

Threats of Artificial Intelligence in India with special reference to Education:

Navigating the Challenges and Embracing Opportunities

Mr. Kiran Suraj S

Assistant Professor, MBA Department, Amruta Institute of Engineering & Management Sciences, Bidadi

Abstract :

Purpose: This study aims to examine the threats of Artificial Intelligence with special reference to Education sector, and further navigate the challenges and understand how to convert these threats into potential opportunities - particularly in India.

Design/methodology/approach: This is a conceptual study involving in person interview with a few AI- experts from the industry and academicians.

Findings: The findings of this research call for a nuanced and context-specific approach, recognizing that the impact of AI in India may differ from global trends. By fostering a collaborative and forward-thinking mindset, India can position itself to leverage the transformative power of AI in education while minimizing its potential threats.

Research limitations/implications: This research paper predominantly focuses on the threats and potential opportunities of AI in the education sector, wherein other sectors are not focused. There is ample scope to perform empirical study on this topic.

Practical implications: The findings and inferences of this paper can be utilized by Education institutions for restructuring their policies and for further efficient administration.

Originality/value: The value of the study is to educational institutions and related organizations seeking for the role of artificial intelligence in education.

Keywords: (AI) Artificial Intelligence, Threats, Challenges, Opportunities. Education sector

Introduction :

Education is one the most essential sectors of society. It is linked with all of the other sectors and its impact on them is substantial. Due to this significance, education is indispensable for all cliques of society beyond any hurdles. Artificial Intelligence (AI) has emerged as a transformative force, propelling societies into an era marked by unprecedented innovation and efficiency. In India, the rapid integration of AI technologies across diverse sectors promises substantial advancements in healthcare, finance, governance and even education,. However, the embrace of AI comes hand-in-hand with a spectrum of challenges that warrant thorough examination and strategic mitigation. This research article endeavors to explore the multifaceted landscape of the "Threats of Artificial Intelligence to Education Sector in India," with a dual focus on navigating challenges and embracing opportunities.

This research article delves into the multifaceted threats posed by the rapid adoption of Artificial Intelligence (AI) in India. As AI technologies become increasingly integrated into various sectors, including healthcare, finance, governance and education it is crucial to examine potential threats and challenges with regard to its applications wherein in this article we will predominantly focus more on the impact of AI in the Education sector of India. This article synthesizes existing literature, analyzes case studies, and presents insights into addressing these threats, and throws light on the potential opportunities that can be figured out from these threats.

One major factor driving this discussion is the ongoing development of artificial intelligence (AI), which can be described as “the ability of a machine to perform cognitive functions that we associate with human minds, such as perceiving, reasoning, learning, interacting with the environment, problem solving, decision-making, and even demonstrating creativity” (Rai et al., 2019, p. iii). When a machine is programmed to perform almost all the critical tasks than a human requires years of expertise to learn, the students of this generation have started to use the application of AI in their education as a life hack.

Though AI has several merits of lubricating the process of any task completion and reducing the actual human efforts, the Gen Z students are gradually becoming dependent on the outcomes of AI.

Considering the social interactions between individuals and technology and its possible threat to identity, further investigations into IT identity threat are needed to understand this phenomenon (Craig et al., 2019). There is thus an urgent demand to conduct in-depth research on new forms of human-AI collaboration, especially on related consequences for the students in terms of attitudes and actions toward AI as well as psychological, emotional, and social aspects.

The Rise of AI in India

The integration of Artificial Intelligence in education has the potential to revolutionize the learning landscape in India. However, this transformation is not without risks. This section provides an overview of the current state of AI in the Indian education system, setting the stage for the subsequent exploration of threats and opportunities. As India strides confidently into the digital age, AI has become a linchpin of technological evolution, fostering breakthroughs that redefine traditional paradigms. From predictive analytics enhancing healthcare outcomes to automated financial services optimizing resource allocation and driving the education sector's utility, the impact of AI is omnipresent. This surge in adoption underscores the urgency of comprehending the threats that accompany such technological integration, especially in the field of education, urging stakeholders to navigate these challenges judiciously. It is of course evident from several studies that students are gradually becoming interdependent on technology for their daily student activities. Now even a letter for requesting leave is copied from the AI tools that are available online which has made the life of any student much more easier than it was earlier.

