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Effectiveness of Artificial Intelligence on Students of Higher Education in Mayurbhanj District

Shaktijeet Nayak

Assistant Professor in Educational studies, M.P.C Autonomous College, Baripada, Odisha, India
Email: *nayakshaktijeet[at]gmail.com*

Abstract: ***This study examines how well artificial intelligence (AI) works for students in higher education institutions in the Indian state of Odisha's Mayurbhanj district. This study aims to comprehend the effects of AI technologies at the local level, especially in light of post-pandemic learning changes, as they continue to change the global educational scene. The study investigates the ways in which AI affects academic achievement, individualized instruction, administrative effectiveness, and student learning experiences. One hundred postgraduate students from MPC Autonomous College and Maharaja Sriram Chandra Bhanja Deo University participated in the descriptive survey method. A straightforward random sampling method was used to choose the participants. The main research instrument used to gather data was a self-made checklist. The study's two main goals were to determine how successful AI is in relation to gender inequalities and how students from various institutions feel about its use in the classroom. To ascertain significance, statistical tools were used to analyze the data, especially the t-test. The findings showed that neither the gender-based effectiveness of AI nor the views of students at the two universities differed significantly. In terms of inclusion, these results demonstrate the neutral role AI plays and point to a generally consistent influence of AI technologies across groups. The study's educational implications indicate that AI can improve student engagement, automate administrative processes, and personalize learning through the use of smart content platforms, virtual labs, and intelligent tutoring systems. But ethical issues with accessibility and data privacy are still quite important. In order to fully use AI's potential to improve educational equity and quality, the study ends with a demand for more integration of AI technologies in education, faculty training, and policy reform.***

Keywords: Artificial Intelligence in education, student learning experience, gender equality in classroom, personalized learning Tools, Higher education in Odisha

1. Introduction

Technology integration in higher education has grown more and more important in the current digital era to improve the caliber of learning (Sunandi et al., 2023). The application of artificial intelligence (AI) to customize the educational process is one noteworthy innovation. AI makes it possible to adapt instructional strategies and resources to the needs of specific students, which could enhance learning results and boost motivation among them (Fatma Wati et al., 2024). The advancement of artificial intelligence (AI) has raised some worthwhile and moral questions for day-to-day life. While artificial intelligence (AI) has the potential to increase human efficacy and production, it also has the ability to replace existing knowledge and disrupt educational possibilities. As AI technology advances, it is crucial to assess its possible impacts on people's security, effectiveness, and general well-being (Zameer, Arshad, Khan, & Raja, 2017). However, there are still a lot of obstacles in Indonesia's way when it comes to implementing AI-based educational technologies. The Indonesian Internet Service Providers Association (APJII) reported in 2023 that just 51.29% of the nation's population is digitally literate. Furthermore, less than 25% of Indonesian higher education institutions have substantially integrated AI-based technology into their teaching and learning processes, according to study by Rifky (2024). The advantages of AI in higher education have been shown in a number of earlier studies. For example, Zawacki-Richter et al. (2019) highlighted how AI may improve learning quality and accessibility through tailored strategies. Nevertheless, the majority of these studies ignore the unique opportunities and constraints faced by developing nations like Indonesia in favour of concentrating on global or developed country contexts. In order to enhance learning effectiveness, recent literature evaluations over the last three years, including research by Ahmad et al. (2024) and Hahap et al. (2023), further highlight the significance of combining AI strategies. However, not much research has been done on how AI-based analytical tools are specifically used in Indonesian universities. These days, an organization's ability to survive in a highly competitive market where astute roles are always emerging is the real test of a 21st-century workplace. Advances in production or administration quality, customer demands, and the internationalization and globalization of the commercial, educational, and learning sectors have all forced organizations to include IT into their administrative processes (Hou, Khokhar, Zia, & Sharma, 2021). Innovation is necessary for workplaces in highly competitive environments to maintain their competitive advantage (Ranjbar, Nejad, Zakeri, & Gandomi, 2020). The effectiveness of undergraduate programmes is determined by how higher learning institutions use this method, which also allows them to tap into the full potential of artificial intelligence.

