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Understanding the Scope and Problems of Artificial Intelligence and Assisted Learning in Higher Education

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ABSTRACT
Learning is a dynamic experience. We need to create learning experiences that assist all kinds of learners. Human beings have different patterns of learning. Assisted learning helps in decentralizing the learning experience in a more individualistic approach. Artificial Intelligence has helped in automating many tasks of administrative nature, evaluation and has even helped personalize learning, countering the problems of teacher exhaustion. Not just efficient grading use of AI through educational chatbots and applications can help in helping students get a 24/7 mentoring option which in a real-world scenario might be difficult for human teachers to cater to. With technology has come ease of global accessibility and insights that are backed by data. But it also brings along with it an enhanced scenario of digital divide, technological hurdle and inequality. The paper through case studies tries to analyze the scopes and problems of using Artificial Intelligence in Assisted Learning in Higher Education.

Keywords: ai, ai in education, assisted learning

I. INTRODUCTION

The growth of Artificial Intelligence has created an influx and abundance of information and has facilitated access to excess data. Affiliated technology, available in the public domain has further enhanced this problem. There are primarily two major challenges. Firstly, there is a need for AI Literacy, second is the critical issue of trust and authenticity of AI generated content. The question has often been, is AI-generated information reliable? In today's time, AI Literacy is a must and it must start from the campus of the educational institutes. Fundamental concepts like Natural Language Processing, Neural Networks, Machine Learning must be clear to both students and teachers to fully exploit the scope of the technology and use it to the benefit of everyone (*Key Components of Developing AI Literacy at Your Institution*, 2024). Kristen DiCerbo, The Chief Learning Officer of Khan Academy thinks that AI will be able to solve one of the major problems of the current educational system that we see in Higher Education – teacher exhaustion and burnout and the problem of incomplete learning due to staff shortage. Govt and policy makers across the globe are forming leadership roles and addressing the issue of AI in education. There is also a need at govt level to promote AI in education. Say for example the 'IndiaAI Mission', has been initiated by the Central govt to promote AI in education so that the country, its startups and other industries can harness the power of AI. The Indian Govt is trying its best to work and promote cutting edge technology across India. Multiple Centre of Excellence has been set up across the country to focus on different emerging areas of technology (*AI & Emerging Technologies Group | Ministry of Electronics and Information Technology, Government of India*, n.d.). Capacity building is very important if India must take full advantage of the emerging Technology and AI. There is also an urgent need to support innovation.
Ideas that can shape policy parameters of AI in Education can be explained through this simple diagram.

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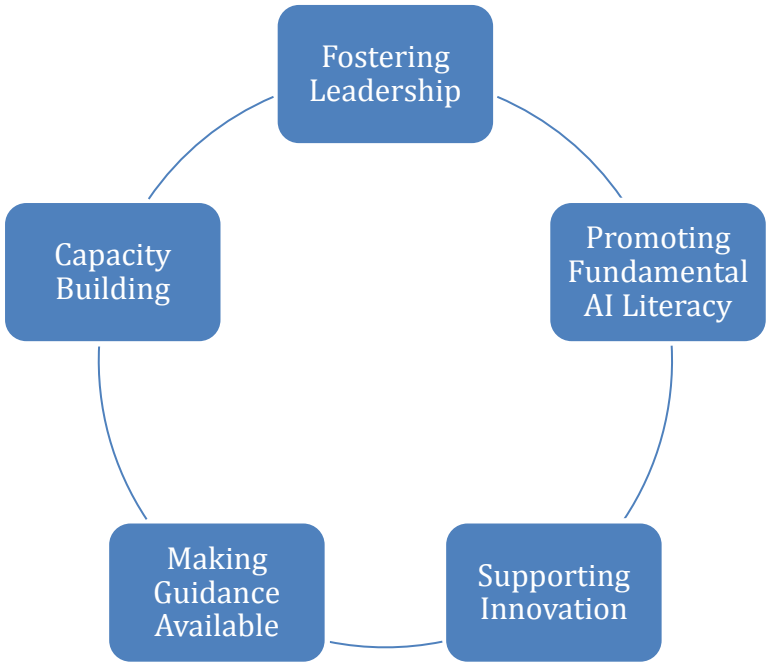