Theoretical Background / Literature Review

The ongoing development of information technology (IT) enables organizations to introduce digital work as the new normal. The employees are facing new forms of work that might decrease personal interaction but increase interaction with IT (Milad Mirbabaie · Felix Brünker · Nicholas R. J. Möllmann (Frick) · Stefan Stieglitz). Artificial Intelligence detaches itself as a spearhead of these challenges, in terms of benefits and opportunities, or as inconveniences and threats toward all levels: from individuals, to businesses, from countries to regions and global community (Alina Iorga Pisica Tudor Edu Rodica Milena Zaharia and Razvan Zaharia - 2023) . One important and highly recognized contribution of implementing AI is related to the teaching–learning process; under its complex understanding, all aspects that people need to pass through in order to acquire new knowledge and skills and which ultimately influence their attitudes, decisions, and actions (IGI Global February 2023). The tools offered by AI have proven to be effective, and some have become widely used in universities and high schools in Western countries, such as virtual and augmented reality, voice assistants, etc., just to mention a few of the many other applications (Holmes, W.; Persson, J.; Chounta, I.A.; Wasson, B.; Dimitrova, V- 2023) Therefore, AI will change workplaces and professions persistently, potentially threatening the livelihoods of individuals whose jobs are taken over (Aleksander, 2017; Haenlein & Kaplan, 2019). The use of AI could also support the development of uncertainty and invasion of privacy (Cheng et al., 2021). This negative phenomenon is often referred to as the dark side of AI, referring to how AI presents risks for individuals, organizations, and society (Alt, 2018; Grundner & Neuhofer, 2021; Wirtz et al., 2020). Nonetheless, the utilization of AI in organizations could not only eliminate or change current jobs but also create new areas of work, for example, within engineering, programming, or even in social domains (Acemoglu & Restrepo, 2018).

AI is increasingly being augmented in electronic markets, triggering a widespread acceptance in organizations across industrial boundaries and transforming the global economy (Adam et al., 2020; Guan et al., 2020; Thiebes et al., 2020). Therefore, AI is considered an integral part of business strategy and organizational decision making (Cheng et al., 2020a, b; Shrestha et al., 2019), thus making it a key element for generating business value (Dwivedi et al., 2019). On the one hand, AI is considered an engine for productivity and progress; on the other hand, AI entails societal upheaval (Yang & Siau, 2018).

This paper exhibits a conceptual study of the threats that arise due to the rapid adaption of AI in the field of education and how the students of today have drastically become inter-dependent on the artificial intelligence. The study is limited to the impact of AI application in the Education sector, wherein the students of graduation and post-graduation are predominantly focused. This study throws light on how Artificial Intelligence has become an integral part of the students and how they are being benefitted from its usage. It also explains how the AI has become a threat to the students of today.

Objectives

- To understand key threats associated with the proliferation of AI in India with special reference to Education.
- To understand the potential opportunities of AI in the field of education.

The primary objectives of this research are twofold: to identify and scrutinize the threats emanating from the proliferation of AI in India and to explore avenues for embracing opportunities within this transformative landscape. The intricate interplay between challenges and opportunities demands a nuanced understanding that extends beyond the dichotomy of potential harm and benefits. By navigating these challenges adeptly, India has the potential not only to mitigate risks but also to harness the full spectrum of opportunities that AI presents.

Discussion

Artificial intelligence is the ability of a machine performing the activities that a human performs after he acquires the expertise over a period of time. Here the AI based devices are programmed in such a manner that it can perform almost all the tasks assigned by the programmer within a lesser time when compared to humans. Hence this ability of the machine to perform our tasks in an easier and faster manner has facilitated many humans to completely depend on such AI tools for their day to day chores. AI has drastically grown over the last 5 years having its extension in almost all the fields. Likewise the education sector has also extended its greetings to the new age artificial intelligence where all the work of both the teacher and the student can be performed by a pre-programmed machine.

The students have increasingly started to use the freely available versions of web bases artificial intelligence websites that are customized for each tasks individually.

The data collected from around 60 students provides the following insights on usage of AI

Gamma: is a AI powered tool used to generate and create PPT's or documents with just the right prompts as an input

Merlin Extension: It is a Chatbot cum assistant powered by ChatGPT which acts as your assistant that can keep notes, convert speech to text, translate and much more.

Grammarly- it reviews spelling, grammar, punctuation, clarity, engagement, and delivery mistakes in English texts, detects plagiarism, and suggests replacements for the identified errors.

QuillBot is a software developed in 2017 that uses artificial intelligence to rewrite and paraphrase text

ChatGPT (Chat Generative Pre-trained Transformer) is a chatbot developed by OpenAI and launched on November 30, 2022. Based on a large language model, it enables users to refine and steer a conversation towards a desired length, format, style, level of detail, and language.