2. Concept of the Usage of Artificial Intelligence and It's Uses in Higher Education

Artificial Intelligence is the ability of digital computers to solve problems that are associated with high thinking ability which cannot be solved by human beings at the present time. AI is a field of computer science that allows us to create intelligent machines that behave like humans, think like humans and make their own decisions. Artificial intelligence is composed of two words, artificial which defines artificial things and intelligence which expresses the ability to think for oneself, so artificial intelligence is ―artificial thinking power. This field was founded on the idea that someday machines will be able to think, that is, they will be able to reproduce intellect

and intelligence, along with consciousness, the functions that make us human. With the ultimate goal of creating consciousness, AI goes through different stages: planning, reasoning, data analysis, predicting outcomes and acting accordingly. Artificial Intelligence includes the use of statistics and probability, as well as many mathematical tools (neural networks and machine learning are mostly based on them). The term Artificial Intelligence or AI was coined by John McCarthy in 1956, two years after the untimely death of Alan Turing, who came to be known as the father of AI. It encompasses a broad range of fields, including the social sciences, physics, chemistry, biology, computer science, engineering, astronomy, and neuroscience. AI is a collection of computer models and algorithms rather than a single technology. Expert systems, fuzzy logic, artificial neural networks (ANNs), machine learning, deep learning, natural language processing, computer vision, and robotics are some of the main fields of artificial intelligence. These computer-based tools or technologies have been employed to accomplish the objectives of artificial intelligence. AI has a number of educational uses. Engineering education, higher education, mathematics education, language education, robotics education, computer science education, STEM education, medical education, music education, and science education are among the popular fields where AI technologies are being used to help students learn. Companies including Nuance, Knewton, Congii, Quadrium, Century Tech, Kid Sense, Carnegie Learning, Didactive, Blippar, Thinkster Math, Volley, and Quizlet are utilizing AI in education to improve the classroom. By using AI tools to innovate education, these companies are fusing the natural and the artificial.

Table 1.1: AI Applications in Higher Education

AI Application	Reference	Function
Virtual Teaching Assistant	(Online Source)	Able to answer frequently asked questions without the help of humans
Personalized Learning	(Online Source)	Apply data analytics to make the learning program adaptable based on various requirements
Intelligent Tutoring System	(Online Source)	Apply cognitive science and AI technologies to provide personalized tutoring in real-time
Smart Education	(Zhu, et al., 2016)	Use AI technology to make education more effective, efficient, flexible, and comfortable
Virtual Lab	(Zakaria, et al., 2011)	Provide students with an online platform with interactive simulations to perform experiments, collect data, etc.
Student Learning Assessment Tool	(Jain, et al., 2014)	Apply AI technology to develop a student's specific learning subject by using concept maps

Rationale of the Study

After reviewing all the literature, it is evidenced that there are a number of studies found related to Artificial Intelligence India and also in abroad. The emergence of artificial intelligence has brought about significant changes in the contemporary workplace. AI has been utilized, among other things, to enhance decision-making and data analysis, automate and optimize processes, and provide insights into customer behaviors. Research has shown that artificial intelligence (AI) can improve students' efficacy by automating procedures and eliminating tiresome learning tasks. AI can help with data analysis and information sharing since it makes knowledge gathering more precise and efficient (Wang, Li, Zheng, & Li, 2022). By providing higher education institutions with insights into the behaviors and learning patterns of their undergraduate students, AI can also boost lecturer productivity and improve learning outcomes (Hou et al., 2021). AI has the potential to help students become more inventive and creative learners since it can provide feedback on concepts and help them create and refine their original learning methods. According to research by Rejeb, Keogh, and Rejeb (2022), artificial intelligence (AI) can help any organization foster a culture of cooperation and trust. Teachers and students are more likely to be committed to their responsibilities when they feel that their roles are respected and that their opinions and ideas are taken into account. This can lead to a more forward-thinking institution. Because AI-enabled solutions help workers plan their duties more intelligently and work more successfully, AI also allows employees more flexibility (Hou, Khokhar, Sharma, Bakul, Mohammad, & Hossain, 2023). Artificial intelligence has the potential to increase undergraduate participation by offering perceptive evaluations of their work and expediting the feedback-giving process. Additionally, rather than only replacing tasks, it is asserted that machine learning technologies enhance human decision-making (Schafer, Ben, Konstan, & Riedl, 2001). However, based on actual data, professional opinions regarding AI's effect on undergraduates can be separated into two groups: revolutionary and evolutionary. Even in the current unstable, uncertain, complex, and confusing learning environment, there have been suggestions about using AI to reduce undergraduates' workloads, which can be very successful, according to Hou et al. (2023). This shows how AI has the potential to significantly impact higher education institutions' productivity through a variety of techniques, including the automation of administrative tasks, improved decision-making abilities, student feedback platforms, a decrease in study effort, and a rise in knowledge retention. To fully explore AI's potential in a variety of fields and contexts, however, further research is required. Artificial intelligence (AI) and emotional intelligence (EI) are two important concepts that have drawn a lot of attention in the literature, claim Luhana et al. (2023). These concepts' implications on employee performance, retention, and well-being have been the subject of numerous research studies; the findings show that emotional intelligence has a major impact on both. Additionally, it was found that AI dramatically modifies staff performance. Similarly, studies have demonstrated that training in emotional intelligence enhances academic staff members' capacity to instruct and fosters a positive work-life balance. According to Schafer et al. (2001), higher education institutions should prioritise the development of learning/knowledge intelligence from an e-learning perspective because doing so can enhance students'