Figure Source: TeachAI (*5 Key Policy Ideas to Integrate AI in Education Effectively*, 2024)

AI is gradually transforming education systems all around the world to alter the conventional trends of learning processes and advance new methods of education. Starting from intelligent tutoring systems up to learners' customization platforms and AI-based administrative tools, the education environment is changing dynamically. Such technologies can improve learning performances, offering feedback, and expanding opportunities for learners globally. In 2023, there was a survey that was conducted by Forbes Advisor on 500 educators in the United States, 55% of the respondents showed that there has been an improvement on the outcome of the students after AI was introduced. About 60% of the practicing educators admitted that they use AI in their classroom teaching. It was found out from the survey that the utility of AI were in diverse ways. Some focused on tutoring systems that were powered by AI, use of AI in grading and evaluation, focusing on educational games that were powered by AI and more. The biggest problems that emerged in the survey were of plagiarism and detachment from human interaction. Data privacy and security concerns of the students were a strong area of concern. Another massive challenge was how the students used AI generators to finish their assignments. One of the biggest learnings of the study was indeed the need to implement AI literacy and the need to use AI more efficiently (Hamilton, 2024).

Thus, a key reason for the education system in India carrying numerous challenges is a large and diverse student base along with regional disparities and scarcity of resources. However, these hinderances do not appear to dampen India's prospects of gaining from AI in this regard and enhancing educational outcomes. Different government policies and even the National Education Policy 2020 envision the use of technology in education and realize that AI can even the playing field and make education more inclusive (Panditrao, 2020). AI must go beyond the current trends of technology implementation in Indian education to foster equality as well as the effectiveness of education systems by enhancing the scope and accessibility of education for all. Thus, AI technologies can provide personalized education processes, personalized learning, help teachers diagnose the learners better to find out how to help them, and thus decrease the amount of paperwork. Such advancements are specially useful in a country where equal opportunities in education and the quality of available schools may still be an issue. AI thus has the potential in the future to revolutionize Indian higher education by bringing the nicer element of innovation and better learning that is tailored for individual needs (Wang *et al.*, 2023). The implementation of AI technologies is to pave the way towards the development of an environment that is more flexible and oriented toward the students. By adopting these technologies, India can significantly leverage such advancements as AI in the education systems and become a developed nation. This study aims to examine AI in education and its uses and effects in the education system in India with prospects, consequences and the future scope of AI.

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II. REVIEW OF LITERATURE

a. AI in Education

Figure: AI in Education
Source: (Cloudfront, 2023)

According to Dhawan and Batra, (2020), the use of Artificial Intelligence in education has not only received interest but also a lot of research is being conducted making the area generate a lot of literature. In the present study, prior literature is applied to explain the complex impact of AI integration on the teaching-learning process. These have included; Intelligent Tutoring systems that involve adaptive learning materials for students, Personalized learning systems that encompass electronic training for students, and Chatbot systems that encompass everything to do with the use of the chatbot in learning. Intelligent tutoring systems (ITS) can be considered one of the most investigated AI applications in the sphere of education (Mousavinasab *et al.,* 2021). Such systems use AI algorithms to issue instruction and feedback to learners and replicate the exact one-on-one sessions with a tutor. Researchers have proved that it enhances students' learning outcomes since it personalizes content and learning rates. Its effectiveness is highly noticeable where subject areas, which involve a sequence of systematic problem solving, are involved like mathematics and sciences. It can also help students in assisted learning to find answers to problems.

