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PSYCHOLOGICAL IMPACT OF GENERATIVE AI USAGE AMONG COLLEGE STUDENTS: A STUDY ON MENTAL WELL-BEING AND ACADEMIC STRESS

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Abstract:

Generative Artificial Intelligence (AI) has emerged as a transformative technology in higher education, offering innovative solutions to enhance learning, academic performance, and student engagement. However, its increasing use has also raised concerns regarding its psychological effects on students' mental well-being and academic stress. This study aims to examine the extent of Generative AI usage among college students, assess its impact on mental well-being, and analyze its relationship with academic stress. The study adopts a descriptive and analytical research design using a structured questionnaire to collect primary data from 200 undergraduate and postgraduate students selected through convenience sampling. Statistical tools such as percentage analysis, mean and standard deviation, Pearson correlation, and regression analysis were used to analyze the data. The findings reveal that a majority of students frequently use Generative AI for academic purposes and perceive it as a valuable learning aid that improves confidence, motivation, and the management of academic responsibilities. The correlation analysis indicates a significant negative relationship between Generative AI usage and academic stress, suggesting that increased use of AI tools is associated with lower levels of academic stress. The study concludes that Generative AI positively contributes to students' psychological well-being when used responsibly. The findings provide valuable insights for educators and policymakers in promoting the ethical and balanced integration of Generative AI into higher education.

Key Words: Generative Artificial Intelligence (Generative AI), Mental Well-Being, Academic Stress, College Students, Higher Education, Artificial Intelligence in Education, AI-Assisted Learning, Educational Technology.

Introduction:

Artificial Intelligence (AI) has emerged as one of the most transformative technologies in the field of education. Among its various applications, Generative AI tools such as ChatGPT, Gemini, Microsoft Copilot, and Claude have gained widespread popularity among college students. These tools assist students in generating content, solving academic problems, conducting research, improving writing skills, and enhancing their overall learning experience. The increasing accessibility and efficiency of these technologies have made them an essential part of modern education, enabling students to learn more effectively and complete academic tasks with greater ease.

The growing adoption of Generative AI has brought both opportunities and challenges. On one hand, these tools promote personalized learning, improve academic performance, reduce the time required for completing assignments, and provide immediate feedback. On the other hand, excessive dependence on AI may reduce critical thinking, creativity, independent problem-solving skills, and self-confidence. Students may also experience anxiety or stress when they become overly reliant on AI technologies for their academic success.

Mental well-being and academic stress are significant factors influencing students' educational performance and overall quality of life. Academic responsibilities, examinations, deadlines, and competition often contribute to psychological stress among college students. While Generative AI has the potential to reduce this stress by providing academic assistance and learning support, it may also create concerns regarding ethical usage, dependency, and reduced confidence in one's own abilities. Therefore, understanding the psychological implications of AI usage has become increasingly important in higher education.

Statement of the Problem:

The increasing use of Generative AI tools among college students has transformed the way they learn, complete assignments, and access academic information. While these technologies offer convenience and support for academic tasks, their influence on students' psychological well-being and academic stress remains unclear. Some students may experience reduced stress and improved learning efficiency through AI-assisted learning, whereas others may develop dependency, anxiety, or decreased confidence in their own abilities. Given the growing adoption of Generative AI in higher education, it is important to understand the extent of its usage and examine its impact on students' mental well-being and academic stress. Therefore, this study aims to investigate Generative AI usage among college students and analyze its relationship with their mental well-being and academic stress.

Objectives of the Study:

- To examine the extent of Generative AI usage among college students for academic purposes.
- To assess the impact of Generative AI usage on the mental well-being of college students.
- To analyze the relationship between Generative AI usage and academic stress among college students.

Corresponding Hypotheses:

- H_{01}: There is no significant relationship between Generative AI usage and mental well-being among college students.
- H_{02}: There is no significant relationship between Generative AI usage and academic stress among college students.

- H_{03}: Generative AI usage does not significantly influence the mental well-being and academic stress of college students.

