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A STUDY ON THE USE OF ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION AMONG STUDENTS IN MUMBAI

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Abstract:

This study aim to examine the use of Artificial Intelligence in education among students in Mumbai, one of India's most technologically advanced and diverse metropolitan regions.

The research focuses on evaluating the impact of AI on academic performance, creativity, critical thinking and independent learning abilities. It also explores students' attitudes towards. AI-based learning, differences in AI usage across gender and academic streams and the ethical and practical challenges associated with AI adoption in educational institutions. A descriptive research design is proposed, using primary data collected from a sample of 80 students across various educational levels and streams within the Mumbai Metropolitan Region.

Introduction:

In recent years, Artificial Intelligence (AI) will emerge as a transformative force in education. AI technologies such as adaptive learning platforms, virtual tutors, and AI-driven assessment tools will increasingly integrate into learning environments. As Mumbai stands as one of India's most technologically advanced cities with a diverse student population, understanding how students will interact with and benefit from AI in education will become essential. This proposed study will aim to explore the impact, adaptability, and awareness of AI among students across educational institutions in Mumbai. The study will focus on how AI will be used to personalize learning, automate administrative tasks, and enhance student engagement. It will also examine the factors that will influence student access and willingness to use AI, such as digital literacy, accessibility of resources and the level of support provided by institutions.

Objectives of the Study:

1. To understand whether reliance on AI reduces students' creativity and original contribution in academic tasks.
2. To identify the challenges and limitations faced in the implementation of AI in educational institutions
3. To explore the purpose of integrating Artificial Intelligence (AI) in education
4. To examine the challenges and ethical concerns associated with the adoption of AI in education
5. To study the long-term implications of AI on educational equity
6. To suggest strategies and policy recommendations for effective integration of AI into the Indian education system

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Related Review of Literature:

1. **Isave, G Suresh. (2023).**
   'A study of the use of Artificial Intelligence by Student-Teachers'.
   This study examines how B.Ed. student-teachers from Savitribai Phule Pune University utilize AI tools for educational purposes. The findings reveal that ChatGPT and other AI platforms are widely used for lessons, assignments, reports, and presentations. While students recognize AI's efficiency, they emphasize the need for structured training and government issued guidelines to ensure proper use. The study also shows that most student-teachers support integrating AI into teacher education curricula but remain concerned about its impact on employment opportunities. Importantly, they oppose a complete ban on AI, instead advocating responsible use supported by policies and training.
2. **Bhuva Milind (2023).**
   'A Comparative Study on Learning Experience with vs Without AI among Higher Education Students in Mumbai.'
   This study examines and contrasts the learning experiences of higher education students who use AI tools with those who do not.. Findings show that while average experiences appear similar, students using AI reported slightly higher satisfaction, indicating potential advantages in engagement and comprehension. The research highlights AI's role in enhancing personalization, assessments, and administrative efficiency in education. However, it also raises ethical concerns around privacy, bias, and future employment. The author concludes that while AI does not drastically transform learning outcomes alone, it positively shapes student motivation and adaptability, warranting structured integration and further research.
3. **Vieriu Aniella Mihaela & Petrea Gabriel (2025).**
   'The Impact of Artificial Intelligence (AI) on Students' Academic Development'.
   This study, conducted at POLITEHNICA Bucharest, explores how AI integration shapes students' learning and academic performance. Findings reveal that 95.6% of students actively use AI, mainly through virtual assistants and educational platforms, to save time, access resources, and improve comprehension. Students acknowledge AI's benefits in personalization, engagement, and performance but raise concerns about accuracy, over reliance, reduced critical thinking, and academic dishonesty. The authors recommend comprehensive training, ethical guidelines, and validation protocols to ensure responsible adoption. The y conclude that AI should complement rather than replace traditional learning methods to support balanced and effective education.
4. **Bhambari, Kadam. (2023).**
   'Exploring the Impact of AI on the Education Industry: Eight Transformative Changes.'
   This article explores eight major ways in which Artificial Intelligence is reshaping education. It highlights AI's role in providing personalized learning experiences, automating administrative tasks, and offering intelligent tutoring support. The study emphasizes the benefits of AI-driven assessments and real-time feedback, which help track student performance more effectively. Additionally, AI facilitates immersive virtual classrooms and adaptive simulations that enhance engagement. Bhambari also notes ethical considerations such as transparency, equity, and responsible usage, stressing the importance of guidelines to avoid over-dependence. Overall, the article presents AI as a transformative force in

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education while underscoring the need for careful and regulated implementation.