Another area of the reinforcement of AI practices is the element of personalized learning platforms. Such platforms employ statistics and machine learning to deliver educational materials and learning experiences that match each learner's proficiency, areas of difficulty, and interests. Dedicated research has shown that the process of differentiated instructional methods can raise students' attention and improve overall academic outcomes since every learner has unique characteristics, which should be considered (Saravanakumar and Padmini Devi, 2020). Such platforms include components of multimedia and interactive possibilities to make the work process more interesting and effective. Natural Language Processing (NLP) powered chatbots are being used in learning environments to support functions such as information help desk and administration. Chatting with educational bots, shows that these bots can help students with all sorts of questions they may have, whether it is related to courses or timetables, and can be available 24/7 (Ghnemat *et al.,* 2022). This is something that might be difficult for a mentor to provide. Using chatbots also enables a more responsive and engaging means of imparting knowledge to students, which, in turn, will result in more satisfied students and better rates of continuation at the learning institution. Thus, the discussion highlights the impact of AI in the context of the education experience within the sphere of intelligent tutoring systems, individualized teaching solutions, and the deployment of chatbots and other assistants. Many of these technologies present possible ways to increase learning and student achievement while at the same time focusing on individualizing learning experiences.

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b. Benefits of AI-Assisted Learning

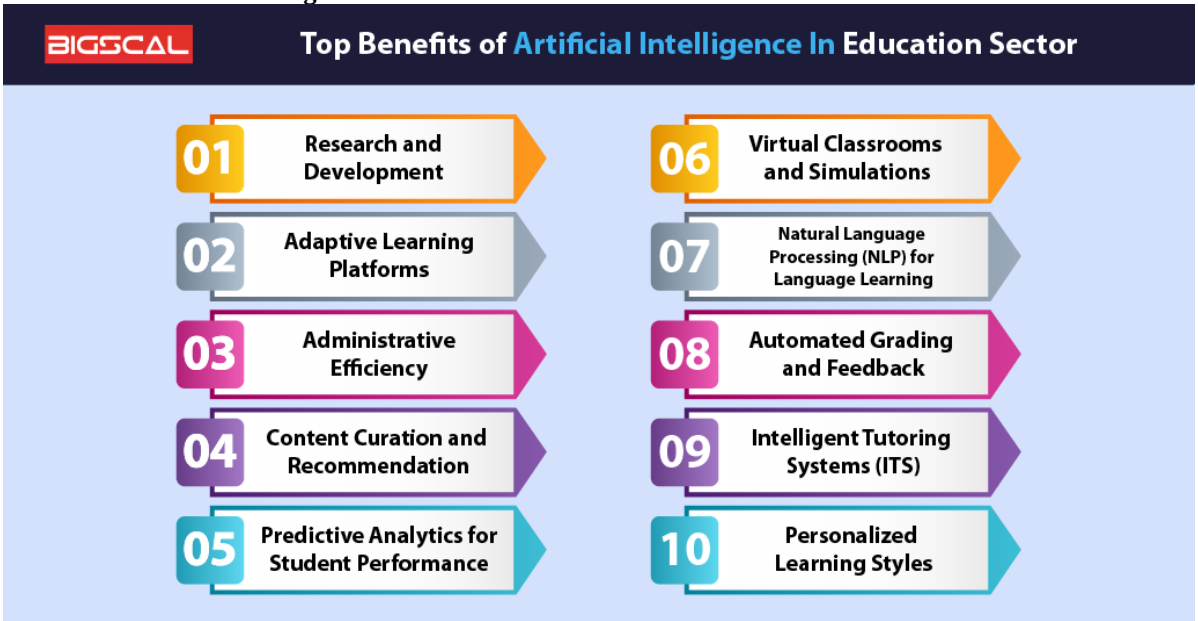

Figure: Benefits of AI-Assisted Learning
Source: (Bigscal, 2023)

