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Use of AI Tools by students: Analysis of undergraduate students using AI in Mumbai

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Abstract:

This study investigates the perceptions and experiences of students regarding the use of Artificial Intelligence (AI) tools in education. A survey of 67 students revealed that the students are using AI tools frequently for educational purposes. While AI tools are seen as helpful in reducing workload and saving time, concerns exist about their potential to replace teachers and hinder critical thinking. The majority of respondents believe AI can improve the learning experience, enhance creativity, and innovation. However, they also acknowledge the risks of superficial learning, plagiarism, and lack of critical thinking. The study highlights the need for balanced integration of AI in education, emphasizing its potential to augment teacher roles and enhance student learning outcomes. The findings suggest that AI will play a significant role in education in the next 5-10 years, necessitating careful consideration of its implementation and impact.

Introduction:

Artificial Intelligence (AI) tools are transforming the academic research landscape, offering students new ways to approach learning, data analysis and knowledge generation. These tools enhance productivity, streamline processes and enable deeper insights in various academic disciplines.

We are doing research on uses of AI tool in students Life and its impact on students' life. Just to know this we conducted a survey in which 67 people gave their valuable time to fill the form and we will do ahead work through various points.

Objectives:

- Identify the most commonly used AI tools among undergraduate students.
- Understand the reasons why students use AI tools (e.g., academic tasks, research, personal projects).

- Determine if AI tools help students save time in their academic activities.
- Gather students' opinions on the potential drawbacks or limitations of AI tools.
- Explore students' opinions on whether AI tools enhance or hinder critical thinking and innovation.
- Identify potential risks or concerns students have when using AI tools.
- Determine if AI tools help students solve problems in a practical and effective manner.
- Gather students' opinions on the potential future applications and impact of AI in education.

Hypothesis:

Hypotheses of AI tools in education:

(Ha) Use of AI tools is a personalized support and learning for students which leading to improve engagement and learning outcomes.

(H0) AI can provide personalized support but cannot fully replace human and emotional connection.

(Ha) AI power tutors can effectively support students in learning with guidance and feedback.

(H0) There is a potential for job displacement , AI is more likely to augment rather than replace teachers .

(Ha) AI powered assistant technologies have made education more accessible to students with disabilities, improving their learning experience.

(H0) while privacy concern exist , many AI tools are designed to protect student data and ensure Ethical use.

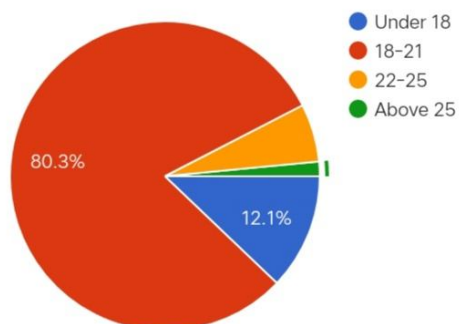
(Ha) AI- powered assessment tools have been shown to be reliable and efficient, providing teachers with valuable insights into students performance.

(H0) Bias in AI algorithms remain concern and also there are many technical challenges exist.

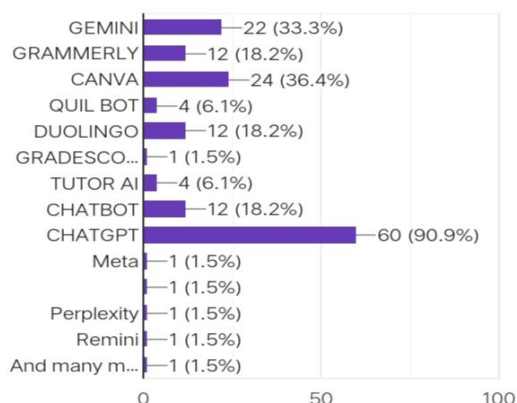
Research Methodology:

The aim of the study is to look into how using AI affects young generation. A quantitative research is designed to accomplish his objective. He targeted population for his research comprises of users of all age group students. A random sampling technique is utilized o select a representative sample of 67 respondents.

