



A COMPARATIVE STUDY ON THE IMPACT OF GENERATIVE AI TOOLS ON LEARNING BEHAVIOUR AND TECHNICAL SKILLS AMONG STUDENTS AND WORKING PROFESSIONALS

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Abstract: This research compares how Generative AI tools such as ChatGPT, Gemini, and GitHub Copilot influence both students and working professionals. While students mainly use AI for learning, assignments, and coding practice, working professionals use it for productivity, automation, report writing, debugging, and decision support. A total of 80 participants were surveyed. Results indicate AI improves productivity for professionals and learning convenience for students, but also increases dependency and reduces independent problem-solving abilities across both groups.

I. INTRODUCTION

Generative Artificial Intelligence (AI) tools such as ChatGPT, Gemini, and GitHub Copilot have rapidly transformed the way individuals learn, work, and interact with digital information. These tools are increasingly used across academic and professional environments due to their ability to generate human-like responses, assist with complex tasks, and provide instant solutions. As the adoption of AI continues to expand, both students and working professionals are integrating such tools into their daily activities to enhance efficiency and reduce cognitive load. For students, Generative AI has become a convenient learning companion. It is frequently used for writing assignments, understanding difficult concepts, preparing for examinations, and generating or debugging code. Similarly, working professionals across IT and non-IT sectors use Generative AI to automate repetitive tasks, draft emails and reports, assist with coding, and improve decision-making processes.

II. PROBLEM STATEMENT

The rapid adoption of Generative AI tools such as ChatGPT, Gemini, and GitHub Copilot has transformed learning and workplace practices. While these tools enhance efficiency, skill development, and convenience, they also raise concerns about dependency, reduced critical thinking, and job-related anxiety. Existing research often examines either students or professionals in isolation, leaving a gap in comparative understanding across both groups. Furthermore, inadequate training and limited awareness of AI policies hinder responsible usage. This study therefore investigates the dual impact of Generative AI on learning behaviour and technical skills among students and working professionals.

III. OBJECTIVES OF RESEARCH

- To study the patterns of Generative AI usage among students and working professionals.
- To examine the relationship between Generative AI usage and learning behaviour, productivity, and technical skill development.
- To analyse the positive impacts of Generative AI tools on academic performance and workplace efficiency.
- To analyse the negative impacts of Generative AI tools, including dependency, reduced problem-solving ability, and risk of incorrect outputs

IV. HYPOTHESIS OF STUDY

1) Null Hypothesis(H₀): There is no significant relationship between the use of Generative AI tools and the learning behaviour or technical skill development of students and working professionals.
Alternative hypothesis(H₁): There is a significant relationship between the use of Generative AI tools and the learning behaviour or technical skill development of students and working professionals.

2) Null Hypothesis(H₀): Generative AI usage does not significantly affect productivity, independent problem-solving ability, or task-completion behaviour among students and working professionals.
Alternative hypothesis(H₁): Generative AI usage significantly affects productivity, independent problem-solving ability, and task-completion behaviour among students and working professionals.

3) Null Hypothesis(H₀): There is no significant relationship between the frequency of Generative AI usage and the amount of time saved by users.
Alternative hypothesis(H₁): There is a significant relationship between the frequency of Generative AI usage and the amount of time saved by users.

4) Null Hypothesis(H₀): Generative AI usage does not significantly influence the confidence levels of students and working professionals in performing academic or workplace tasks.
Alternative hypothesis(H₁): Generative AI usage significantly enhances the confidence levels of students and working professionals in performing academic or workplace tasks.

V. SIGNIFICANCE OF STUDY

This study will contribute to a clearer understanding of how Generative AI tools impact the learning behaviour and technical skill development of students and working professionals. The insights gathered will help educators, institutions, and organizations identify both the benefits and the risks associated with AI-assisted learning and work practices. The findings can support the development of AI literacy programs that promote responsible and effective use of Generative AI tools. They can also guide policymakers, academic institutions, and corporate leaders in designing training modules, usage guidelines, and support systems that ensure AI improves productivity without reducing independent thinking or essential skills. Additionally, this research can help organizations and educational institutions refine their AI governance policies, address concerns related to dependency, data privacy, and accuracy, and encourage balanced, ethical, and mindful AI adoption among different user groups.

