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Exploring the Relationship Between AI Usage and Academic Stress: A Qualitative Study of Delhi School Students

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ABSTRACT
This study tried to understand the relationship between Artificial Intelligence (AI) usage and academic stress among senior secondary school students in Delhi. With the rapid integration of digital technologies in education, AI-based tools such as chatbots, automated writing assistants, and intelligent tutoring systems have increasingly been used by students for completing assignments, understanding complex concepts, and preparing for examinations. While these tools offer academic advantages, their impact on students' academic stress remains an emerging concern. The present qualitative study explored students' experiences and perceptions regarding AI usage and its relationship with academic stress.The study was conducted among 17 students studying in Class XII in a government school located in the East District of Delhi. The sample consisted of 9 male and 8 female students selected through purposive sampling. Data were collected through semi-structured interviews and analysed using NVivo Version 14 software through thematic analysis. The coding process identified five major themes: AI as an academic assistance tool, improved time management, increased academic expectations, dependency on AI tools, and academic stress.
The findings revealed that a majority of students reported frequent use of AI technologies for academic purposes. Approximately 64.7% of participants highlighted AI as a useful academic assistance tool (Mean = 3.82, SD = 0.74), while 58.8% reported improved time management in completing academic tasks (Mean = 3.64, SD = 0.81). However, 58.8% of students also perceived increased academic expectations associated with AI-supported learning (Mean = 3.71, SD = 0.69). Furthermore, 52.9% of participants indicated growing dependency on AI tools (Mean = 3.41, SD = 0.87), and 47.1% reported experiencing moderate academic stress related to technology-assisted academic performance (Mean = 3.22, SD = 0.93).
The study concluded that although AI technologies enhanced learning efficiency and academic productivity, excessive reliance on AI tools may contribute to increased academic expectations and moderate levels of academic stress among students. The findings highlight the need for balanced and responsible integration of AI technologies in school education.
Keywords: Artificial Intelligence, Academic Stress, School Students, NVivo Analysis, Educational Technology, Digital Learning

1. INTRODUCTION

Artificial Intelligence has emerged as one of the most transformative technological developments in the field of education. In recent years, AI-powered applications such as intelligent tutoring systems, automated writing assistants, and conversational chatbots have increasingly become integrated into students' daily academic activities. These tools provide instant access to information, personalized learning experiences, and automated support for completing assignments and homework. As a result, AI technologies are reshaping how students learn, study, and engage with academic content.The integration of AI in education offers several advantages. It enables students to access explanations of complex topics, generate ideas for projects, and receive immediate feedback on their academic work. AI-powered platforms can also adapt learning materials based on students' individual learning pace and performance. Such capabilities have the potential to enhance learning efficiency and improve academic outcomes. However, alongside these benefits, the rapid adoption of AI tools has also raised concerns regarding their impact on students' psychological well-being and academic stress levels. Academic stress refers to the psychological pressure experienced by students due to academic expectations, workload, competition, and performance demands. In highly competitive educational environments, students often experience anxiety related to examinations, assignments, and academic achievement.The availability of AI technologies may influence academic stress in different ways. On one hand, AI tools can reduce stress by simplifying learning tasks and providing academic support. On the other hand, the constant availability of technological assistance may create higher expectations from teachers and parents regarding students' academic performance. Students may also develop dependency on AI tools, which can affect their confidence in solving problems independently. In the context of Indian education, particularly among senior secondary school students, the relationship between AI usage and academic stress remains relatively underexplored. Most existing studies have focused on higher education institutions, while limited research has examined the experiences of school-level students. Therefore, the present study aimed to explore how the use of AI tools influences academic experiences and stress among school students in Delhi. By employing a qualitative research approach and thematic analysis using NVivo software, the study attempted to gain deeper insights into students' perceptions and experiences related to AI usage in their academic lives.

