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A Study On The Effectiveness Of Google Gemini Usage For Academic Purpose Among Arts And Science College Students With Special Reference To Coimbatore City

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Abstract: This study examines the effectiveness of Google Gemini, an AI-powered tool, for academic use among Arts and Science college students in Coimbatore City. It explores students' awareness, usage patterns, and the perceived benefits and challenges of using the tool for tasks like research, assignments, and exam preparation. Data was collected through a structured questionnaire. The findings reveal that while many students find Google Gemini helpful in enhancing learning, concerns remain regarding accuracy and ethical use. The study suggests promoting digital literacy to improve the effective use of AI in Education.

Keywords: Google Gemini, Artificial Intelligence, Academic Purpose, Student Perception, Digital Learning.

INTRODUCTION:

In the modern era, technology has become an integral part of education, revolutionizing the way students learn, conduct research, and complete academic tasks. Among the many technological advancements, artificial intelligence (AI) tools have gained significant attention for their ability to support and enhance academic activities. One such AI-powered tool, Google Gemini, is designed to offer a wide range of features, including real-time information retrieval, research assistance, and task automation, making it a potentially valuable resource for students.

Google Gemini is a conversational AI tool developed by Google that integrates large language models with search capabilities, offering students access to a vast number of academic resources and support. Its ability to process complex queries, provide instant feedback, and deliver tailored educational content has made it a game-changer for educational purposes. However, while it is widely used in various professional fields, the application of Google Gemini in academic settings, particularly among arts and science students, has not been extensively explored.

OBJECTIVES:

1. To study the demographic profile of the respondent.
2. To assess the level of awareness and usage of Google Gemini among arts and science college students in Coimbatore city.
3. To evaluate the effectiveness of Google Gemini in enhancing academic performance in terms of research, assignments, and project work.
4. To analyze the benefits and challenges faced by students in using Google Gemini for academic purposes.
5. To understand the perception and attitude of students towards using Google Gemini as a supplementary academic tool.
6. To compare the usage patterns and effectiveness of Google Gemini across different disciplines (arts vs. science) within the same institution.

STATEMENT OF THE PROBLEM:

While digital tools have revolutionized the education sector, the utilization of AI-based tools like Google Gemini among college students, especially in Coimbatore city, remains largely unexplored. There is a need to understand whether Google Gemini effectively aids students in their academic journey and what factors influence its usage. This study aims to fill the gap by investigating the role of Google Gemini in improving the learning process and academic output among arts and science college students.

SCOPE OF STUDY:

The scope of this study is limited to arts and science college students in Coimbatore city. The research will focus on understanding the usage patterns, effectiveness, and challenges faced by students when using Google Gemini for academic purposes. The study will only consider students who have access to the internet and Google Gemini on their devices. Data will be collected from a sample of students, faculty members, and academic administrators within these institutions.

LIMITATION OF STUDY:

1. The study will be limited to arts and science colleges in Coimbatore city, which may not reflect the experiences of students in other regions.
2. The study will only include students who have prior knowledge and access to Google Gemini, limiting the generalizability of the results.
3. The research may face challenges in obtaining objective responses from students, as their perceptions may be influenced by individual biases.
4. The study will be cross-sectional and not longitudinal, limiting the ability to measure long-term effects of Google Gemini usage on academic performance.

REVIEW OF LITERATURE:

1. Smith, A. (2024) studied the impact of AI chatbots like Google Gemini in enhancing academic writing. The findings revealed that students significantly improved their content structure and grammar after regular use.

2. Johnson, L. & Wang, R. (2023) explored the role of generative AI tools in promoting independent research among college students. The study highlighted that tools like Google Gemini fostered curiosity and improved learning engagement.

3. Thomas, K. (2023) examined AI integration in higher education and noted that personalized feedback from tools like Gemini helped students better understand complex topics.

RESEARCH METHODOLOGY

Research in common refers to a search for knowledge. Research methodology is a way to systematically solve the research problem.

RESEARCH DESIGN

Research design is the arrangement of conditions analyses of data in a systematic manner that aims to combine relevance to research purpose.

SAMPLE SIZE

The sample size is certified to its nature of data collection. Data collection is based on the primary data. 110 respondents are selected from Coimbatore district for the purpose of the study.

