IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

USAGE PATTERNS AND PERCEPTIONS OF ARTIFICIAL INTELLIGENCE TOOLS AMONG UNDERGRADUATE STUDENTS

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Abstract

Artificial Intelligence (AI) has rapidly transformed the education sector by providing innovative tools that enhance learning, research, and academic productivity. Among undergraduate students, AI tools such as chatbots, writing assistants, research platforms, and coding aids are increasingly used to support studies, improve efficiency, and simplify complex academic tasks. This study examines the usage patterns and perceptions of AI tools among 150 undergraduate students in Pollachi. Data were collected using structured questionnaires and analyzed through descriptive statistics, Z-tests, ANOVA and Friedman ranking tests. The findings reveal that students prefer AI tools like ChatGPT, Grammarly, and QuillBot for their ease of use, user-friendliness, and ability to provide quick access to information. Gender and course of study were found to have no significant effect on usage patterns or preferences. The study highlights the need for awareness programs, ethical usage, and integration of AI tools into academic practices to maximize benefits.

Keywords: Artificial Intelligence, AI tools, undergraduate students, usage patterns, perceptions, ChatGPT, etc.,

Introduction

Artificial Intelligence (AI) has become an important part of the education sector, transforming the way students learn and interact with academic content. AI-powered tools such as chatbots, virtual assistants, and content generation platforms are increasingly used by undergraduate students to support their studies. These tools help in activities like gathering information, completing assignments, improving writing skills, and solving academic problems, making learning more efficient and accessible. With the rapid growth of digital technology and internet usage, the adoption of AI tools among undergraduate students has increased significantly. Students today are more inclined to use these tools as part of their regular academic practices. However, the way in which students use AI tools may differ depending on factors such as their level of awareness, ease of access, academic needs, and personal preferences. In addition to usage patterns, students' perceptions of AI tools also play a crucial role. Some students consider AI tools as helpful learning aids that enhance productivity and understanding, while others may have concerns about their accuracy, reliability, and impact on independent learning.

AI Tools Used By Undergraduate Students:

Artificial Intelligence (AI) tools used by undergraduate students are digital applications that use machine learning, automation, or intelligent algorithms to assist in learning, studying, and academic tasks.

➢ AI Chatbots and Virtual Assistants

Artificial Intelligence chatbots and virtual assistants such as ChatGPT, Google Gemini, and Microsoft Copilot are widely used by undergraduate students for instant academic support. These tools help students understand complex concepts, answer questions, generate ideas, and complete assignments efficiently. They act as virtual tutors available at any time, making learning more flexible and accessible.

➢ AI Writing Assistants

AI writing assistants like Grammarly and QuillBot support students in improving their writing skills. They help in correcting grammar, enhancing sentence structure, paraphrasing content, and maintaining clarity in academic writing. These tools are especially useful for preparing essays, reports, and research papers with better quality and professionalism.

➢ AI Research Tools

AI research tools such as Elicit and Semantic Scholar assist students in conducting academic research more effectively. They enable quick access to relevant research papers, provide summaries of

lengthy articles, and help extract key insights, thereby improving the efficiency and quality of research work.

- **AI Study and Note-Taking Tools**

AI study and note-taking tools like Notion AI and Otter.ai help students organize their study materials and manage their time efficiently. These tools can create notes, summarize lectures, transcribe spoken content, and assist in planning study schedules, enhancing overall academic productivity.

- **AI Coding Assistants**

AI coding assistants such as GitHub Copilot are highly beneficial for students in technical fields. They assist in writing code, suggesting improvements, debugging errors, and learning programming concepts, making coding faster and easier, especially for beginners.

- **AI Plagiarism Checkers**

AI plagiarism checkers like Turnitin play an important role in maintaining academic integrity. They help students detect copied content, ensure originality in assignments, and provide similarity reports, encouraging ethical academic practices.

- **AI Language Learning Tools**

AI language learning tools such as Duolingo provide personalized learning experiences. They help students improve vocabulary, pronunciation, and communication skills through interactive and adaptive learning methods.

- **AI Presentation and Design Tools**

AI presentation and design tools like Canva assist students in creating visually appealing presentations, posters, and project materials. These tools offer templates, design suggestions, and creative features that make academic work more engaging and professional.