career options, job satisfaction, and commitment to completing tasks.

3. Objective of the Study

- To study the effectiveness of Artificial Intelligence towards the student of higher education institutions with respect to Gender.
- To study the perception of MSCB and MPC student towards Artificial Intelligence with respect to its usages.

Hypothesis of the Study

- H0: There is no significant difference in the effectiveness of Artificial Intelligence towards the student of higher education institution with respect to Gender.
- H0: There is no significant difference in the perception of MSCB and MPC student towards Artificial Intelligence with respect to its usages.

Method of the Study

Keeping in view the nature of the study, objective type of data was collected. The investigator has followed the Descriptive Survey method for collection of data. This study is concerned on Effectiveness of Artificial Intelligence on Students of Higher Education of Mayurbhanj District. In this research, the population comprises postgraduate students of MPC Autonomous College and Maharaja Sriram Chandra Bhanjadeo University, Baripada, who are pursuing higher educational courses such as MBA, MCA, and Integrated B.Ed.-M.Ed. From this population, a sample of 100 students has been selected from the departments of MBA, MCA, and Integrated B. Ed-M. Ed of both institutions. The Reseacher were chosen using the random sampling technique to ensure fair representation of the target group. The researcher used self- made checklist for student to collect the data. The instructions were given via google form and also explained to the students as per manual. The investigator was available all the time to answer their queries about the percentage change and the questions comprised in them. The researcher performed quantitative data analysis through the help of checklist. These collected data will be analyzed with the help of descriptive statistics like percentage, mean, median, mode, standard deviation (SD) and T-test. The collected data will be analyses with the help of MS Excel.

Table 1.2

S. No.		Total
1	Department of MCA (MPC College)	20
2	Department of MBA (MPC College)	20
3	Department of MBA	20
4	Department of MCa	20
5	Department of Integrated B. Ed- M.Ed	20

4. Analysis and Interpretation

After collecting data, it has to be analyzed. The data collected was scored according to the scoring given in the respective manuals of tools and then tabulated along with other variables. The researcher has asked several questions to the participants to know their view on Artificial Intelligence and Machine Learning. The interpretation of the data is based on careful, logical and critical examination of result which is further based on the nature of problem, objectives and research question of the study.

Objective 1: To study the effectiveness of Artificial Intelligence towards the student of higher education institution with respect to Gender.

H0: There is no significant difference in the effectiveness of Artificial Intelligence towards the student of higher education institution with respect to Gender.

Table 1

Group	N	Mean	SDS	t-value	Level of Significance
Male	56	14.55	3.324	0.116	N. S
Female	44	14.63	3.457		