As per the study by Nagaraj *et al.,* (2023), the importance of integrated learning supported with AI helps in the improvement of learning outcomes among students. Various applications of AI in learning have shown how the use of artificial intelligence can enhance the learner's achievement. It is possible since a student gets an individual approach, instant feedback, and easy access to the information and materials used in the learning process, making it more stimulating and encouraging. But while quantitative questions might be easier to get, more subjective qualitative queries may face difficulties in getting apt answers. A review of literature comparing the effects of using AI-assisted learning and non- AI-assisted learning methods has always pointed to the fact that performance improves with the integration of AI into learning. Intelligent tutoring systems (ITS) as well as learning personalize platforms follow student's needs and learning disorders and offer special approaches to tackle specific strengths and weaknesses (Morgan *et al.,* 2020). Students employing the use of AI in professional courses too are known to generate better and more improved scores and understanding of the knowledge as compared to normal learning processes. Another benefit that is ideal in learning with the help of artificial intelligence is the issue of feedback. By artificial intelligence, the performance data of students can be processed right away and fashion a quick and accurate response on assignments and evaluations. This instant feedback loop helps the student to see a mistake and rectify it immediately which enhances learning and helps in constant feedback (Roy *et al.,* 2022). Personalization also assists educators in knowing the areas that may require extra attention and thus intervenes to be efficient.

The other major advantage of using AI in education is the aspect of access. Cognitive disability in this regard simply implies that some students might not be able to learn in the same way the rest of their counterparts do, and this brings us to the following conclusion, AI tools can indeed be developed to cater to the differing learning needs that student with disabilities exhibit. For example, technologies like speech recognition and text-to-speech will be beneficial to students with visual or auditory learning disability while learning applications can facilitate learning for students with different learning needs and at different rates (Jindal and Bansal, 2020). Such openness benefits a wider number of learners since more student categories can be served with quality learning resources.

c. Challenges and Limitations

According to Sethi *et al.,* (2021), there are still several challenges and limitations that need to be highlighted when it comes to the implementation of learning with the help of AI in education to make it effective and ethical. Some of the issues are ethical questions, privacy and data protection, and prejudice in AI systems which in turn affect the equity of learning. The major focus of public ethical debates is established around AI in education. The application of AI technologies presents dilemmas of using data properly, being open to the processed information, and being responsible for the decision-making process (Kashive *et al.,* 2020). For instance, the application of AI to track the behavior and performance of students means that some measures can amount to privacy violations as well as abuse of students' freedom of choice. Furthermore, AI decision-making processes may prevent teachers and learners from understanding how an AI arrived at a particular decision or conclusion essentially reducing the learners' trust in the system. The privacy aspect and concerns of data security are noticeable

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impediments to the integration of AI in education (Rahman, 2022). AI systems frequently depend on large volumes of data to perform optimally, including students' identification data and academic performance records as well as behavioral and biometric data. The privacy of students requires that this data should not be accessed by anyone in a way that is not authorized. Studies show that learning institutions are at high risk of being attacked by hackers through various means and this has serious repercussions for the students and teachers as most of their data is stored on computers (Aithal and Aithal, 2020).

The last of the most important challenges and concerns that AI presents to education is the threat of unfair bias within AI. That is why, various training datasets contain latent prejudice that, receiving the necessary data, becomes amplified, in more cases, instead of improving the situation, making it worse. These preconceptions and prejudices can lead to discrimination and unfair treatment of specific groups of students and society's reinforcement of inequity with new forms of discriminative injustice (Dwivedi and Joshi, 2020).