VI. LITERATURE REVIEW

● **Adoption in Education** Studies show that students increasingly use Generative AI tools like ChatGPT and GitHub Copilot for assignments, coding practice, and exam preparation, offering faster comprehension of complex topics (Zhang & Lu, 2022).

● **Workplace Productivity** Research highlights that professionals benefit from AI through automation, report writing, and debugging, which significantly improves efficiency and reduces repetitive tasks (Park et al., 2022; Rudolph et al., 2023).

- **Positive Impacts** Generative AI supports skill development, enhances creativity, and saves time, with many users reporting improved confidence in handling technical and academic tasks (Dwivedi et al., 2023).
- **Negative Impacts** Excessive reliance on AI reduces independent problem-solving, critical thinking, and originality, raising concerns about long-term skill erosion (Sharma & Gupta, 2021).
- **Cognitive Offloading Theory** This theory explains how users shift mental effort onto AI systems, improving efficiency but weakening independent reasoning (Rahwan et al., 2019).
- **Uses and Gratifications Theory** Motivations differ across groups: students seek learning support, while professionals prioritize productivity, automation, and decision-making (Davenport & Ronanki, 2018).
- **Concerns and Risks Literature** emphasizes risks such as AI hallucinations, biased outputs, data privacy issues, and job insecurity, which hinder responsible adoption (Gilson et al., 2023).
- **Training and Policy Gaps** Many organizations and institutions lack structured AI training and clear usage policies, leaving users uncertain about ethical and safe practices (Brynjolfsson & McAfee, 2017).
- **Research Gap** Most studies focus on either students or professionals separately, with limited comparative analysis across both groups. This gap highlights the need for integrated research to understand AI's dual impact on learning behaviour and workplace performance

VII. RESEARCH METHODOLOGY

Research Design:

This study adopts a quantitative, cross-sectional survey design to assess how students and working professionals use Generative AI tools and how these tools influence their learning behaviour, productivity, and technical skill development. This study adopts a quantitative, cross-sectional survey design to assess how students and working professionals use Generative AI tools and how these tools influence their learning behaviour, productivity, and technical skill development.

Data Collection Tool:

Data was collected using a structured online questionnaire created and distributed through Google Forms. This method ensured easy accessibility, wider reach, and the ability to gather responses efficiently from both students and working professionals across various fields.

The survey will comprise the following sections:

- **Demographic Information:**

This section will collect basic background data including:

- Age
- Gender
- Occupation (Student / Working Professional)

- **Generative AI Usage Patterns:**

- Tools used (e.g., ChatGPT, Gemini, GitHub Copilot)
- Frequency of usage (daily, weekly, monthly)
- Average time saved per week (hours)
- Impact on skills/learning (positive, negative)

Ethical Considerations:

Participation in the survey was entirely voluntary, and responses were collected anonymously, ensuring confidentiality. An informed consent statement was included in the form, informing participants about the purpose of the study and assuring them that their data would be used strictly for academic research.