SOURCES OF DATA

The data is collected in two ways;

- **PRIMARY DATA:**

  Primary data will be collected through the following methods:

1. Questionnaire Survey
2. Interviews

- **SECONDARY DATA:**

Secondary data will be gathered from academic journals, articles, and existing research studies that have explored AI tools in education, specifically focusing on Google Gemini or similar tools like Google Search, Google Scholar, or other AI-powered academic assistants.

TOOLS AND TECHNIQUES

The tools used under for the study are

- Simple percentage method
- Chi square

- **SIMPLE PERCENTAGE METHOD**

A percentage analysis is used to interpret the data by the researcher for analysis and interpretation. Using percentages, the data are reduced in the standard from with base equal to 105 which fact facilitates relative comparisons. In the percentage analysis, Percentage is calculated by multiplying the number of respondents into hundred and it is divided by the same size.

Formula:

$$\text{PERCENTAGE} = \frac{\text{NO OF RESPONDENTS}}{\text{TOTAL RESPONDENTS}} * 100$$

- **CHI – SQUARE:**

The chi-squared test is done to check if there is any difference between the observed value and expected value.

Formula:

Chi square formula $\chi^2 = \sum(Oi - Ei)2/E$

OVERVIEW OF PRODUCT

Gemini, formerly known as **Bard**, is a generative artificial intelligence chat bot developed by Google. Based on the large language model (LLM) of the same name, it was launched in 2023 in response to the rise of Open AI's Chat GPT. It was previously based on the lamda and palm llms.

LaMDA had been developed and announced in 2021, but it was not released to the public out of an abundance of caution. Open AI's launch of Chat GPT in November 2022 and its subsequent popularity caught Google executives off-guard, prompting a sweeping response in the ensuing months. After mobilizing its workforce, the company launched Bard in a limited capacity in March 2023 before expanding to other countries in May. Bard took center stage during the 2023 Google I/O keynote in May and was upgraded to the Gemini LLM in December. In February 2024, Bard and Duet AI, another artificial intelligence product from Google, were unified under the Gemini brand, coinciding with the launch of an Android app.

Gemini has received lukewarm responses. It became the center of controversy in February 2024, when social media users reported that it was generating historically inaccurate images of historical figures as people of color, with conservative commentators decrying its alleged bias as "wokeness".

DATA ANALYSIS AND INTERPRETATION

THE TABLE SHOWING AGE OF THE RESPONDENTS
TABLE 1

S.NO	PARTICULAR	NO. OF RESPONDENTS	PERCENTAGE
1	Below 18	5	4.55%
2	18-22	39	35.45%
3	23-27	47	42.73%
4	Above 27	19	17.27%
	TOTAL	110	100

INTERPRETATION:
From the above table, it shows that 4.55% of the respondents are below 18 years of age, 35.45% of the respondents are 18-22 years of age, 42.73% of the respondents are 23-27 years of age, 17.27% of respondents are above 27 years of age. Majority 42.73% of respondents are 23-27 years of age.

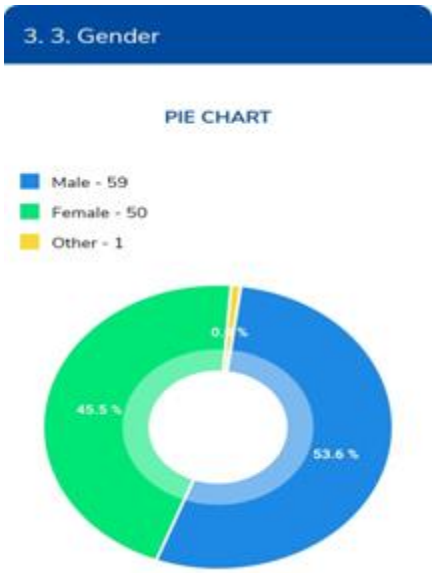
CHART 1
CHART SHOWING AGE OF THE RESPONDENTS

THE TABLE SHOWING GENDER OF THE RESPONDENTS
TABLE 2

S.NO	PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
1	Male	59	53.64%
2	Female	50	45.45%
3	Other	1	0.91%
	TOTAL	110	100

INTERPRETATION:
From the above table, it shows that 53.64% of the respondents are male, 45.45% of the respondents are female, 0.91% of the respondents are other. Majority 53.64% of respondents are male.

