, seeing it as a tool that focuses on creating computer systems and programs capable of performing tasks that usually require human thinking. However, 20% of respondents showed a neutral stance or limited understanding of artificial intelligence, indicating a potential gap in awareness and education among professionals in higher education administration. It is worth noting that the majority of respondents acknowledged using artificial intelligence tools such as chatbots, data analytics and machine learning algorithms in their work. These technologies were mainly used for tasks such as generating reports or managing student data.



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Area 2: Utilization of AI Tools:

In the survey, a significant 80% of respondents emphasized the integration of AI chatbots into their daily activities. Remarkably, despite this high adoption rate, a smaller subset (40%) acknowledged using a diverse range of AI applications such as image/video editing tools, sound and music generators, and computer vision technologies. This subset represents a minority who explore varied AI functionalities beyond chatbots. Moreover, an interesting observation emerged from a participant's mention of utilizing AI specifically for language learning and translation purposes. This instance underscores a focused and singular application of AI technology tailored to individual needs within daily routines, highlighting its adaptability across diverse contexts. Furthermore, two respondents specifically highlighted the instrumental role of AI in the realms of data management and analysis. This recognition emphasizes the broader spectrum of AI utilization beyond specific applications, showcasing its versatility and efficacy in handling and interpreting data for various purposes.

Area 3: The Most Used AI chatbots:

All respondents have heard of Chat GPT. 60% of respondents had heard of Google Bard, and only 20% had heard of Bing Chat. 80% use Chat GP, 20% use Google Bard on a daily basis. The rest of the respondents do not use the aforementioned artificial intelligence tools on a daily basis.

Area 4: Perceptions on AI in Higher Education:

Experts unanimously highlighted the potential of AI technology to improve the learning process in higher education through increased student engagement, customized learning, effective academic advising and optimized operations of educational institutions. However, some expressed concerns about the ethical aspects of implementing AI in education, including data privacy issues. In addition, experts stressed the need to balance the use of technology with maintaining ethical standards and the privacy of educational participants. They pointed out the importance of developing guidelines governing the appropriate and ethical use of AI in an educational context, a key element in its implementation.

Area 5: AI in The Education Process:

In a significant number of participants' statements, it was pointed out that tools based on artificial intelligence have the potential to significantly improve educational processes, positively



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affecting both academics and students. It was also repeatedly emphasized that artificial intelligence poses new challenges to the education and learning process. In addition, participants in the debate expressed the need for detailed reflection on how to implement AI technology in the field of education, taking into account both the benefits and challenges of this innovation. The need to continuously improve the knowledge of academics in the field of technology was pointed out, in order to be able to use the potential of artificial intelligence in the most effective way and in accordance with the best teaching practices.

Area 6: Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis:

Strengths:

- Personalization: AI demonstrates the capability to tailor learning experiences, catering to individual student needs effectively.
- Task Automation: AI's ability to automate various tasks is a significant strength, streamlining processes and saving time.

Weaknesses:

- Privacy Concerns: There are substantial concerns about privacy and data security due to the collection and analysis of extensive student data by AI systems.
- Potential for Mistakes: AI systems may occasionally make errors, learn incorrect information, or even foster overreliance on technology, which can pose challenges in the educational context.
- Limitations in Teaching Creativity: AI might not effectively teach creativity, potentially hindering aspects of innovative thinking among students.

Opportunities:

- Innovation in Teaching Methods: AI-powered platforms pave the way for innovative teaching techniques such as simulations and intelligent tutoring systems.
- Promotion of Inclusivity: AI has the potential to promote inclusivity in learning, accommodating different learning styles and needs.
- Diverse Learning Approaches: AI can facilitate various learning methods, enhancing the learning experience for students.



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- **Threats:**
- **Job Displacement:** There are concerns about AI replacing certain roles in education, potentially leading to job insecurity among educators.
- **Ethical Concerns:** AI's deployment in education raises ethical considerations, particularly regarding fairness, access, and concerns about AI-driven bias.
- **Potential for Encouraging Cheating:** AI's capabilities might inadvertently encourage cheating, potentially undermining academic integrity. However, it can also assist in generating content quickly.

Conclusions

A recent study conducted in Poland took a deep dive into the impact of AI on higher education, focusing primarily on the perspectives of scholars and university administrators. The study sheds light on how AI is shaping the landscape of higher education in Poland and highlights its potential implications for the future of academia.



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