III. SPECIFIC AI TOOLS IN EDUCATION: A CASE STUDY

Tool: IBM Watson Education

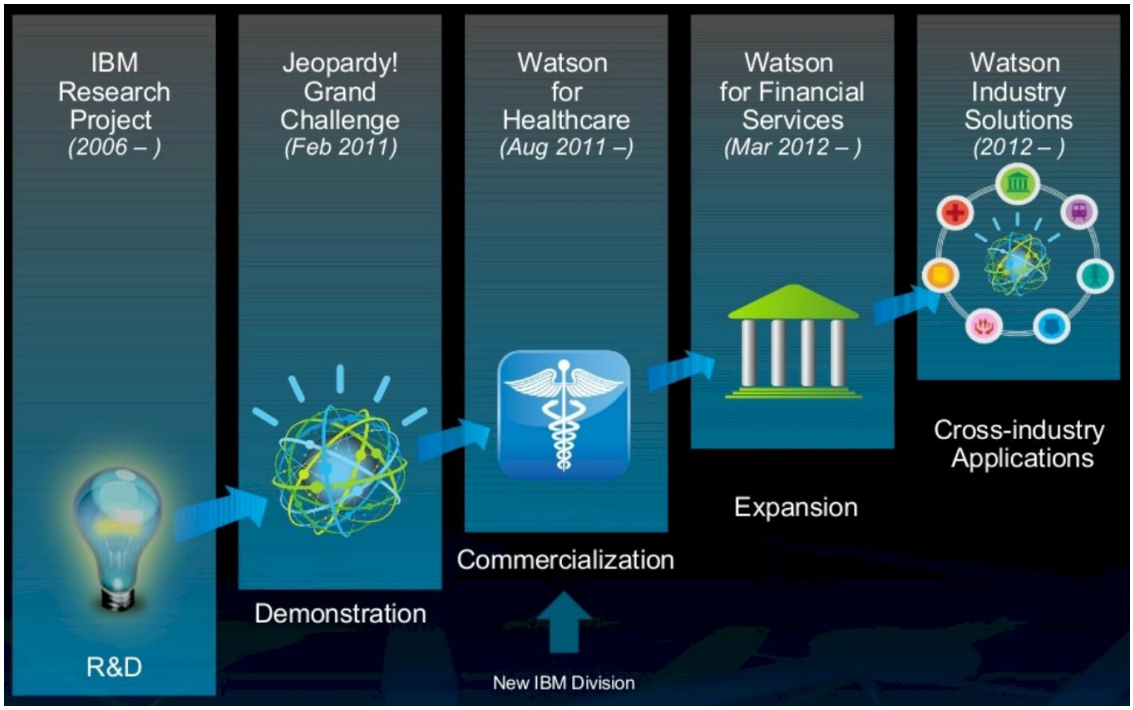

Figure: IBM Watson Education
Source: (Nextplatform, 2023)

IBM Watson Education is thus an advanced artificial intelligence application meant to improve teaching and learning processes to assist educators at all levels. This platform integrated high-level machine learning techniques to process large volumes of information and give details on the performance of students together with their learning approach (Rajeshwari and Krishna Prasad, 2020). In this way, through the use of data and analysis, which is provided based on each student's specifics, IBM Watson Education contributes to the enhancement of an appropriate learning process. The tool also supports teachers in its automation of administrative tasks and real-time analysis of the lessons given so that the teachers can adjust their style as per the students' understanding. Literature reviews have indicated that institutions that adopted IBM Watson Education have increased students' participation and performance.

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Tool: DreamBox Learning

Figure: DreamBox Learning
Source: (Commonsense, 2023)

DreamBox Learning is an adaptive learning company mainly specializing in mathematics instruction. It individualizes the student learning process by adapting the level and type of problems the student has to solve. Thus, DreamBox employs real-time report generation of analytics and timely feedback to guide the students and personalize the difficulty level and learning progress (Longnecker, 2021). It is intended that the platform will promote the development of highly course-related conceptual knowledge and reasoning abilities. Studies show that DreamBox has improved the learners' academic math performance thus it is useful in the improvement of math learning in various settings. DreamBox says that every student is unique in their own way and hence must have exclusive or individual ways of learning too.

IV. INSTITUTIONAL CASE STUDY: AMITY UNIVERSITY

Amity University is one of the most innovative private universities of India and has been advancing the introduction of innovations to ease the learning process. Observing the possibilities of using AI in the sphere of learning and teaching, Amity University set itself an objective to integrate AI tools into the curriculum to fulfill the expectations of its numerous student body and achieve increased rates of learning success (Bhatnagar *et al.,* 2021).