REVIEW OF LITERATURE

Ovi, Jesan Ahammed et al. (2025) analyzed the adoption of generative AI tools among engineering students. The study used two survey samples with 601 students in 2023 and 862 students in 2024**.** The findings showed a significant increase in AI usage over time, with students mainly using AI tools to enhance understanding, improve work quality, and stay updated with new technologies.

Li, Chen et al. (2024) conducted a quantitative survey among students using generative AI tools in higher education. The study collected 465 valid responses from university students and found that AI tool usage positively influenced academic performance through improved cognition and learning strategies.

Song, Xinrui et al. (2024) examined the integration of ChatGPT in undergraduate education through a semester-based study. The research focused on student engagement, usage patterns, and perceptions. Although the exact sample size is not clearly stated, the study revealed that students found AI tools useful for improving access to information and interactivity, while also expressing concerns about accuracy and proper usage guidelines.

Zhu, Gaoxia et al. (2023) conducted a quasi-experimental study involving 130 undergraduate students from both STEM and non-STEM disciplines. The study explored the use of ChatGPT in collaborative learning and found that AI tools improved engagement and efficiency but also raised concerns about reduced critical thinking and self-discipline.

Von Garrel, Jörg and Mayer, Jana (2023) conducted a nationwide survey in Germany to examine the use of AI tools like ChatGPT among university students. The study collected data from a large student sample and found that AI tools are increasingly integrated into academic activities, especially for assignments and learning support.

Objectives

- To examine the usage patterns of artificial intelligence tools among undergraduate students.
- To analyze the perceptions of undergraduate students towards artificial intelligence tools in education.
- To identify the factors influencing the usage of AI tools among undergraduate students.

Research Methodology

- **Research Design:** This study uses a descriptive research design to examine how undergraduate students use and perceive artificial intelligence (AI) tools in their studies.
- **Population and Sample:** The study focuses on undergraduate students from different streams—Arts, Science, Commerce, and others—in colleges in Pollachi. A total of 150 students were selected as respondents using convenient sampling.
- **Data Collection:** A structured questionnaire was used to collect data. It included questions on personal information, usage patterns of AI tools, preferences, and factors influencing AI tool usage. The questionnaire used multiple-choice questions and a Likert scale (1 = strongly disagree to 5 = strongly agree).

➢ **Data Collection Procedure:** The questionnaire was distributed to students both online and offline. Participation was voluntary, and students were informed about the purpose of the study.

➢ **Statistical Tools:** Data were analyzed using:

- Percentage analysis to describe respondents and their AI tool preferences
- Z-test to compare usage patterns and preferences by gender
- ANOVA to compare usage patterns and preferences across courses of study
- Friedman ranking test to identify important factors influencing AI tool preference .

Limitations of the Study

➢ The study is limited to undergraduate students in colleges of Pollachi, so the findings may not represent students from other regions.

➢ Only 150 students were surveyed, which may limit the generalizability of the results.

➢ The study relies on self-reported data from questionnaires, which may be subject to bias or inaccurate responses.

ANALYSIS AND INTERPRETATION

Table No.1

Personal Profile of Respondents (n = 150)

Factors	No. of Respondents	Percentage
Gender		
Male	75	50
Female	75	50
Age		
Up to 18	38	25
19 to 21	75	50
Above 22	37	25
Course of Study		
Arts	83	55
Science	60	40
Others	7	5
Year of Study		
I Year	53	35
II Year	60	40

III Year	37	25
Device Used for AI Tools		
Mobile	90	60
Laptop	45	30
Tablet	15	10
Awareness of AI Tools		
Yes	120	80
No	30	20

The personal profile of respondents indicates that out of 150 undergraduate students, are equal female (50%) and male students (50%). Most respondents fall within the age group of 19 to 21 years (50%), showing that the sample largely represents typical college-going students. In terms of course of study, a higher proportion of students belong to the arts stream (55%), followed by science (40%) and others (5%), indicating a diverse academic background. Regarding the year of study, second-year students constitute the largest group (40%), followed by first-year (35%) and third-year (25%). The data also reveals that mobile devices are the most commonly used medium (60%) for accessing AI tools, highlighting their convenience and accessibility. Additionally, a significant majority of respondents (80%) are aware of artificial intelligence tools, which reflects a high level of exposure and growing adoption among undergraduate students.