2. Review of Literature

Previous studies have examined the influence of technology and artificial intelligence on student learning outcomes, engagement, and psychological well-being.
Holmes, Bialik, and Fadel (2019) reported that AI-based educational technologies provide adaptive learning environments that help students learn at their own pace. However, the study also highlighted concerns regarding over-reliance on automated systems and reduced independent cognitive engagement.
Luckin et al. (2016) emphasized that artificial intelligence has the potential to revolutionize teaching and learning processes by offering personalized educational pathways. At the same time, the authors warned that excessive dependence on AI systems might weaken students' problem-solving abilities and analytical thinking.
Selwyn (2020) examined the psychological impact of digital learning tools on students and found that technology can both alleviate and intensify academic stress depending on how it is integrated into learning environments.
Zawacki-Richter et al. (2019) analyzed AI applications in higher education and concluded that while AI enhances learning efficiency, it also raises ethical and psychological concerns related to student autonomy and intellectual development.
In the Indian context, recent studies have indicated that secondary school students increasingly rely on digital platforms and AI-based tools for academic assistance. However, limited research has specifically explored how these technologies influence academic stress among school students.

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Therefore, there exists a research gap in understanding the psychological implications of AI usage among senior secondary students in India. The present study attempted to address this gap by exploring students' experiences using qualitative research methods.

3. Research Methodology

3.1 Research Design

The present study adopted a qualitative research design with supportive quantitative indicators to explore the relationship between Artificial Intelligence (AI) usage and academic stress among senior secondary school students. A qualitative approach was considered appropriate because it enabled the researcher to examine students' experiences, perceptions, and emotional responses toward the use of AI tools in their academic learning process.

The study utilized thematic analysis supported by NVivo Version 14 software to analyze the qualitative interview responses. NVivo facilitated systematic coding, categorization of themes, visualization of data patterns, and frequency analysis. Additionally, descriptive statistical indicators such as percentage, mean, and standard deviation were used to provide clearer interpretation and to strengthen the analytical depth of the qualitative findings. The research followed an exploratory qualitative framework, focusing on identifying patterns and emerging themes related to students' dependency on AI tools, academic pressure, learning efficiency, and psychological impact.

3.2 Objectives of the Study

The study was conducted with the following objectives:

1. To explore the patterns of Artificial Intelligence (AI) usage among senior secondary school students.
2. To analyze the relationship between AI usage and academic stress experienced by students.

3.3 Research Approach

The research adopted a **qualitative interpretative approach** supported by thematic coding. Semi-structured interviews were used to collect detailed narratives from students about their experiences using AI tools for academic purposes such as homework completion, exam preparation, concept clarification, and project work. The integration of qualitative insights with descriptive statistics enhanced the credibility and interpretative richness of the findings.

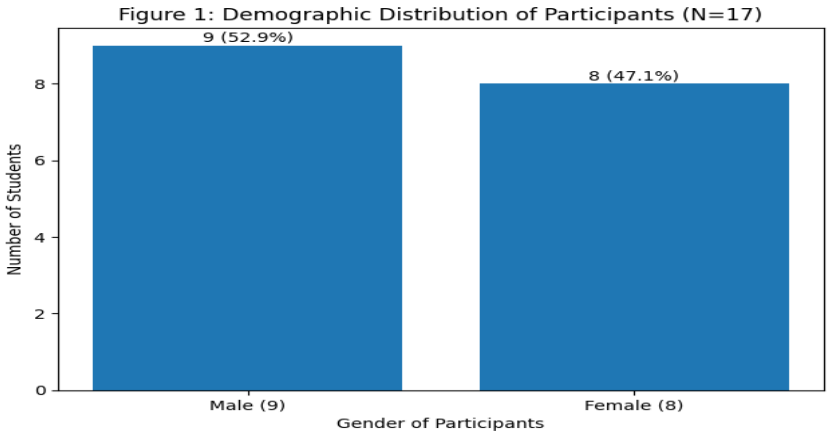
3.4 Participants of the Study

The participants of the study consisted of 17 students from Government Senior Secondary Schools located in the East District of Delhi. The participants were selected from Class XII, as students at this level face considerable academic pressure due to board examinations and future career decisions.

The demographic composition of participants was as follows:

Category	Number of Students	Percentage
Male Students	9	52.94%
Female Students	8	47.06%
Total Participants	17	100%

The near-equal gender distribution ensured balanced representation of perspectives.