Amity University joined hands with IBM Watson Education to incorporate AI in the workings of different departments in 2019. The integration was mainly centered on using IBM Watson for adaptive learning and other services for students and academics (Tyagi *et al.,* 2020). The designed AI system was incorporated to make use of the students' performance information, understand the patterns, and recommend learning materials. Also, for immediate assistance and addressing students' inquiries, AI-supported chatbots were implemented to improve the support framework.

There are positive effects on the general outcome when AI-assisted learning has been adopted in classrooms as seen in Amity University. It helped the students have a more personal, one on one lesson, most of the time the content was adapted to the student's needs that is their performance as per their abilities. This form of personalizing the students and group work enhanced academic performance, in terms of improved test scores and better retention rates. Course participants gained significantly from the efficiency of the AI in tasks that could beforehand have captured a lot of an educator's time, thereby enabling the educator to continually observe interoperability between teaching techniques and the learner (Holloway *et al.,* 2022). In addition, such an approach of the AI system supplying relevant information allows for improving the curriculum and teaching practices among faculty as the latter can focus on the essential components based on the data received. In conclusion, the integration of AI in Amity University has replaced tradition and improved the learning process which has also boosted the image of Amity University as an academic institution to be reckoned with in innovation.

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V. ETHICAL CONSIDERATIONS

With the incorporation of AI in education, several vital ethical issues surface. Some of the issues that have been raised are that of depictions being of skewed results that tend to bring out and increase the existing differential effects in society as well as invasion of privacy due to the large amounts of information required. It is thus very important to have measures that can enable AI to come up with decisions that are transparent in a bid to restore confidence in educators and students (Chaka, 2023). Further, there is a call for policies that inform the right use of AI in education to prevent its misuse and to make it possible to reap the benefits of AI incorporation in learning for all learners. To achieve a reasonable objective and fair integration of AI. In education, these ethical issues need to be considered.

VI. RECOMMENDATIONS

a. Develop Comprehensive Ethical Guidelines: Regulate the application of AI in the Learning process to ensure that it has good ethics, which address issues for example, bias, privacy, and transparency (Su *et al.*, 2022). Ideally, these guidelines should be developed in consultation with educator technologists, and policymakers for it to be very effective and extensive.
b. Invest in Teacher Training: Proactively offer the faculty and other educators training and professional development to enhance their awareness and understanding of AI applications for teaching (Paek and Kim, 2021). This will assist teachers on how to utilize the strength of AI while at the same time being aware of the risks and the social misconducts involved.
c. Promote Inclusive AI Development: AI systems to be fair, which shall in turn instantiated using a broad range of datasets from different populations and areas of the world, also with the participation of as many stakeholders as possible. Such an approach will assist in avoiding Bias and guarantee that AI assistants will support all students without discriminating against their characteristics (Alam and Mohanty, 2022).
d. Addressing problems of Plagiarism and Fact Checking: As part of research ethics and fact finding we need to keep strict adherence to ethical use of AI and be careful about plagiarism problems and avoid the problems of AI generated content. Fact checking becomes an important consideration as the AI technology is still in progress and not all search queries and answers are accurate or correct. There is a need to monitor content and plagiarism, problems of similarity and other research related issues for that purpose.

VII. CONCLUSION

The general adoption of the concept of AI-aided learning in higher learning institutions can therefore be regarded as a revolution with the capacity to revolutionize learning outcomes and learning process. The advantages of using AI include learning intervention, access to technology, and interaction; the disadvantage includes ethical issues, privacy, and algorithms prejudice. Mitigating the potential problems with AI in education will therefore require proper ethical frameworks as well as continuous professional development for teachers coupled with AI development that will include all these challenges. In the future, the progress and a few more academic investigations, inter-stakeholders' cooperation, and policy adjustment will be vital to realize AI's opportunities to develop a better, fair, and efficient learning environment for students globally. The following image can be used to sum up the considerations for use of AI in Education.