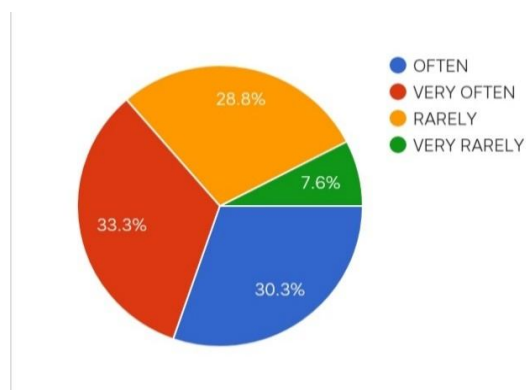
The secondary data is collected from various articles, journals and research papers .he primary data is gathered and analyzed using a standardized survey questionnaire that was made available to respondents online using google forms. The questionnaire included items related to users were AI usage habits, its impact on mental and physical well being, academic performance, etc. The tools of analysis are pie diagrams and bar charts.

DATA ANALYSIS:**1) Age group -****Interpretation –**

It has been observed that 80% of AI users are between the age of 18 - 21 , with 12% being under the age of 18 . Only 6% of them are between the age of 22 - 25 , while remaining 1.5% are above 25.

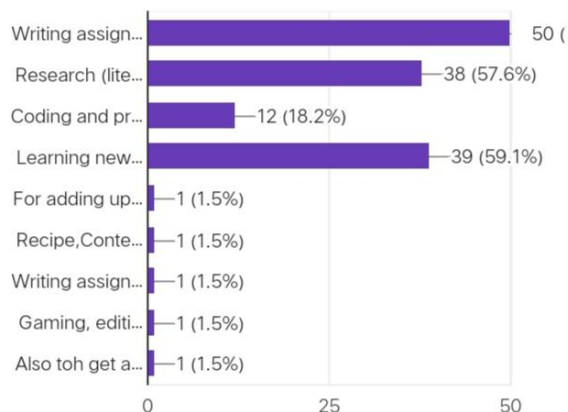
2) Which AI tool do you use most often for academic purposes ?**Interpretation -**

According to the above bar graph it explains us that most of the students use Chatgpt (60) , 24 of them use Canava , 22 of them use Gemini , 12 of them Grammerly , Duolingo and chatbot , 4 of them used Quil bot and tutor ai , rest others use other AI tools for academic purpose.

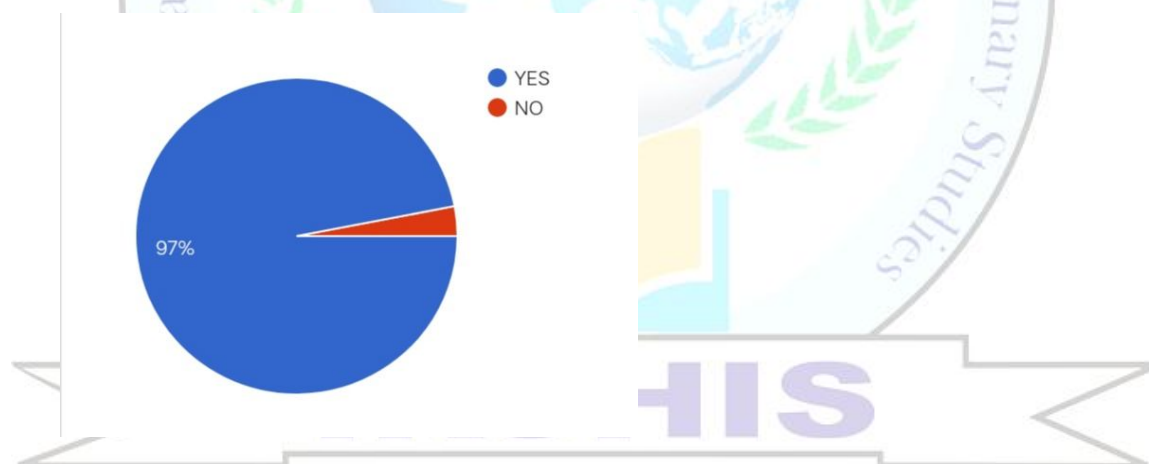
3) How often do you use AI tools for Education purpose ?