5. **Chervonya Lesya; Nataliia Lakusha; Nataliia Krokhmal; & Myroshnychenko Serhii (2023). 'Artificial Intelligence in Higher Education: Development Trends and New Reality.'**
   This study explores the benefits, challenges, and prospects of AI in higher education. The authors emphasize AI's potential to personalize learning, automate assessments, and create virtual learning environments that enhance accessibility and effectiveness. However, they also warn of risks such as teacher replacement, reduced human interaction, data privacy issues, and inequality in access. The paper highlights global and European trends, including frameworks and strategies for ethical and inclusive AI adoption. The authors conclude that 9 while AI can revolutionize higher education, careful regulation, ethical safeguards, and collaboration between universities, industries, and policymakers are essential for its sustainable integration.
6. **Bankar Dnyaneshwari; Bawiskar, Swapnil; Bharade, Yuvraj; Bhosale, Vidya; & Biradar, Akash (2024).**
   'Impact of AI in Indian Education System.'
   This study investigates the adoption, benefits, and challenges of AI in India's education sector. Findings show widespread use of AI tools such as ChatGPT, adaptive platforms, and AI-driven proctoring for personalized learning, engagement, and administrative efficiency. Students report strong awareness and belief in AI's transformative potential, highlighting improvements in accessibility and teacher support. However, concerns around ethics, plagiarism, reduced human interaction, and data privacy persist. The authors stress aligning AI with India's National Education Policy 2020 and traditional educational values to achieve balanced, equitable, and future-ready learning. They conclude that AI should supplement human educators while safeguarding integrity, inclusivity, and emotional intelligence.

Methodology of the Study:

The research methodology will depict the flow of the research process and will assist the researcher in carrying out the research smoothly. It will include the data source, sample size, sampling technique, and tools of analysis. The research methodology will serve as the blueprint of the research.

Geographical Area:

The study will be conducted across the Mumbai Metropolitan Region (MMR), including suburbs and educational zones.

Hypothesis:

H_{01}: There is no significant improvement in academic performance with the use of AI tools.

H_{11}: There is a significant improvement in academic performance with the use of AI tools.

H_{02}: There is no significant difference in perception and attitude towards AI-based learning between male and female students.

H_{12}: There is a significant difference in perception and attitude towards AI-based learning between male and female students.

H_{03}: The use of AI tools does not significantly affect students' critical and independent thinking abilities.

H_{13}: The use of AI tools significantly affects students' critical and independent thinking abilities.

H_{04}: There is no significant difference in AI usage among students from different faculties.

H_{14}: There is a significant difference in AI usage among students from different faculties.

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Data Analysis and Interpretation:

Demographic Characteristics of Respondents

VARIABLES	PARTICULARS	FREQUENCY	PERCENTAGE (%)
AGE GROUP	BELOW 18 YEARS	12	14.6
	18- 25 YEARS	59	72
	ABOVE 25 YEARS.	11	13.4
	TOTAL	82	100
GENDER	MALE	18	22
	FEMALE	64	78
	TOTAL	82	100
FACULTY/STREAM	COMMERCE	60	73.2
	HUMANITIES	14	17.1
	SCIENCE	8	9.8
	TOTAL	82	100
CURRENT LEVEL OF EDUCATION	JUNIOR COLLEGE	9	11
	UNDERGRADUATE	32	39
	POST GRADUATE	41	50
	TOTAL	82	100
CURRENTLY STUDYING IN MUMBAI	YES	76	92.7
	NO	6	7.3
	TOTAL	82	100

The demographic analysis of 82 respondents shows that the majority of participants belong to the 18–25 years age group (72%), indicating that the study mainly represents young adults. A smaller proportion are below 18 years (14.6%) and above 25 years (13.4%). This suggests that the research findings largely reflect the views of youth.

In terms of gender, most respondents are female (78%), while 22% are male, indicating a higher female representation in the sample. Additionally, 92.7% of participants are currently studying in Mumbai, showing that the study is strongly focused on Mumbai-based students.

Regarding academic background, the majority of respondents belong to the Commerce stream (73.2%), followed by Humanities/Arts (17.1%) and Science (9.8%). In terms of educational level, 50% are postgraduate students, 39% are undergraduates, and 11% are in junior college. This indicates that the study primarily represents higher education students, particularly those from a Commerce background.

Overall, the sample mainly consists of young, female, postgraduate Commerce students studying in Mumbai. Therefore, the findings of the study are more reflective of this specific demographic group.

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Testing of Hypothesis:

Following are the hypotheses framed by the researcher and had been tested below using the information from the data collected using the questionnaire.

H_{01}: There is no significant improvement in academic performance with the use of AI tools.

H_{11}: There is a significant improvement in academic performance with the use of AI tools.