Figure Source: https://www.weforum.org/agenda/2024/01/ai-guidance-school-responsible-use-in-education/

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The goal for which we are using AI in the first place should be very clear. We can design our assistance accordingly. We must keep ourselves updated with the policies of privacy, data security and other ethical considerations that are important part of the educational framework where we are adopting AI. The importance of promoting AI Literacy among all stakeholders is important if we are to realize the scope and problems of using AI in education. This brings us to the important aspect of addressing the real existent risks of using AI. While addressing these risks we must keep in consideration the need to weigh the advantages to the disadvantages of such an engagement. The academic integrity should be given number one priority, and we must try and integrate human element in the main decision-making process. While AI can assist in computing complex tasks in shorter duration of time, the decision making should still be shouldered by human beings. Over reliance on technology can have its harmful impacts in the long run.

REFERENCES

1. *5 key policy ideas to integrate AI in education effectively*. (2024, July 16). World Economic Forum. Available at: https://www.weforum.org/agenda/2024/04/prepare-future-policy-ideas-ai-in-education/.
2. *AI & emerging technologies group | Ministry of electronics and information technology, Government of India*. (n.d.). https://www.meity.gov.in/emerging-technologies-division#:~:text=The%20Government%20of%20India%20launched,India%27s%20AI%20startups%20and%20researchers.
3. Aithal, P.S., & Aithal, S. (2020). Implementation strategies of higher education part of national education policy 2020 of India towards achieving its objectives. *International Journal of Management, Technology, and Social Sciences (IJMTS), 5*(2), 283-325.
4. Alam, A., & Mohanty, A. (2022). Business models, business strategies, and innovations in EdTech companies: Integration of learning analytics and artificial intelligence in higher education. in *IEEE 6th Conference on Information and Communication Technology (CICT)*, pp. 1-6. IEEE.
5. Bhatnagar, A.K., Khanna, U., & Rana, A. (2021). Digital learning ecosystem at Indian higher education system. *The Journal of Contemporary Issues in Business and Government, 27*(2), 4360-4375.
6. Bigscal. (2023). https://www.bigscal.com/wp-content/uploads/2024/03/Top-Benefits-of-Artificial-Intelligence-In-Education-Sector_1.webp.
7. Chaka, C. (2023). Fourth industrial revolution—A review of applications, prospects, and challenges for artificial intelligence, robotics and blockchain in higher education. *Research and Practice in Technology Enhanced Learning, 18*, 002-002.
8. Cloudfront. (2023). https://d3lkc3n5th01x7.cloudfront.net/wp-content/uploads/2023/04/24222707/ai-in-education-2-1.png.
9. Commonsense. (2023). https://www.commonsense.org/sites/default/files/png/2018-08/game-review-dreambox-learning-math.png.
10. Dhawan, S., & Batra, G., 2020. Artificial intelligence in higher education: Promises, perils, and perspective. *Expanding Knowledge Horizon. OJAS, 11*, 11-22.
11. Dwivedi, V.J., & Joshi, Y.C. (2020). Leadership pivotal to productivity enhancement for 21st-century Indian higher education system. *International Journal of Higher Education, 9*(2), 126-143.
12. Ghnemat, R., Shaout, A., & Abrar, M. (2022). Higher education transformation for artificial intelligence revolution: Transformation framework. *Int. J. Emerg. Technol. Learn., 17*(19), 224-241.
13. Hamilton, I. (2024, June 6). Artificial intelligence in Education: Teachers' opinions on AI in the classroom. *Forbes Advisor*. Available at: https://www.forbes.com/advisor/education/it-and-tech/artificial-intelligence-in-school/.
14. Holloway, J., & Lewis, S. (2022). Governing teachers through datafication: Physical–virtual hybridity and language interoperability in teacher accountability. *Big Data & Society, 9*(2), 20539517221137553.
15. Jindal, A., & Bansal, M. (2020). Knowledge and education about artificial intelligence among medical students from teaching institutions of India: a brief survey. *Med Ed Publish, 9*, 200.
16. Kashive, N., Powale, L., & Kashive, K. (2020). Understanding user perception toward artificial intelligence (AI) enabled e-learning. *The International Journal of Information and Learning Technology, 38*(1), 1-19.
17. *Key components of developing AI literacy at your institution*. (2024, January 16). www.elsevier.com. https://www.elsevier.com/connect/key-components-of-developing-ai-literacy-at-your-institution.
18. Longnecker, J. (2021). *Teacher practices with adaptive math technology: Sitting in the driver's seat of a self-driving car*.
19. Morgan, B., Hogan, M., Hampton, A.J., Lippert, A., & Graesser, A.C. (2020). The need for personalized learning and the potential of intelligent tutoring systems. in *Handbook of Learning from Multiple Representations and Perspectives*, pp. 495-512. Routledge.