Interpretation -

33% of users very oftenly use AI tools . 30% of users oftenly use AItools . 28% of users rarely use AItools . 7.6% of users rarely use AI tools for educational purpose .

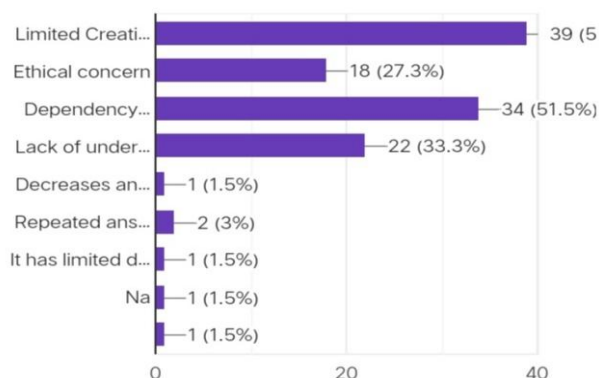
4) For what purpose do you use AItools ?**Interpretation -**

According to the data recieved, we understand that 51 of them use AI tools for writing assignments, 38 of them use for research work, 12 of them use it for coding and programming assistance, 39 of them use for learning new concepts or subjects. Rest of them use it to get answers for the questions, gaming and editing, recipes, content writing, which apps to use.

5) As a student does AItools help you to reduce your workload ?**Interpretation –**

As a student, 97% users say that AI tools helps to reduce your workload, whereas 2% users say that AI tools do not help in reducing workload.

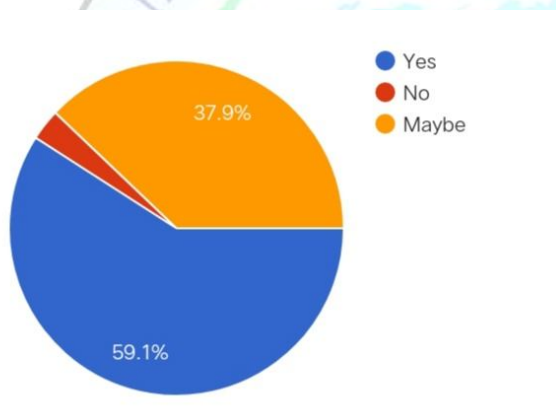
6) According to you what are the disadvantage of AI for students ?



Interpretation -

According to data received, we know the disadvantages are that 39 of them say limited creativity, 34 of them say dependency of data, 22 of them say lack of understanding, 18 of them say ethical concern, 3 of them say they get repeated answers and rest say limited data till the year 2021, not having update of latest data, decreases individual's thinking capacity to a certain level and demotes hardwork.

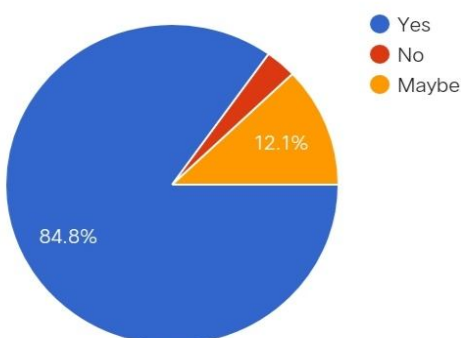
7) Do you think AI can improve the learning experience of students ?



Interpretation -

59.1% think AI can improve the learning experience of students. 37.9% feel AI may improve the learning experience of students. 3% of them think AI cannot improve the learning experience of students.