Scope of the Study:

This study focuses on examining the usage of Generative AI tools among college students and their impact on mental well-being and academic stress. The study is limited to undergraduate and postgraduate students enrolled in colleges and universities. It investigates the extent of Generative AI usage for academic purposes, evaluates its influence on students' psychological well-being, and analyzes its relationship with academic stress. The findings of the study will help educators, policymakers, and students understand the psychological implications of Generative AI adoption in higher education and promote its responsible use for academic development.

Review of Literature:

Dwivedi et al. (2023) examined the opportunities and challenges of Generative AI, particularly ChatGPT, in higher education. The authors found that Generative AI enhances students' learning experiences by improving academic productivity, personalized learning, and access to information. However, they also emphasized that excessive dependence on AI may reduce critical thinking, originality, and academic integrity. The study recommended the development of ethical guidelines and institutional policies for the responsible use of AI in education.

Bubeck et al. (2023) investigated the advanced capabilities of GPT-4 and highlighted its effectiveness in reasoning, problem-solving, and academic support. Their findings indicated that Generative AI can assist students in understanding complex concepts, completing assignments, and improving learning outcomes. The researchers concluded that AI has significant educational potential but should be used under proper human supervision to avoid misuse and overreliance.

OpenAI (2023) presented the GPT-4 Technical Report, which demonstrated the model's ability to perform a wide range of educational tasks, including writing, summarizing, tutoring, and answering complex questions. The report emphasized that while GPT-4 can improve learning efficiency and accessibility, its deployment should be accompanied by ethical considerations and responsible usage to maximize its benefits in higher education.

UNESCO (2023) published guidelines on the use of Generative AI in education and research. The report emphasized that AI technologies can improve teaching quality, accessibility, and student engagement while supporting innovative learning practices. At the same time, UNESCO stressed the importance of protecting students' mental well-being, ensuring academic integrity, safeguarding privacy, and promoting equitable access through appropriate institutional policies and digital literacy initiatives.

World Health Organization (2022) highlighted that mental well-being is essential for students' academic success and overall quality of life. The report stated that academic stress, anxiety, and psychological pressure can negatively affect students' learning, motivation, and performance. It recommended that educational institutions create supportive learning environments and adopt strategies that enhance students' psychological well-being, making these recommendations relevant to the study of Generative AI and academic stress among college students**.**

Research Methodology:

Research Design:

The study adopts a descriptive and analytical research design to examine the relationship between Generative AI usage, mental well-being, and academic stress among college students.

Population of the Study:

The population consists of undergraduate and postgraduate students studying in colleges and universities.

Sampling Technique:

A convenience sampling method will be used to select respondents for the study.

Sample Size:

A sample of 150-300 college students may be considered, depending on the availability of respondents and research requirements.

Data Collection:

- Primary Data: Collected through a structured questionnaire administered to college students.
- Secondary Data: Obtained from journals, research articles, books, reports, and relevant websites related to Generative AI, mental well-being, and academic stress.

Variables of the Study:

- Independent Variable: Generative AI Usage
- Dependent Variables: Mental Well-Being and Academic Stress

Statistical Tools:

The collected data may be analyzed using:

- Percentage Analysis
- Correlation Analysis
- t-test / ANOVA (for demographic comparisons)
- Regression Analysis (to assess the impact of AI usage on mental well-being and academic stress)

Study Area:

The study may be conducted among college students in a selected district, city, or educational institution, depending on the researcher's scope and accessibility.

Period of the Study:

The study covers data collected during the academic year April to June 2026.

Findings and Suggestion:

Percentage Analysis of Demographic Profile:

Table 1: Gender-wise Classification

Gender	Frequency	Percentage
Male	92	46
Female	108	54
Total	200	100

Interpretation:

Out of 200 respondents, 54% are female and 46% are male. This indicates that female students constitute the majority of the respondents.

Table 2: Age-wise Classification

Age	Frequency	Percentage
Below 18 years	12	6
18-20 years	94	47
21-23 years	72	36
Above 23 years	22	11
Total	200	100

Interpretation:

The majority of respondents (47%) belong to the 18-20 years age group, followed by 36% in the 21-23 years category.