Craiyon: Online artwork generator that uses AI to generate the artwork in accordance to the prompts provided.

Whisper: The AI tools is used for the Online transcription of audio files using language models from OpenAI.

Gemini: It is a new kind of assistant developed by Google that uses generative AI to collaborate with the user and help them get things done. It can act as a personal assistant and has the programmed ability to assist in decision making.

The students have adapted to just open the respective AI tools that is available online and provide the prompts to the tool asking it to perform any such assigned task. This has made the work of the students much more easy though, the students are found to get more lethargic and repellant to innovation and creativity. –

They are so much used to the usage of the newly available AI tools that they have forgotten to actually perform the tasks by themselves. For instance, the students used to write a leave letter requesting for leave or an apology letter apologizing for the leave taken, but now they simply open an AI website and give the AI tool a prompt asking it to write a leave letter or an apology letter for which the AI tool provides a neatly drafted letter as per the prompt as an output, which the students just copy and forward the same to their teachers. It was just an example stating the students perseverance of AI wherein there are several such real life examples. The notes that are dictated in the classes are recorded using the digital devices and are converted into a text document using the AI tools. The power point presentations that are to be presented for any projects are done using the help of AI tools, and large reports are summarized using the AI tools with ease.

Threats of AI to the education sector:

Though the new age Artificial Intelligence has provided several merits to all the stakeholders of the education sector that includes the students, faculty and the management, there are yet many threats that AI brings hand in hand upon its application. A few to discuss are,

Privacy Concerns:

The data protection and Privacy are the basic things that an user expects when he/she enters a new website or a portal. But there are several concerns in privacy and security of user information in in the usage of AI's.

- **Student and Faculty Data Protection**

As AI systems rely on vast amounts of data, any activity done by the students via AI's will constantly be recorded and stored. Such data may or may not be protected, hence ensuring the privacy and security of student information is paramount. It is highly important to maintain the sensitive information provided by a student or a faculty, wherein the AI tools that are in use today are most likely lagging. There are no clear Data Security and protection information provided on the interface wherein the students or teachers tend to utilize the same without the knowledge of its adverse effects on the long run.

- **Informed Consent**

It is a part of the ethics that any data collected and utilized of student or a teacher must be accompanied by informed consent. The consent of the user for further processing their information is a must when it comes to data being captured online. Here the AI tools capture infinite data of the user and may a times without the complete consent of the user. This might lead to several issues such as sensitive data theft, cybersecurity concerns, phishing, etc.

Overreliance on Technology:

As progression towards technologically advanced AI tools and their implementation in the day to day activities to perform the task better is a topic to be appreciated, overreliance on the technologies make the users lethargic and repellent to innovation and creativity.

- **Reduced Human Interaction:**

Students of today have lost a major part of their etiquettes having isolated themselves at the times of SARS Covid-19, wherein they have almost lost their interpersonal communication skills and relationship with their friends and their

faculty members. Excessive reliance on AI for teaching and learning has led to reduced human interaction, impacting the social and emotional development of students. The students have forgotten to socialize, network or even empathize others which is not a very good sign of development.

- **Technical Issues:**

AI's are accessible via the internet, and internet is not always constant in a developing nation like India, especially in the rural areas of India. Dependence on technology introduces the risk of disruptions due to technical issues, network failures, or cyberattacks, hindering the learning process.

Lack of Transparency and Accountability:

The logical answering of the AI enabled sites are always mysterious and not very familiar to the normal internet users, as they are not really aware how the system generates the result for the prompt and how reliable is the result are.

- **Opaque Decision-Making:**

AI's do almost all the intellectual work a well trained and experienced human may do but how do they do that is not known by everyone. The lack of transparency in how AI algorithms make decisions can create challenges in understanding the reasoning behind educational outcomes, making it difficult to hold systems accountable.

- **Limited Explainability:**

Some advanced AI models operate as "black boxes," making it challenging to explain their decisions comprehensively. This lack of explainability can raise ethical concerns, particularly in critical educational scenarios such as explaining a research finding or analyzing the result for a research gap.

Job Displacement and Skill Gap:

It is of course the talk of the hour that Artificial intelligence has the ability to replace the human capital in any field-like wise in the field of education as well. There is an emerging threat to the faculty members that the AI's can replace the jobs of teachers as it has the potency to accumulate the expertise of such teachers in no time.