VIII. PROPOSED WORK

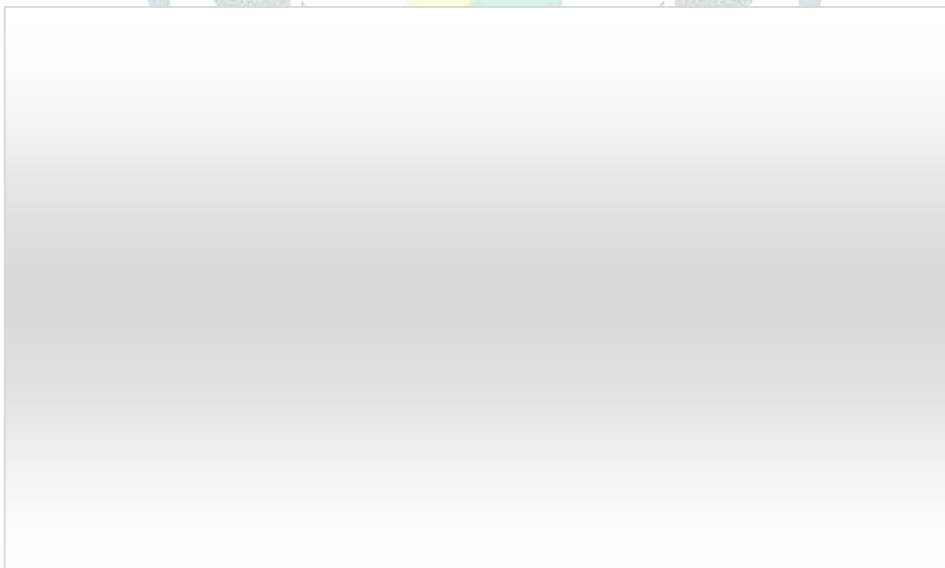
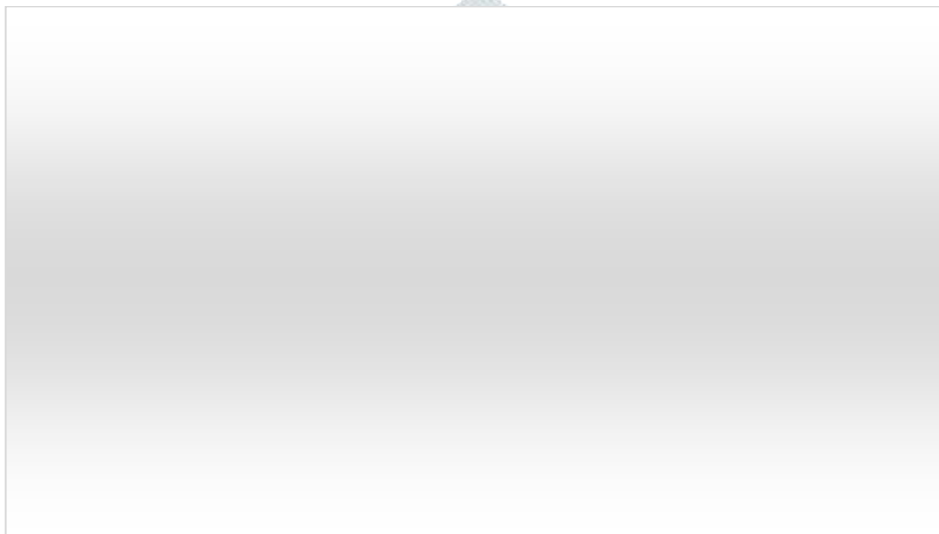
An online survey of 70 participants was taken via google forms with their consent and anonymous responses.