ISSN (Online): 2583-0074
Volume-4 Issue-5 || September 2024 || PP. 1-9 DOI: 10.5281/zenodo.13637234

20. Mousavinasab, E., Zarifsanaiey, N., R. Niakan Kalhori, S., Rakhshan, M., Keikha, L., & Ghazi Saeedi, M. (2021). Intelligent tutoring systems: A systematic review of characteristics, applications, and evaluation methods. *Interactive Learning Environments, 29*(1), 142-163.
21. Nagaraj, B.K., Kalaivani, A., Begum, S., Akila, S., & Sachdev, H.K. (2023). The emerging role of artificial intelligence in stem higher education: A critical review. *International Research Journal of Multidisciplinary Technovation, 5*(5), 1-19.
22. Nextplatform. (2023). https://www.nextplatform.com/wp-content/uploads/2019/02/ibm-watson-history.jpg.
23. Paek, S., & Kim, N. (2021). Analysis of worldwide research trends on the impact of artificial intelligence in education. *Sustainability, 13*(14), 7941.
24. Panditrao, M.M., & Panditrao, M.M. (2020). National education policy 2020: What is in it for a student, a parent, a teacher, or us, as a Higher Education Institution/University?. *Adesh University Journal of Medical Sciences & Research, 2*(2), 70-79.
25. Rahman, A. (2022). Mapping the efficacy of artificial intelligence-based online proctored examination (OPE) in higher education during COVID-19: Evidence from Assam, India. *International Journal of Learning, Teaching and Educational Research, 21*(9), 76-94.
26. Rajeshwari, M., & Krishna Prasad, K. (2020). IBM watson industry cognitive education methods. *International Journal of Case Studies in Business, IT, and Education (IJCSBE), 4*(1), 38-50.
27. Roy, R., Babakerkhell, M.D., Mukherjee, S., Pal, D., & Funilkul, S. (2022). Evaluating the intention for the adoption of artificial intelligence-based robots in the university to educate the students. *IEEE Access, 10*, 125666-125678.
28. Saravanakumar, A.R., & Padmini Devi, K.R. (2020). Indian higher education: Issues and opportunities. *Journal of Critical Reviews, 7*(2), 542-545.
29. Sethi, K., Chauhan, S., & Jaiswal, V. (2021). Artificial Intelligence in higher education: First attempt. in *Impact of AI Technologies on Teaching, Learning, and Research in Higher Education*, pp. 1-29. IGI Global.
30. Su, J., Zhong, Y., & Ng, D.T.K. (2022). A meta-review of literature on educational approaches for teaching AI at the K-12 levels in the Asia-Pacific region. *Computers and Education: Artificial Intelligence, 3*, 100065.
31. Tyagi, A.K., Aswathy, S.U., & Abraham, A. (2020). Integrating blockchain technology and artificial intelligence: Synergies perspectives challenges and research directions. *Journal of Information Assurance and Security, 15*(5), 1554.
32. Wang, T., Lund, B.D., Marengo, A., Pagano, A., Mannuru, N.R., Teel, Z.A., & Pange, J. (2023). Exploring the potential impact of artificial intelligence (AI) on international students in higher education: Generative AI, chatbots, analytics, and international student success. *Applied Sciences, 13*(11), 6716.