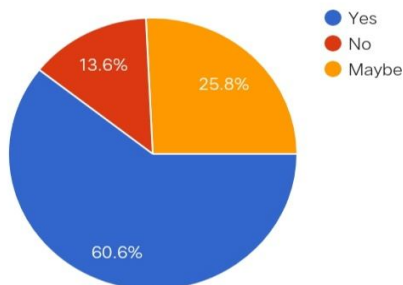
8) Do you think AI helps to save time of students ?



Interpretation -

84% of students feel that AI helps to save time. 12.1% of students feel that AI may help to save time. Rest of them think that AI does not help students to save time.

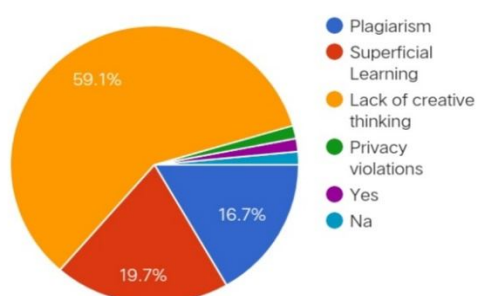
9) Do you think AI technology can enhance creativity and innovation among students ?



Interpretation -

According to the data received, 60.6% think AI technology can enhance creativity and innovation among students. Whereas 25.8% of them think that AI technology may enhance the creativity and innovation among students. Rest 13.6% think that AI technology does not enhance the creativity and innovation among students, as it affects the creativity level of students.

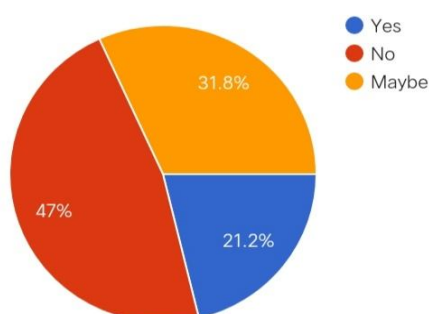
10) According to you what is the highest risk in AI ?



Interpretation -

The data above explains that lack of creative thinking (59.1%) is the highest risk in using AI. 16.7% of risk in using AI is plagiarism. 19.7% of risk in using AI is superficial learning. Rest risks are privacy violations and many more.

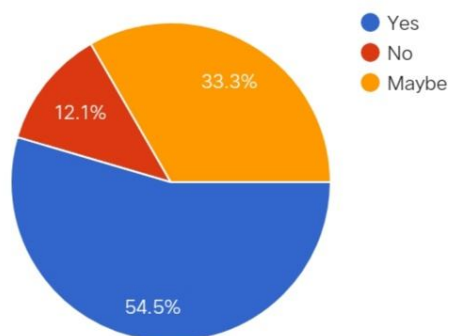
11) If AI solves your problem digitally does it also solve your problem practically ?



Interpretation -

21.2% of students think that if AI solves the problem digitally, it also solves problems practically. 31.8% of students think that AI solves problems digitally but it may not solve problems practically. Majority of students think that AI solves problem digitally but it cannot solve problems practically.

12) Do you think AI will play a large role in education in the upcoming 5-10 years ?



Interpretation -

54.5% of users think that AI will play a large role in education in the upcoming 5 - 10 years . 33.3% of users think that AI may play a large role in education in the upcoming years , where as 12.1% of users think that AI will not play a large role in education in the upcoming years.

Expected Outcome:

Based on the provided data, we can anticipate the following outcomes of AI tool usage in student academic life:

▪ Positive

Increased Efficiency and Productivity - The overwhelming majority of students believe AI tools help reduce their workload. This suggests that AI can automate repetitive tasks, freeing up time for more creative and in-depth work.

Enhanced Learning Experiences - A significant portion of students recognize the potential benefits of AI in improving their learning experiences. AI can provide personalized instruction, offer instant feedback, and facilitate a deeper understanding of complex topics.

Improved Creativity and Innovation - While there are some concerns about AI stifling creativity, a majority of students believe that AI can actually enhance their creative abilities. AI tools can help generate ideas, provide inspiration, and assist in the creative process.