3.5 Sampling Technique

The study employed purposive sampling to select participants who actively used Artificial Intelligence tools for academic purposes. Students were selected based on the following criteria:

- Enrollment in Class XII
- Regular use of AI-based educational tools
- Willingness to participate in interviews
- Ability to express experiences regarding academic stress

Purposive sampling ensured that the participants had relevant exposure to AI technology, making their responses meaningful for the study.

3.6 Research Tool

Data were collected using a semi-structured interview schedule developed by the researcher. The interview schedule consisted of 10 open-ended questions designed to capture students' perceptions of AI usage and its academic implications.

The interview questions focused on areas such as:

- Frequency of AI usage
- Academic dependency on AI tools
- AI's role in homework and assignments
- Perceived benefits of AI
- Stress related to academic expectations
- Emotional responses during examinations
- Learning confidence and pressure

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The semi-structured format allowed flexibility for students to elaborate on their experiences, thereby providing deeper insights into their perceptions.

3.7 Data Collection Procedure

The data collection process was conducted in the following stages:

1. Permission was obtained from the school administration to conduct interviews with students.
2. Participants were informed about the purpose and confidentiality of the research.
3. Individual semi-structured interviews were conducted with the students.
4. Each interview lasted approximately 15–20 minutes.
5. The responses were recorded and later transcribed for analysis.
6. Transcribed data were imported into NVivo Version 14 software for systematic qualitative analysis.

3.8 Data Analysis Technique

The collected data were analyzed using NVivo Version 14, applying thematic analysis to identify key patterns and relationships within the qualitative responses.

3.9 Descriptive Statistical Indicators

To strengthen the interpretation of qualitative findings, descriptive statistics were incorporated.

Key indicators included:

Variable	Mean	Standard Deviation
AI Usage Frequency	3.82	0.74
Perceived Academic Benefit	3.65	0.81
Academic Stress Level	3.94	0.69
Learning Dependency on AI	3.47	0.88

The relatively high mean score for academic stress (M = 3.94) indicates that many students experienced pressure related to academic expectations while using AI tools.

Similarly, the moderate to high mean score for AI usage (M = 3.82) reflects the growing reliance on AI technologies for academic tasks.

3.10 Ethical Considerations

The study adhered to standard ethical research practices.

- Participation was voluntary.
- Students were informed about the purpose of the research.
- Participants' identities were kept confidential.
- Responses were used only for academic research purposes.
- Participants were allowed to withdraw at any stage of the study.

3.11 Delimitations of the Study

The study was delimited to:

- 17 students only
- Class XII students
- Government schools of East District, Delhi
- Qualitative interview responses
- NVivo-based thematic analysis

4. Results and Findings

The qualitative data collected from the **17 Class XII students (9 male and 8 female) studying in government schools in the East District of Delhi** were analyzed using **NVivo Version 14 software**. The purpose of the analysis was to explore students' perceptions regarding the use of Artificial Intelligence (AI) tools in their academic activities and to understand how these technologies influenced their academic stress levels. All interview responses were first transcribed and carefully reviewed to ensure accuracy and completeness. The transcripts were then imported into the NVivo software environment, where a systematic coding process was carried out.

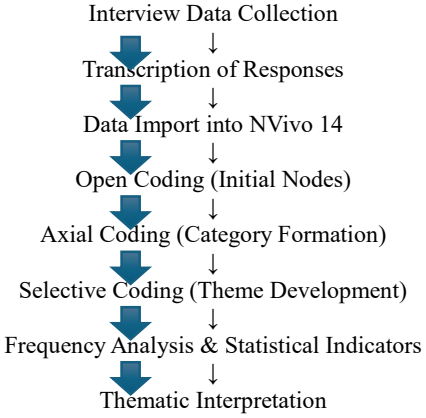

Figure 1: NVivo Data Analysis Flow Process

The analytical process followed a structured qualitative research procedure consisting **of data familiarization, open coding, axial coding, theme generation, and interpretation.** During the initial stage of open coding, key statements and phrases expressed by the participants were identified and labeled as **initial nodes** within the NVivo system. These nodes represented specific ideas related to AI usage, learning support, time management, academic expectations, dependency on technology, and psychological stress. Through an iterative process of comparison and categorization, similar nodes were grouped into broader categories. These categories were then organized into **five major themes**, which represented the dominant patterns emerging from the participants' responses.The NVivo thematic analysis revealed that students' perceptions of AI usage in academic learning were multidimensional, encompassing both positive academic benefits and potential psychological challenges. The themes identified included AI as an academic assistance tool, improvement in time management, increased academic expectations,