- **Automation of Teaching Tasks:**

As AI has the potential to become a threat to several jobs around the globe, education sector is not left aside. AI has the potential to automate certain teaching tasks, leading to concerns about job displacement for educators. This can affect not only teachers but also other support staff within the education sector.

- **Skills Mismatch:**

The rapid evolution of AI may result in a gap between the skills taught in traditional educational settings and the skills needed in the workforce, potentially leaving students ill-prepared for emerging job markets.

Though there are several threats of AI in the education sector, it cannot be forgotten that the raise of Artificial Intelligence in today's world has made way for several advancement in science, technology and economy. The efficiency of work has been enhanced and the time taken for a critical task has been reduced by almost 85%. The threats mentioned above can be embraced into potential opportunities when they are appropriately channeled and scrutinized. Artificial Intelligence has the potential to bring about significant advancements and improvements in the education sector. Here are some advantages of incorporating AI in education:

- **Personalized Learning:** AI has the ability to analyze the students' learning patterns, their preferences, and progress to tailor the educational content in accordance to the same. This enables a personalized and customized learning experience focusing each and every student, catering to individual needs and pacing.
- **Adaptive Learning Systems:** AI-powered adaptive learning platforms can dynamically adjust the levels of difficulty of tasks and content based on the student's performance, which ensures that they are appropriately challenged and engaged with the rightly fitted activity for development
- **Efficient Administrative Tasks:** As educators find the task of administering difficult, AI can streamline such administrative tasks, such as grading the students, scheduling classes or tests, and resource management efficiently. This allows educators to focus more on teaching and interacting with students rather than focusing on administering tasks.
- **Automated Tutoring:** tutoring systems that are AI based can provide instant feedbacks, guidance, and support to students, helping them grasp concepts more effectively and quickly. This is particularly beneficial for slow learners and students who need additional assistance outside regular classroom hours.
- **Data Analysis and Insights:** Implementing artificial intelligence in the education sector provide the facilities of analyzing vast amounts of educational data to identify patterns, trends, and areas where students may be struggling and to navigate where the management needs to focus on for development. This information can be used to enhance teaching methods and curriculum development.
- **Virtual Reality (VR) and Augmented Reality (AR):** As visualizing everything that happened in the past history had always remained a dream to the students, and now thanks to Artificial intelligence enabled Augmented Reality and Virtual Reality technologies that can create immersive learning experiences, allowing

students to explore historical events, scientific concepts, and other subjects in a more interactive and engaging way, making it easier for the students to understand and remember.

- **Global Access to Education:** The education outreach programs were one of the most crucial programs post-independence in India as it was very difficult for rural and poor students to proceed with higher education. Now that AI facilitates online learning platforms, making education accessible to each and every student globally. This can be particularly beneficial for students in remote or underserved areas who may not have easy access to traditional educational resources.
- **Language Processing and Translation:** English has always been a barrier to education in the most remote and rural areas of the globe as they do not have sufficient resources to adapt to English learning. The AI-powered language processing tools can assist students in language learning by providing instant translation from any provided language to any required language, pronunciation assistance, and language practice exercises lubricating the process of learning a new language.
- **Collaborative Learning:** AI's has brought the world even more closer where AI-powered collaborative tools enable students to work together on projects, share their unique ideas, and engage in group activities, fostering teamwork- teambuilding and communication skills.
- **Continuous Learning and Skill Development:** As the student's track record can be maintained by the AI on its platform it can recommend additional learning resources, courses, and materials based on individual progress and their career goals, promoting continuous skill development throughout one's education and professional journey.

Despite these advantages, it's important to note that ethical considerations, data privacy, and the potential for bias in AI systems must be carefully addressed to ensure responsible and equitable implementation in the education sector. These merits showcase the transformative potential of AI across diverse domains, leading to increased efficiency, improved decision-making, and innovative solutions to complex challenges. However, it is crucial to navigate the ethical considerations and potential risks associated with AI to ensure responsible and beneficial deployment.

Conclusion

In conclusion, the research on the threats of Artificial Intelligence (AI) in India, with a special focus on education, underscores the critical need for a balanced and proactive approach. As AI continues to permeate various facets of our society, including education, it brings forth both challenges and opportunities that demand careful navigation.

The threats outlined in this research, ranging from concerns about privacy and data security to potential job displacement, highlight the importance of establishing robust regulatory frameworks and ethical guidelines.