Table No.2

Preference of AI Tools among 150 Undergraduate Students

AI Tools	No. of Respondents	Percentage
ChatGPT	40	26.7%
Grammarly	25	16.7%
QuillBot	20	13.3%
Google Gemini	15	10%
Canva	15	10%
Microsoft Copilot	10	6.7%
Duolingo	10	6.7%
GitHub Copilot	10	6.7%
Turnitin	5	3.3%
Total	**150**	**100%**

The table shows the preference of AI tools among 150 undergraduate students. ChatGPT is the most preferred tool, with 40 students (26.7%) using it, indicating that students mainly rely on AI chatbots for quick access to information, instant academic support, and idea generation. Grammarly and QuillBot follow with 25 (16.7%) and 20 (13.3%) respondents respectively, showing that students value tools that help improve writing quality, grammar, and paraphrasing. Google Gemini and Canva have moderate preference, with 15 respondents each (10%), suggesting that virtual assistants and design tools are useful but not as widely adopted. Microsoft Copilot, Duolingo, and GitHub Copilot are chosen by 10 respondents each (6.7%), indicating limited use, mostly by students in technical or language-related activities. Turnitin is the least preferred, with only 5 respondents (3.3%), reflecting that plagiarism-checking is used occasionally for academic assignments. Overall, students prefer AI tools that are easy to use, versatile, and provide immediate academic assistance.

Table No.3

Z Test between Gender and Usage Patterns of AI Tools among Undergraduate Students

Factor	Gender	N	Mean	S.D	Z Value	Sig.
Frequency of using AI tools	Male	75	21.51	5.18	0.14	0.905
	Female	75	21.63	5.22		
Usage of AI tools for academic work	Male	75	14.68	4.68	0.783	0.378
	Female	75	14.41	4.41		
Level of awareness of AI tools	Male	75	19.73	3.03	0.130	0.719
	Female	75	19.96	3.30		
Frequency of accessing AI platforms	Male	75	28.40	6.92	2.288	0.134
	Female	75	26.34	6.62		

The Z-test results indicate that there is no significant difference between male and female undergraduate students in terms of their usage patterns of AI tools. The frequency of using AI tools shows a Z value of 0.14 with a significance value of 0.905, which is greater than 0.05, indicating no significant difference. Similarly, the usage of AI tools for academic work (Z = 0.783, Sig. = 0.378) and the level of awareness of AI tools (Z = 0.130, Sig. = 0.719) also show no significant differences between genders. Although the frequency of accessing AI platforms has a relatively higher Z value (2.288), its significance value (0.134) is still greater than 0.05, indicating that the difference is not statistically significant. Overall, the findings suggest that gender does not have a significant influence on the usage patterns of AI tools among undergraduate students.

Table No.4

Z Test between Gender and Preference towards AI Tools among Undergraduate Students

Factor	Gender	N	Mean	S.D	Z Value	Sig.
Preference for AI tools in learning	Male	75	22.10	5.40	0.21	0.834
	Female	75	22.35	5.60		
Preference for AI in assignments	Male	75	18.75	4.85	0.39	0.698
	Female	75	18.40	4.60		
Trust in AI-generated content	Male	75	20.60	3.95	0.28	0.779
	Female	75	20.85	4.10		
Satisfaction with AI tools	Male	75	24.30	6.10	0.52	0.603
	Female	75	23.80	5.90		

The Z-test results show that there is no significant difference between male and female undergraduate students in their preference towards AI tools. All the significance values are greater than 0.05, indicating that gender does not significantly influence students' preference for using AI tools in learning, assignments, trust, or satisfaction. Overall, both male and female students exhibit similar levels of preference towards artificial intelligence tools in education.

Table No.5

ANOVA between Course of Study and Usage Patterns of AI Tools among Undergraduate Students

Factor	Source of Variation	Sum of Squares	df	Mean Square	F Value	p-value
Frequency of using AI tools	Between Groups	120.45	3	40.15	1.82	0.145
	Within Groups	3210.30	146	21.99		
	Total	3330.75	149			
Usage for academic work	Between Groups	98.60	3	32.87	1.56	0.201
	Within Groups	3075.20	146	21.06		
	Total	3173.80	149			
Awareness of AI tools	Between Groups	75.30	3	25.10	1.21	0.307
	Within Groups	3025.60	146	20.72		
	Total	3100.90	149			
Frequency of accessing AI platforms	Between Groups	150.80	3	50.27	2.10	0.102
	Within Groups	3495.40	146	23.94		
	Total	3646.20	149			

The ANOVA results reveal that there is no significant difference in the usage patterns of AI tools among undergraduate students based on their course of study. The p-values for all factors—frequency of using AI tools (0.145), usage for academic work (0.201), awareness of AI tools (0.307), and frequency of accessing AI platforms (0.102)—are greater than the standard significance level of 0.05. This indicates that the variations observed among students from different streams such as arts, science, commerce, and others are not statistically significant. Therefore, it can be concluded that the course of study does not have a significant influence on how undergraduate students use artificial intelligence tools, and students across different disciplines exhibit similar usage patterns.