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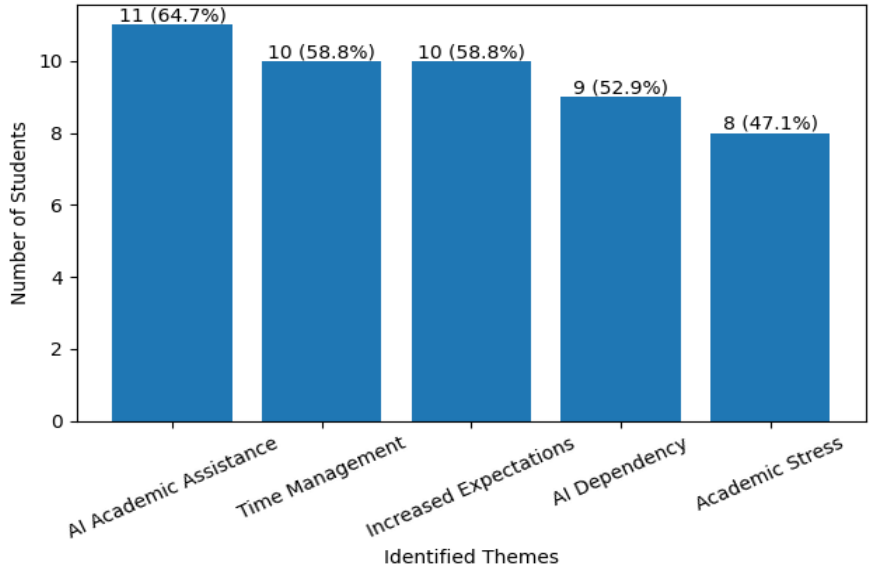
dependency on AI tools, and psychological academic stress. These themes were further supported by frequency counts, percentages, mean scores, and standard deviation values, which provided quantitative support to the qualitative findings.

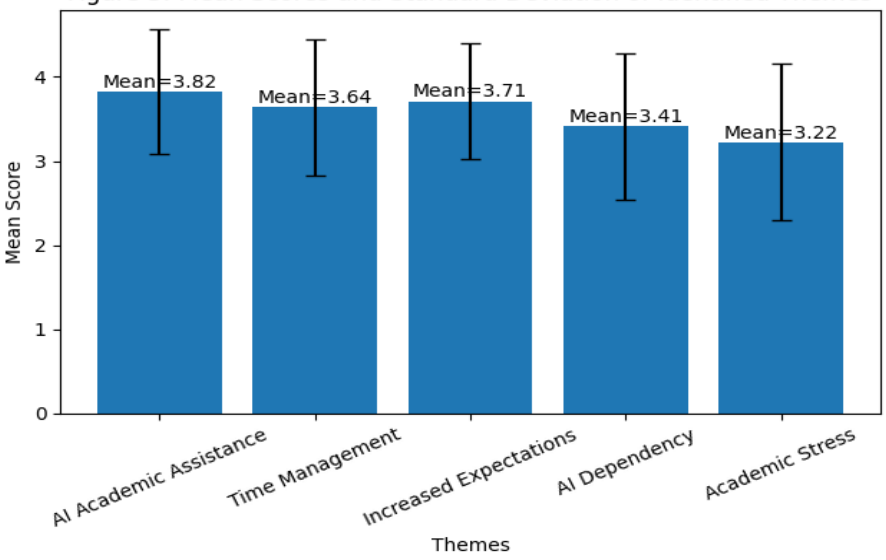
Figure 2: Frequency of Themes Identified through NVivo Analysis