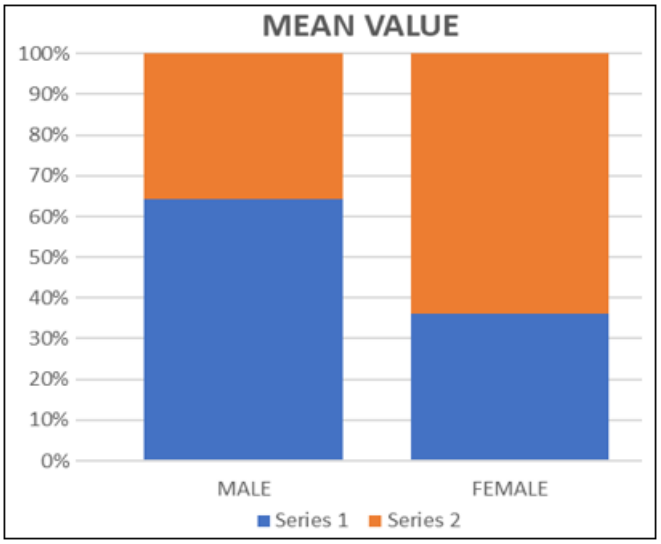

Figure 1

From the above table we can find out that the mean scores of male and female students are 14.55 and 14.03 with standard deviation 2.224 and 3.957 respectively. The t-ratio came out from the above two group is 0.116, which is not significant at both level of significant. That means there is no significant difference between the effectiveness of Artificial Intelligence towards the student of higher education institution with respect to Gender. Thus, the hypothesis there is no significant difference in the effectiveness of Artificial Intelligence towards the student of higher education institution with respect to Gender is 'Rejected'.

Objective 2: To study the perception of MSCB and MPC student towards Artificial Intelligence with respect to its usages.

H0: There is no significant difference in the perception of MSCB and MPC student towards Artificial Intelligence with respect to its usages.

Table 2

Group	N	Mean	SD	t-value	Level of Significance
MSCB University	40	14.325	3.091	0.08	N. S
MPC College	60	14.271	3.546		

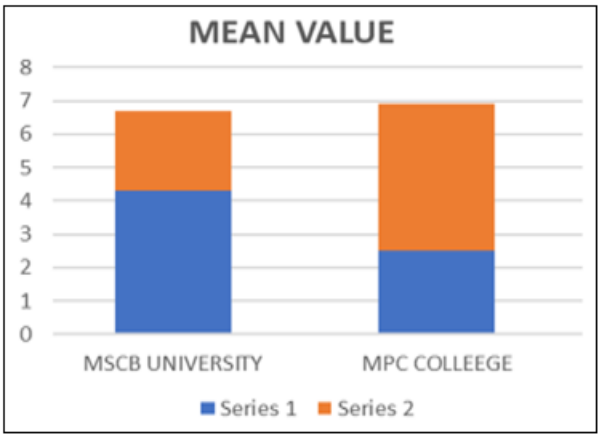

Figure 2

From the above table we can find out that the mean scores of MSCB university and MPC college students are 14.325 and 14.271 with standard deviation 3.091 and 3.546 respectively. The t-ratio came out from the above two group is 0.08, which is not significant at both level of significant. That means there is no significant difference in the perception of MSCB university and MPC college student towards Artificial Intelligence with respect to its usages. Thus, the hypothesis there is no significant difference in the in the perception of MSCB and MPC student towards Artificial Intelligence with respect to its usages. Thus, the hypothesis is 'Rejected'.

5. Major Findings

- There is no significant difference in the effectiveness of Artificial Intelligence towards the student of higher education institution with respect to Gender.
- There is no significant difference in the perception of MSCB and MPC student towards Artificial Intelligence with respect to its usages.

6. Result and Discussion

Applying systematic research approaches, such questionnaires and percentage analysis, can provide important insights into the complex topic of artificial intelligence's (AI) impact on college students. Improved academic results, individualized instruction, and improved learning experiences have all been brought about by the use of AI technologies in educational settings. Teachers can collect quantitative and qualitative information about students' opinions of AI technologies, how they use them, and how it affects their educational journey overall by using student-targeted questionnaires. When these surveys are analyzed, useful percentage statistics are produced, showing patterns and connections that might improve institutional policies and guide instructional methods. A percentage analysis of survey results, for example, can show that a significant percentage of students—say, more than 75%—state that they prefer AI-driven learning platforms that offer resources that are customized according to each student's unique learning preferences. This degree of satisfaction shows that AI encourages student enthusiasm and engagement in addition to facilitating a greater knowledge of difficult subjects. Additional percentage analysis can reveal differences in efficacy by age group, subject of study, or technical proficiency, among other demographics. For educational institutions hoping to apply AI successfully and fairly across a range of student groups, this kind of data is essential. Furthermore, the investigation can look at academic success measures both before and after AI adoption, going beyond user satisfaction alone. The case for incorporating AI into curriculum frameworks can be supported, for example, if 60% of students report higher marks after using AI technologies for study support. Administrators may make well-informed decisions on the distribution of resources and technological expenditures thanks to this data-driven approach, which enables a comprehensive understanding of AI's role in higher education. Additionally, the research is enhanced by taking into account faculty replies from questionnaires, which offer insights into their experiences and perceived difficulties with AI technology. Since successful integration frequently depends on cooperation between students and educators, an understanding of faculty viewpoints guarantees a comprehensive assessment of AI's function in education. The requirement for continual professional growth and training can be emphasized by using percentage analysis to further identify areas where teachers feel underprepared or supported while using AI tools. Continuous assessment using instruments like questionnaires and meticulous percentage analysis must be given top priority by stakeholders as higher education institutions use AI technologies more and more. Continuous innovations and enhancements in teaching and learning are made possible by this evidence-based approach. Higher education may use the enormous potential of AI by following this rigorous approach, guaranteeing that it acts as a stimulant for students' academic achievement and personal development. In conclusion, assessing artificial intelligence's efficacy in higher education is a dynamic process that involves data-driven insights that are advantageous to both teachers and students. Institutions can cultivate an atmosphere where AI improves educational equity, accessibility, and excellence by carefully designing questionnaires and conducting in- depth statistical analyses. Adopting these approaches will open the door to a future in which AI's influence is optimized, ultimately improving the quality of higher education for all parties.