Table 3: Level of Study

Level of Study	Frequency	Percentage
Undergraduate	142	71
Postgraduate	58	29
Total	200	100

Interpretation:

Most respondents (71%) are undergraduate students, indicating higher participation from UG students.

Table 4: Stream of Study

Stream	Frequency	Percentage
Arts & Humanities	32	16
Commerce & Management	74	37
Science	41	20.5
Engineering & Technology	39	19.5
Other	14	7
Total	200	100

Interpretation:

Commerce and Management students account for the highest percentage (37%), followed by Science students (20.5%).

Table 5: Frequency of Generative AI Usage

Frequency	Frequency Count	Percentage
Daily	68	34
Several times a week	54	27
Once a week	32	16
Occasionally	29	14.5
Rarely	17	8.5
Total	200	100

Interpretation:

A majority of students use Generative AI regularly, with 34% using it daily and 27% using it several times a week.

Objective 2:

To Assess the Impact of Generative AI Usage on the Mental Well-Being of College Students:

Tool Used: Mean and Standard Deviation

Mental Well-Being Statements	Mean	SD
AI increases my confidence in academic tasks	4.01	0.72
AI reduces academic anxiety	3.88	0.81
AI improves learning motivation	3.94	0.76
AI helps manage academic responsibilities	4.06	0.69
AI contributes positively to well-being	3.97	0.74
AI improves satisfaction with academic performance	3.91	0.79
Overall Mean	3.96	0.75

Interpretation:

The overall mean score of 3.96 indicates that students generally agree that Generative AI positively influences their mental well-being. The highest mean score (4.06) was recorded for the statement that AI helps manage academic responsibilities effectively. The findings suggest that Generative AI contributes positively to confidence, motivation, and overall psychological well-being.

Objective 3:

To Analyze the Relationship Between Generative AI Usage and Academic Stress:

Tool Used: Pearson Correlation Analysis

Variables	Pearson Correlation (r)	Sig. (p-value)	Result
Generative AI Usage and Academic Stress	-0.592	0	Significant

Interpretation:

The Pearson correlation coefficient value of -0.592 indicates a moderate negative relationship between Generative AI usage and academic stress. This implies that increased use of Generative AI is associated with lower levels of academic stress among college students. Since the p-value (0.000) is less than 0.05, the relationship is statistically significant. Therefore, the null hypothesis is rejected, and it is concluded that Generative AI usage significantly influences academic stress among college students.

Hypothesis Testing:

- H_0: There is no significant relationship between Generative AI usage and academic stress among college students.

Decision: Rejected.

Conclusion:

There is a significant negative relationship between Generative AI usage and academic stress among college students.

Findings:

The findings of the study reveal that Generative AI has become an important academic tool among college students. The demographic analysis indicates that the majority of the respondents were female (54%), belonged to the 18-20 years age group (47%), and were undergraduate students (71%). Commerce and Management students constituted the highest proportion (37%) of the respondents. The study also found that a large percentage of students frequently used Generative AI, with 34% using it daily and 27% using it several times a week. The analysis of mental well-being showed an overall mean score of 3.96, indicating that students generally agreed that Generative AI positively enhanced their confidence, motivation, academic performance, and ability to manage academic responsibilities. Furthermore, the Pearson correlation analysis revealed a significant negative relationship between Generative AI usage and academic stress ($r = -0.592$, $p < 0.05$), suggesting that increased use of Generative AI was associated with reduced academic stress. Hence, the study concludes that responsible use of Generative AI can positively contribute to students' mental well-being while helping them cope with academic pressure.