SR. NO	PARTICULARS	PERCENTAGE%	REFERENCE TABLE
1	The majority of respondents use AI tools very often for their studies.	56	5.6
2	Most respondents use ChatGPT as their primary AI tool for academic purposes.	92	5.7
3	The majority of respondents agreed that AI tools help improve their academic performance.	56	5.8
4	Most respondents agreed that AI tools contribute positively to their learning outcomes.	52	5.9
5	Most students agreed that AI tools make academic tasks easier to understand.	78	5.10
6	The majority of students agreed that they perform better in exams due to the use of AI tools.	65	5.11
7	Most students either supported or remained neutral regarding the need for strict rules on AI usage in academics.	49	5.12

Source: Primary Data

Most students frequently use AI tools for their academic work, with ChatGPT being the primary tool. Students generally believe that AI tools improve their academic performance and learning outcomes. Many feel that AI makes academic tasks easier to understand and helps them perform better in exams. Overall, students show a positive attitude toward AI usage, though opinions vary regarding strict regulations.

Decision: The null hypothesis stating that there is no significant improvement in academic performance with AI tools is rejected.

H_{02}: There is no significant difference in perception and attitude towards AI-based learning between male and female students.

H_{12}: There is a significant difference in perception and attitude towards AI-based learning between male and female students.

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SR. NO	PARTICULARS	PERCENTAGE %	REF. TABLE
1	Most students believe that male and female students perceive AI tools in similar ways.	67	5.13
2	Many students feel that gender influences attitudes toward AI-based learning.	55	5.14
3	Most students think ethical concerns affect their willingness to use AI tools.	56	5.16
4	Most students believe that access to AI-based learning tools is equal for all genders.	72	5.17

Source: Primary Data

Most students believe that male and female students have similar perceptions of AI tools.

However, some feel that gender may influence attitudes toward AI-based learning.

Ethical concerns also play a role in shaping students' willingness to use AI tools.

Overall, students perceive AI access and usage to be largely equal across genders.

Decision: The null hypothesis stating that there is no significant difference in perception and attitude towards AI-based learning between male and female students is accepted.

H_{03}: The use of AI tools does not significantly affect students' critical and independent thinking abilities.

H_{13}: The use of AI tools significantly affects students' critical and independent thinking abilities.

SR. NO.	PARTICULARS	PERCENTAGE %	REF. TABLE
1	Most students frequently rely on AI tools to complete their assignments.	30	5.18
2	Most students believe that AI tools affect their ability to think independently	76	5.19
3	Most students feel that using AI tools influences their creativity in academic work.	62	5.20
4	Many students think excessive use of AI negatively affects problem-solving skills.	70	5.21
5	Most students believe that AI tools encourage independent learning	55	5.22

Source: Primary Data

Most students feel that AI tools support their learning without fully replacing their own thinking. Some believe that frequent use of AI may reduce independent effort over time. A few students express concern that overreliance on AI can affect critical thinking skills. Overall, opinions are mixed, but many agree that balanced use of AI is important for maintaining independent thinking.

Decision: The null hypothesis stating that the use of AI tools does not significantly affect students' critical and independent thinking abilities is rejected.

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H_{04}: There is no significant difference in AI usage among students from different faculties.

H_{14}: There is a significant difference in AI usage among students from different faculties.

SR. NO	PARTICULARS	PERCENTAGE %	REF. TABLE
1	Most students believe AI tools help them better understand complex subjects and improve academic comprehension.	64	5.23
2	Many students feel that AI-based learning is more engaging than traditional teaching methods.	43%	5.24
3	Students agree that educational support for AI usage is provided equally across faculties.	40%	5.25
4	Most students think their faculty influences how often they use AI tools.	73%	5.26
5	Most students think their faculty influences how often they use AI tools.	61%	5.27
6	Many students feel that guidelines or policies should be clearly established for AI usage in education.	76%	5.28

Source: Primary Data

Overall, students show a positive attitude toward AI-based learning. They find AI helpful, engaging, and supportive in understanding subjects better. Many believe faculty influence and institutional support play an important role in AI usage. Students also feel that clear guidelines should be established for responsible use of AI in education.

DECISION: The null hypothesis stating that there is no significant difference in AI usage among students from different faculties is rejected.

Findings :

1. The majority of students reported that AI tools help improve their academic performance, enhance understanding, and support better exam preparation.
2. Students indicated differences in perception and attitude towards AI-based learning across genders.
3. Many students believe that AI tools influence their critical and independent thinking abilities, especially when used frequently.
4. Responses suggest that AI usage varies among students from different faculties, depending on academic requirements and exposure.

Conclusions:

1. There is a significant improvement in academic performance with the use of AI tools, indicating that AI positively contributes to students' academic success.
2. There is a significant difference in perception and attitude towards AI-based learning between male and female students.

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3. The use of AI tools significantly affects students' critical and independent thinking abilities.
4. There is a significant difference in AI usage among students from different faculties.

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