Addressing these challenges requires collaboration between policymakers, educators, industry stakeholders, and the broader society to ensure that the integration of AI in education aligns with the values and needs of the Indian context.

On the flip side, the opportunities presented by AI in education are immense. The potential for personalized learning experiences, efficient administrative processes, and innovative teaching methodologies can revolutionize the education landscape in India. Embracing these opportunities requires a commitment to investing in the necessary infrastructure, training educators, and fostering a culture of adaptability and continuous learning. In navigating the complex landscape of AI in education, it is imperative to strike a balance between harnessing the benefits of technological advancements and mitigating potential risks. The findings of this research call for a nuanced and context-specific approach, recognizing that the impact of AI in India may differ from global trends. By fostering a collaborative and forward-thinking mindset, India can position itself to leverage the transformative power of AI in education while minimizing its potential threats. Ultimately, the successful integration of AI into the education sector will depend on a strategic and inclusive approach that prioritizes the well-being and development of individuals and society as a whole.

References

1. Hua, M.T.A. Promises and Threats: iN2015 Masterplan to Pervasive Computing in Singapore. *Sci. Technol. Soc.* 2012, 17, 37–56.[CrossRef]
2. Ahmad, M.F.; Ghapar, W.R.G.W.A. The Era of Artificial Intelligence in Malaysian Higher Education: Impact and Challenges in Tangible Mixed-Reality Learning System toward Self Exploration Education (SEE). *Procedia Comput. Sci.* 2019, 163, 2–10.[CrossRef]
3. Ministry of Education, Science and Technology of the Republic of Korea (MEST). Smart Education Promotion Strategy; President's Council on National ICT Strategies: Seoul, Korea, 2011.
4. Popenici, S.A.D.; Kerr, S. Exploring the impact of artificial intelligence on teaching and learning in higher education. *Res. Pract. Technol. Enhanc. Learn.* 2017, 12, 22. [CrossRef]
5. Barton, D.; Woetzel, J.; Seong, J.; Tian, Q. Artificial Intelligence: Implications for China; Discussion Paper Presented at the 2017 China Development Forum; McKinsey Global Institute: Washington, DC, USA, 2017.
6. Kempe, F. The US Is Falling behind China in Crucial Race for AI Dominance. *CNBC*. 2019. Available online: <https://www.cnbc.com/2019/01/25/%20CNBC> (accessed on 20 April 2019).
7. Defense Innovations Board (DIB). AI Principles: Recommendations on the Ethical Use of Artificial Intelligence by the Department of Defense; Defense Innovations Board: Washington, DC, USA, 2019.

8. Agarwal S. and Kaushik J. S., 2020 “Student’s Perception of Online Learning during COVID Pandemic,” Indian J. Pediatr., vol. 87, no. 7, p. 554, , doi: 10.1007/s12098-020-03327-7.
9. Borenstein J. and Howard A.,2021, “Emerging challenges in AI and the need for AI ethics education,” AI Ethics, vol. 1, no. 1, pp. 61–65, doi: 10.1007/s43681-020-00002-7.
10. Cervantes J., Garcia-Lamont F., Rodríguez-Mazahua L., and Lopez A., 2020 “A comprehensive survey on support vector machine classification: Applications, challenges and trends,” Neurocomputing, vol. 408, pp. 189–215, doi: <https://doi.org/10.1016/j.neucom.2019.10.118>.
11. Roopal Shrivastava, ROLE OF ARTIFICIAL INTELLIGENCE IN FUTURE OF EDU, *International Journal of Professional business Review*, Miami, v. 8 | n. 1 | p. 01-15 | e0840 | 2023.
12. Sayed Fayaz Ahmad 1,*, Mohd. Khairil Rahmat 2 , Muhammad Shujaat Mubarik 3 , Muhammad Mansoor Alam 4 and Syed Irfan Hyder, Artificial Intelligence and Its Role in Education, Sustainability 2021, 13, 12902. <https://doi.org/10.3390/su132212902>
13. Cox, A. How artificial intelligence might change academic library work: Applying the competencies literature and the theory of the professions. J. Assoc. Inf. Sci. Technol. 2023, 74, 367–380
14. Zhuo, T.Y.; Huang, Y.; Chen, C.; Xing, Z. Exploring AI Ethics of ChatGPT: A Diagnostic Analysis. arXiv 2023, arXiv:2301.12867

Other sources:

<https://www.google.co.in/>

<https://en.wikipedia.org/wiki/Wiki>

<https://www.britannica.com/technology/artificial-intelligence>