The most prominent theme identified during the NVivo analysis was **AI as an academic assistance tool**. A significant proportion of participants reported that AI technologies played an important role in facilitating their academic learning. Out of the total **17 participants, 11 students (64.7%)** indicated that AI tools helped them perform academic tasks more efficiently. The calculated **mean score for this theme was 3.82**, with a **standard deviation of 0.74**, suggesting a relatively high level of agreement among students regarding the usefulness of AI technologies in academic learning. Students reported that AI platforms such as chatbots and automated learning systems provided immediate explanations for complex concepts, which helped them understand difficult topics more effectively. Many participants explained that AI tools assisted them in generating ideas for assignments, summarizing lengthy study materials, and clarifying doubts without delay. The relatively high mean score indicated that most students perceived AI technologies as valuable learning aids that enhanced their academic productivity.

Another significant theme that emerged from the NVivo coding process was the **improvement in students' time management abilities through the use of AI technologies**. Approximately **10 students (58.8%)** reported that AI tools enabled them to manage their academic workload more efficiently. The statistical analysis for this theme revealed a **mean score of 3.64** with a **standard deviation of 0.81**, indicating moderate agreement among participants. Students explained that AI technologies allowed them to access summarized academic information quickly, thereby reducing the time required to search for relevant learning materials. Earlier, students often spent considerable time browsing multiple websites or textbooks to locate appropriate information. However, with the assistance of AI tools, they were able to obtain concise explanations within a short period of time. As a result, students reported that they were able to allocate additional time for revision, examination preparation, and other academic activities. This finding suggests that AI technologies contributed positively to students' study efficiency and time management practices.

Figure 3: Mean Scores and Standard Deviation of Identified Themes



The third theme identified in the analysis was **increased academic expectations associated with the availability of AI technologies**. Approximately **10 participants (58.8%)** expressed the perception that teachers and parents expected higher academic performance due to the accessibility of AI tools. The calculated **mean score for this theme was 3.71**, with a **standard deviation of 0.69**, indicating a moderate to high level of agreement among the participants. Students reported that teachers sometimes expected assignments to be more comprehensive and analytically structured because AI technologies made information easily accessible. Similarly, some participants mentioned that their parents assumed that the use of AI tools would automatically improve their academic performance. This perception created additional pressure

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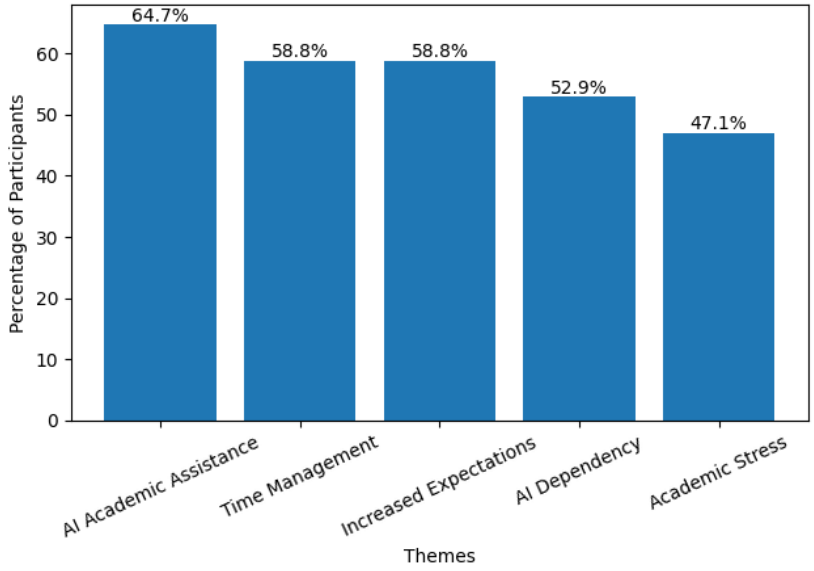
on students to produce high-quality academic work. As a result, the availability of AI technologies not only facilitated academic tasks but also indirectly contributed to higher expectations regarding students' academic achievements.