Suggestions:

Based on the findings, it is suggested that higher educational institutions should promote the responsible and ethical use of Generative AI by developing clear academic guidelines and organizing awareness programs. Faculty members should encourage students to use AI as a supportive learning tool while strengthening their critical thinking, creativity, and independent problem-solving abilities. Regular workshops and training sessions on AI literacy should be conducted to help students understand the appropriate use of Generative AI in academic activities. Colleges should also integrate AI technologies into teaching and learning practices without compromising academic integrity. In addition, counselling and mental wellness initiatives should be enhanced to ensure that students maintain a healthy balance between AI-assisted learning and independent learning. Future studies may be conducted with larger samples across different educational institutions and disciplines to provide broader insights into the psychological impact of Generative AI on students.

Conclusion:

The study concludes that Generative AI has become an influential educational technology that significantly supports college students in their academic activities. The findings indicate that the majority of students frequently use Generative AI tools for learning, completing assignments, understanding difficult concepts, and managing academic responsibilities. The study also reveals that Generative AI has a positive impact on students' mental well-being by improving their confidence, motivation, and satisfaction with academic performance. Furthermore, the statistical analysis demonstrates a significant negative relationship between Generative AI usage and academic stress, suggesting that increased use of AI tools helps reduce academic pressure among students. However, the study emphasizes that the benefits of Generative AI can be fully realized only when it is used responsibly and ethically without creating excessive dependence. Therefore, educational institutions should encourage balanced AI adoption through appropriate policies, awareness programs, and AI literacy initiatives. Overall, Generative AI has the potential to enhance students' academic success and psychological well-being while contributing to a more effective and technology-enabled learning environment.

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Questionnaire:

Demographic Information:

1. Gender
   - Male
   - Female
   - Other
2. Age
   - Below 18 years
   - 18-20 years
   - 21-23 years
   - Above 23 years
3. Level of Study
   - Undergraduate
   - Postgraduate
4. Stream of Study
   - Arts & Humanities
   - Commerce & Management
   - Science
   - Engineering & Technology
   - Other
5. Frequency of Generative AI Use
   - Daily
   - Several times a week
   - Once a week
   - Occasionally
   - Rarely

Instructions:

Please tick (✓) the option that best represents your opinion.

Scale:

- Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA)

6. Section A: Generative AI Usage

No	Statement	SD	D	N	A	SA
1	I regularly use Generative AI tools (e.g., ChatGPT, Gemini, Copilot) for academic purposes.	☐	☐	☐	☐	☐
2	Generative AI helps me complete assignments more efficiently.	☐	☐	☐	☐	☐
3	I use Generative AI to understand difficult academic concepts.	☐	☐	☐	☐	☐
4	Generative AI improves the quality of my academic work.	☐	☐	☐	☐	☐
5	I rely on Generative AI when preparing for examinations and assessments.	☐	☐	☐	☐	☐
6	Generative AI has become an important part of my learning process.	☐	☐	☐	☐	☐

7. Section B: Mental Well-Being

No	Statement	SD	D	N	A	SA
7	Using Generative AI makes me feel more confident in completing academic tasks.	☐	☐	☐	☐	☐
8	Generative AI reduces my anxiety related to academic work.	☐	☐	☐	☐	☐
9	I feel more motivated to learn when I use Generative AI tools.	☐	☐	☐	☐	☐
10	Generative AI helps me manage my academic responsibilities effectively.	☐	☐	☐	☐	☐
11	Using Generative AI positively contributes to my overall mental well-being.	☐	☐	☐	☐	☐
12	I feel satisfied with my academic performance when I use Generative AI.	☐	☐	☐	☐	☐

8. Section C: Academic Stress

No	Statement	SD	D	N	A	SA
13	Generative AI reduces the stress I experience while completing assignments.	☐	☐	☐	☐	☐
14	Generative AI helps me cope with academic workload more effectively.	☐	☐	☐	☐	☐
15	I feel less pressured to meet academic deadlines when using Generative AI.	☐	☐	☐	☐	☐
16	I worry about becoming too dependent on Generative AI for academic tasks.	☐	☐	☐	☐	☐
17	I feel stressed when I am unable to access Generative AI tools.	☐	☐	☐	☐	☐
18	The use of Generative AI has changed the level of academic stress I experience.	☐	☐	☐	☐	☐