Time Savings - A large majority of students recognize that AI can save them time. This is likely due to AI's ability to automate tasks, streamline processes, and provide efficient tools.

• Negative impacts:

Over-reliance and Dependence - While AI can be a valuable tool, there is a risk of students becoming overly dependent on it, which could lead to a decline in critical thinking and

problem-solving skills.

Superficial Learning - Some students worry that AI might lead to a superficial understanding of subjects. It's important to ensure that AI is used as a supplement to traditional learning methods and not as a replacement.

Plagiarism and Ethical Concerns - The use of AI tools can raise ethical concerns, particularly regarding plagiarism. It's essential to establish guidelines and best practices for using AI to avoid these issues.

Privacy and Data Security - While privacy concerns are relatively low among students, it's important to address data security issues and ensure that AI tools are used responsibly.

Overall Outlook - The data suggests that AI tools have the potential to significantly improve student academic life by increasing efficiency, enhancing learning experiences, and fostering creativity. However, it's crucial to address potential challenges and concerns to ensure that AI is used effectively and ethically.

In the next 5-10 years, we can expect AI to play an even more prominent role in education. As AI technology continues to advance, we can anticipate even more sophisticated and personalized tools that can further enhance student learning and outcomes.

Benefits of society –

The use of AI tools in student academics can benefit society in several ways:

1. Improved Education Outcomes:

- **Personalized Learning** - AI can tailor educational content to individual students' needs, ensuring that they receive the most relevant and effective instruction.
- **Enhanced Engagement** - AI-powered tools can create more interactive and engaging learning experiences, leading to increased student motivation and retention.
- **Accessibility** - AI can make education more accessible to students with disabilities by providing assistive technologies and personalized support.

2. Enhanced Workforce Preparedness:

- **Skill Development** - AI can help students develop the skills necessary to thrive in the digital age, such as critical thinking, problem-solving, and creativity.
- **Future-Proofing** - By incorporating AI into education, students can be better prepared for future job markets that will likely be heavily influenced by technology.
- **Innovation** - AI can foster a culture of innovation and entrepreneurship among students, leading to the development of new technologies and solutions to societal problems.

3. Economic Growth:

- **Increased Productivity**: AI can improve the efficiency and productivity of

educational institutions, leading to cost savings and the ability to allocate resources more effectively.

- **Talent Development** - By providing students with the skills and knowledge they need to succeed, AI can help to develop a highly skilled workforce that can drive economic growth.
- **Innovation Hubs** - Universities and schools that effectively integrate AI into their curriculum can become hubs of innovation and entrepreneurship, contributing to economic development.

4. Social Impact:

- **Equity and Inclusion** - AI can help to address educational inequities by providing personalized support to students from disadvantaged backgrounds and ensuring that all students have access to quality education.
- **Global Citizenship** - AI can help students develop a global perspective and understanding of different cultures, promoting tolerance and cooperation.
- **Problem-Solving** - AI can equip students with the tools and skills they need to address complex societal challenges, such as climate change, poverty, and inequality.
- Overall, the use of AI tools in student academics can have a significant positive impact on society by improving education outcomes, enhancing workforce preparedness, driving economic growth, and promoting social impact.

Limitations :

AI tools have several limitations that affect their performance and application across various domains:

- **Data Bias** – AI can replicate biases present in the training data.
- **Lack of Common Sense** – AI doesn't truly understand context like humans do.
- **Limited Creativity** – AI is often derivative, not innovative.
- **Privacy Concerns** – AI can infringe on data privacy and ethics.
- **Black Box Problem** – AI decisions can be difficult to interpret.
- **Human Supervision Needed** – AI often requires human oversight.
- **Limited Transfer Learning** – AI struggles to apply knowledge across different domains.
- **High Energy Consumption** – AI models require significant computational resources.
- **Ethical Risks** – AI can perpetuate inequalities in decision-making.
- **Vulnerability to Attacks** – AI systems can be manipulated through adversarial attacks.
- **Lack of Emotional Intelligence** – AI cannot genuinely understand human emotions.