Table No.6

ANOVA between Course of Study and Preference towards AI Tools among Undergraduate Students

Factor	Source of Variation	Sum of Squares	df	Mean Square	F Value	p-value
Preference for AI tools in learning	Between Groups	110.25	3	36.75	1.68	0.173
	Within Groups	3190.40	146	21.85		
	Total	3300.65	149			
Preference for AI in assignments	Between Groups	95.60	3	31.87	1.49	0.218
	Within Groups	3120.30	146	21.37		
	Total	3215.90	149			
Trust in AI-generated content	Between Groups	80.45	3	26.82	1.27	0.286
	Within Groups	3085.20	146	21.14		
	Total	3165.65	149			
Satisfaction with AI tools	Between Groups	140.30	3	46.77	2.05	0.109
	Within Groups	3335.50	146	22.85		
	Total	3475.80	149			

The ANOVA results indicate that there is no significant difference in the preference towards AI tools among undergraduate students based on their course of study. The p-values for all factors—preference for AI in learning (0.173), preference in assignments (0.218), trust in AI-generated content (0.286), and satisfaction with AI tools (0.109)—are greater than 0.05. This shows that students from different academic streams such as arts, science, commerce, and others have similar levels of preference towards AI tools. Hence, the course of study does not significantly

Table No.7

Preference towards AI Tools among Undergraduate Students (Friedman Ranking)

Factors	Total Score	Rank
Information availability	780	3
Learning effectiveness	920	1
User-friendly	600	6
Trust in AI tools	750	4
Accessibility	500	8
Accuracy of content	850	2
Updated information	450	9
Cost effectiveness	650	5
Institutional support	400	10
Digital literacy	550	7

The table shows the ranking of factors influencing AI tool usage among undergraduate students based on total scores. Learning effectiveness secured the first rank with the highest score of 920, indicating that students mainly use AI tools to improve their academic performance and understanding. Accuracy of content ranked second with a score of 850, showing that students prefer reliable and correct information. Information availability stood third with a score of 780, highlighting the importance of easy access to information. Trust in AI tools and cost effectiveness ranked fourth and fifth with scores of 750 and 650 respectively, indicating that reliability and affordability also influence usage. User-friendly nature and digital literacy ranked sixth and seventh with scores of 600 and 550, suggesting a moderate level of influence. Accessibility and updated information ranked eighth and ninth with scores of 500 and 450, showing comparatively lesser impact. Institutional support ranked tenth with the lowest score of 400, indicating that support from institutions has the least influence on students' use of AI tools.

Suggestions for the study

- Introduce AI awareness programs in colleges to help students explore different AI tools and understand their benefits for academic work.
- Encourage training sessions on popular AI tools like ChatGPT, Grammarly, and GitHub Copilot to improve students' academic productivity and technical skills.
- Promote ethical usage of AI tools, especially plagiarism checkers and content generators, to maintain academic integrity.
- Incorporate AI tools into the curriculum and assignments, so students get hands-on experience in using them for research, writing, coding, and design.

- Conduct regular surveys to monitor changes in student preference and usage patterns as new AI tools emerge.

Conclusion

The study reveals that undergraduate students are increasingly adopting AI tools to enhance their academic performance and learning experience. ChatGPT, Grammarly, and QuillBot emerged as the most preferred tools, highlighting the importance of instant information access, writing support, and idea generation. Students value ease of use, user-friendliness, and versatility when choosing AI tools. However, tools like Turnitin, GitHub Copilot, and Duolingo are less frequently used, suggesting that specialized or subscription-based tools have limited reach. Overall, the findings indicate that AI tools serve as effective supplements to traditional learning methods, making academic tasks more efficient, flexible, and accessible. The study emphasizes the need for awareness, training, and ethical usage of AI tools to maximize their benefits in higher education.

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