7. Educational Implication

- **Personalized Learning:** AI helps students learn at their own pace by providing customized content and adaptive feedback.
- **Effective Use of Time:** Automation of grading and administrative work reduces teachers' workload, allowing them to focus more on teaching.
- **Data-Driven Insights:** AI enables quick analysis of student performance, helping educators make accurate decisions for academic improvement.
- **Enhanced Quality of Education:** Smart classes, AI tutors, and virtual labs increase efficiency and engagement in the learning process.
- **Individual Attention:** AI identifies learning gaps and tailors remedial measures according to students' needs.
- **Vocational Guidance:** AI-powered systems guide students in making informed career choices based on their skills and interests.
- **Resource Optimization:** Institutions can use AI for curriculum design, attendance systems, and cloud-based learning to save resources.

- **Accessibility:** AI tools provide opportunities for students with disabilities through adaptive technologies and support systems.
- **Policy Planning:** AI simulations help policymakers predict future educational needs, ensuring appropriate investments.
- **Global Connectivity:** AI removes geographical barriers, promoting collaborative and inclusive learning environments.

8. Suggestions for Further Research

Based on the present study the researcher brings forth some of the studies that could be taken up in similar areas. They are stated as below

- The present study was confined to higher education of Mayurbhanj District. A similar study may be conducted for all higher Education Institution across Odisha.
- Similar studies can be conducted at different higher education institutions in India.
- A study can be conducted to evaluate the effectiveness of various Artificial driven educational tools on students' performance.
- A study can be conducted to analyze the correlation between Artificial Intelligence utilization in learning environment.
- A further study can be conducted on to investigate how Artificial Intelligence application influence students' engagement and retention rate.
- A study can be conducted to explore how Artificial Intelligence enhance learning environment shape students' skill.
- A study can be conducted to study the ethical implications and data privacy concern.
- A study can be conducted on how cultural factors and shows economic background influence on students learning procedure.
- A study can be conducted on longitudinal study track the long-term effects of Artificial Intelligence integration education.
- A study can be conducted to enhance customized learning experience as per students with diverse learning.

9. Conclusion

The present research highlights the transformative potential of Artificial Intelligence in the field of higher education, particularly in enhancing teaching, learning, and administrative processes. By analyzing the perceptions of postgraduate students from MBA, MCA, and Integrated B. Ed-M.Ed. programs of MPC Autonomous College and Maharaja Sriram Chandra Bhanjadeo University, Baripada, the study reveals that AI is increasingly viewed as a tool that can personalize learning, improve efficiency, and bridge educational gaps. The findings suggest that AI not only supports students in acquiring knowledge at their own pace but also assists educators by reducing routine tasks, enabling them to devote more time to creative and interactive teaching. Moreover, AI contributes to accessibility, inclusivity, and career guidance, making education more dynamic and future-oriented. However, the research also emphasizes the need for proper infrastructure, training, and policy support to ensure the effective implementation of AI in the educational sector. Without adequate preparation, the risk of digital divide and dependency on technology may hinder its benefits. Overall, the study concludes that integrating AI in education can significantly reshape the future of learning, provided it is applied thoughtfully, ethically, and inclusively to serve diverse learners and educational institutions.

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