- **Legal Challenges**– There are few regulations governing AI use in many sectors.

Future scope :

Here are some potential opportunities:

1. **Career opportunities:** AI skills are in high demand, and undergraduates can pursue careers in AI development, research, and applications.
2. **Research and innovation:** Undergraduates can contribute to cutting-edge AI research, exploring new applications and innovations.
3. **Entrepreneurship:** With AI knowledge, undergraduates can develop innovative startups, creating AI-powered solutions.
4. **Interdisciplinary applications:** AI can be applied to various fields like healthcare, finance, and environmental science, offering diverse career paths.
5. **Data analysis and science:** Undergraduates can work with large datasets, gaining insights and making informed decisions.
6. **Automation and optimization:** AI can automate tasks, making processes more efficient, and undergraduates can develop these solutions.
7. **Creative industries:** AI can enhance creative fields like art, music, and writing, offering new forms of expression.
8. **Social impact:** Undergraduates can develop AI solutions addressing social and environmental challenges.
9. **Continuous learning:** The AI field is rapidly evolving, and undergraduates can stay updated with the latest developments.
10. **Global opportunities:** AI is a global field, offering collaborations and career opportunities worldwide.

Suggestions:

- **AI tools offer a plethora of opportunities to enhance student learning experiences.**

Here are some effective ways to incorporate them into education:

- **Personalized Learning**
- **Adaptive Learning Platforms:** These platforms tailor content and pace to individual student needs, providing personalized instruction.
- **Intelligent Tutoring Systems:** AI can create virtual tutors that offer real-time feedback and guidance.
- **Enhanced Content Creation and Delivery**
- **AI-Generated Content:** AI can create educational content like quizzes, summaries, and even lesson plans.
- **Interactive Content:** AI can develop interactive elements like simulations,

games, and virtual reality experiences.

- **Administrative Efficiency**
- **Automated Grading:** AI can streamline the grading process, freeing up teachers' time for more meaningful interactions with students.
- **Student Data Analysis:** AI can analyze student performance data to identify areas for improvement and provide targeted support.
- **Language Learning**
 - **Language Translation Tools:** AI can assist students in learning new languages by translating text and providing pronunciation guidance.
 - **Conversational AI:** AI-powered chatbots can provide language practice and conversation opportunities.
 - **Accessibility**
 - **Text-to-Speech and Speech-to-Text:** AI can help students with disabilities by converting text to speech and vice versa.
 - **Assistive Technology:** AI can be used to develop tools that support students with various learning styles and needs.
 - **-Critical Thinking and Problem-Solving**
 - **AI-Powered Simulations:** Students can practice problem-solving skills in simulated environments.
 - **AI-Assisted Research:** AI can help students find relevant information and analyze data more efficiently.
 - **Ethical Considerations**
- **Bias Awareness:** Ensure AI tools are trained on diverse datasets to avoid biases.
- **Privacy Protection:** Implement measures to protect student privacy and data security.
 - By carefully considering these suggestions and addressing potential challenges, educators can leverage AI tools to create more engaging, effective, and equitable learning experiences for students.

Conclusion:

The study reveals widespread adoption of AI tools among students in Mumbai, with a staggering 80% of users falling within the 18-21 age bracket. These students primarily utilize AI tools for academic purposes, with 51% relying on them for writing assignments, 38% for research work, and 39% for learning new concepts. The benefits of AI tools are evident, with 84% of students believing they save time and an overwhelming 97% crediting AI tools with reducing their workload. However, despite these advantages, concerns persist. Specifically, students worry about limited creativity (39%), dependency on data (34%), lack of understanding (22%), and ethical concerns

(18%). These findings underscore the need for educators to address these concerns while harnessing AI's potential to enhance student learning experiences.

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