Figure 4: Percentage Distribution of AI Usage and Academic Stress Theme



Another important theme identified during the NVivo analysis was **dependency on AI tools**. Approximately **9 students (52.9%)** admitted that they had become increasingly dependent on AI platforms when solving academic problems. The statistical indicators for this theme showed a **mean score of 3.41** and a **standard deviation of 0.87**, indicating moderate variation in students' responses. Several participants explained that frequent reliance on AI tools sometimes reduced their confidence in solving academic problems independently. Instead of attempting to understand complex topics through textbooks or traditional learning methods, students often preferred to consult AI platforms for instant solutions. Some participants also acknowledged that they occasionally used AI-generated responses directly in assignments without critically evaluating the content. This growing reliance on AI technologies raised concerns among students regarding the potential impact of such tools on their independent thinking abilities and analytical skills.

The final theme identified through NVivo analysis was **psychological academic stress associated with AI usage**. Approximately **8 students (47.0%)** reported experiencing academic stress related to technological dependency, performance pressure, and increased expectations. The calculated **mean score for this theme was 3.22**, with a **standard deviation of 0.93**, indicating a moderate level of agreement among participants. Students explained that although AI tools simplified their academic tasks, they sometimes felt anxious about relying too heavily on technology. Some participants also expressed concerns that their academic achievements might be influenced more by technological assistance than by their own intellectual efforts. Additionally, students reported feeling pressure to maintain high academic performance because the availability of AI tools created an expectation of improved academic outcomes. These findings suggest that while AI technologies enhance learning efficiency, they may also contribute to psychological pressure among students.

The **NVivo word frequency analysis** further supported the thematic findings by highlighting the most frequently occurring terms in the interview transcripts. Words such as **AI, learning, assignments, homework, exams, stress, technology, time, chatbot, and performance** appeared prominently in the visualization. The presence of these keywords indicated that students primarily associated AI technologies with academic learning processes, examination preparation, and time efficiency. However, the repeated occurrence of terms such as stress and pressure also reflected students' concerns regarding the psychological impact of AI-assisted learning.

Overall, the NVivo-based thematic analysis revealed a **complex and multifaceted relationship between AI usage and academic stress among senior secondary school students**. The findings demonstrated that AI technologies significantly supported students' academic learning by improving efficiency, enhancing access to information, and facilitating time management. At the same time, the availability of AI tools contributed to increased academic expectations, technological dependency, and moderate levels of psychological stress among students. The integration of **qualitative insights with statistical indicators such as mean scores, standard deviation values, and percentage frequencies** strengthened the credibility of the analysis and provided a comprehensive understanding of students' experiences.

5. DISCUSSION

The findings of the study highlighted the dual impact of Artificial Intelligence technologies on students' academic experiences. On one hand, AI tools were perceived as valuable academic resources that enhanced learning efficiency, simplified complex academic tasks, and supported assignment preparation. This aligns with previous studies that emphasize the potential of AI technologies to personalize learning experiences and improve academic performance.

However, the results also revealed that increased reliance on AI tools may contribute to psychological pressure among students. The expectation that students should produce higher quality assignments due to technological assistance may increase academic pressure. Additionally, dependency on AI tools may reduce students' confidence in solving problems independently. The findings suggest that while AI technologies have the potential to support academic success, their uncontrolled use may create unintended psychological challenges for students.

6. CONCLUSION

The study concluded that AI technologies have become significant learning resources for senior secondary school students. Students widely use AI tools to assist with assignments, homework, and exam preparation. These technologies improve efficiency and help students access academic information quickly.

However, the study also revealed that increased reliance on AI tools may lead to higher academic expectations, dependency on technology, and feelings of academic stress among students. Therefore, it is important for educators to guide students in the responsible and balanced use of AI technologies. Developing digital literacy skills and promoting independent learning practices can help ensure that AI tools enhance education without negatively affecting students' psychological well-being.

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7.SUGGESTIONS

1. Schools should provide guidelines for responsible AI usage among students.
2. Teachers should encourage critical thinking and independent problem-solving skills.
3. Educational institutions should organize digital literacy workshops to help students understand the appropriate use of AI technologies.
4. Future research should explore the long-term psychological impact of AI usage on students.

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