CHART 2
CHART SHOWING GENDER OF THE RESPONDENTS



CHI-SQUARE TEST

Table 3 Showing gender and challenges of Google Gemini

Particulars	Inaccuracy Information	Difficulty in Understanding Response	Lack of Subject	Limited Access	Total
male	27	15	14	3	59
female	22	15	10	3	50
other	1	0	3	0	1
Total	50	30	24	6	110

INTERPRETATION:
The table clearly states the demographic profile of the respondents & challenges in Google Gemini. Majority of the respondents 45.45% of the respondents are inaccuracy information.

HO = There is no relationship between gender and challenges in Google Gemini

O	E	(O-E)^2	(O-E)^2/E
27	26.8	0.04	0.001492537313
22	22.7	0.49	0.02158590308
1	0.45	0.3025	0.6722222222
15	16.09	1.1881	0.07384089497
15	13.63	1.8769	0.137703595
0	0.27	0.0729	0.27
14	12.87	1.2769	0.09921522922
10	10.9	0.81	0.07431192661
0	0.21	0.0441	0.21
3	3.21	0.0441	0.01373831776
3	2.72	0.0784	0.02882352941
0	0.05	0.0025	0.05
			1.652934156

Significance level =0.05

Degree of freedom=6

RESULT:
Calculated chi-square value is (1.652934156) which is lesser than the table value (12.592). Hence, it accepted null hypothesis (H0), and it rejects Alternative hypothesis(H1). So, there is no relationship between the gender and challenges in Google Gemini.

FINDINGS:

1. Maximum 42.73% of respondents belong to the age group of 23-27.
2. Majority 53.64% of respondents are Male.
3. Majority 50.91% of respondents are enrolled in Commerce department.
4. Maximum 30.91% of respondents are currently studying in Final year.
5. Maximum 33.64% of respondents are learned through the Professor/academics.
6. Maximum 40.91% of respondents are using Google Gemini occasionally.
7. Maximum 39.09% of respondents has been using Google Gemini for 1-3 months.
8. Maximum 38.18% of respondents are accessing Google Gemini in Smart phones.
9. Maximum 39.09% of respondents are often using Data analysis tool in Google Gemini.
10. Maximum 76.36% of respondents indicated that they find Google Gemini more useful compared to another academic tool.
11. Maximum 90% of respondents are affirming its positive impact with the usage of Google Gemini.
12. Maximum 47.27% of respondents are rated moderate effectively of Google Gemini in assissing with research and academic tasks.
13. Maximum 46.36% of respondents are indicated that it significantly yes to the Google Gemini helps with the data analysis and research.
14. Majority 54.55% of respondents are expressed confidence in the accuracy of the information provided by the Google Gemini.
15. Maximum 40.91% of respondents are indicated that Google Gemini is primarily used for writing assignments.
16. Maximum 48.18% of respondents are indicated that main factor motivating the use of Google Gemini for academic work are speed and accuracy.
17. Majority 45.45% of respondents are reporting issues with inaccurate information.
18. Majority 38.18% of respondents are suggesting the need for better accuracy of information.
19. Majority 49.09% of respondents are indicating that they are very satisfied with the Google Gemini for academic purposes

SUGGESTIONS:

1. Organize workshops and training programs to educate students and faculty on the effective use of Google Gemini for academic purposes.
2. Incorporate AI tools like Gemini into the academic curriculum to enhance learning outcomes and digital competence.
3. Encourage ethical usage of AI tools, emphasizing originality and critical thinking.
4. Provide institutional access and technical support to ensure all students can use Google Gemini effectively.
5. Regularly assess the impact of AI tools on academic performance to identify strengths and areas for improvement.

CONCLUSION:

The study reveals that Google Gemini has emerged as a promising AI tool for academic purposes among Arts and Science college students in Coimbatore City. It is found that students are increasingly relying on Gemini for quick information retrieval, enhanced learning experiences, and academic content generation. However, while the tool offers numerous benefits, its effectiveness is largely dependent on the user's digital literacy and ethical usage. Promoting awareness, guided use, and integrating such tools into the educational ecosystem can significantly uplift the academic outcomes.

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