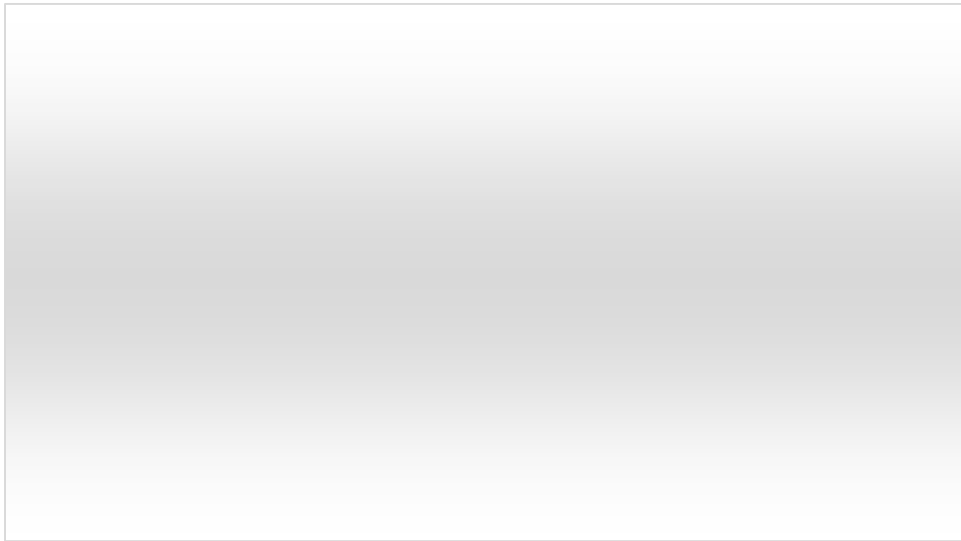
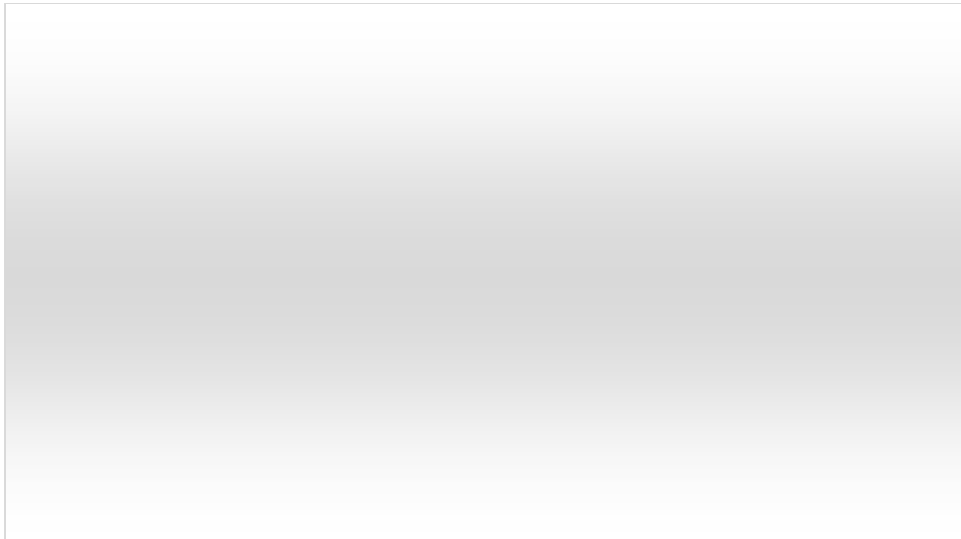
Questionnaire-

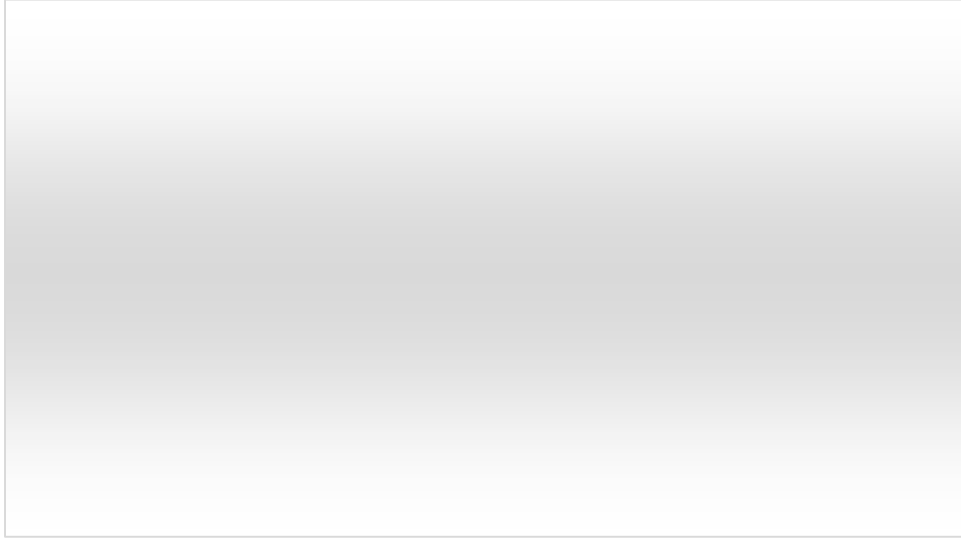
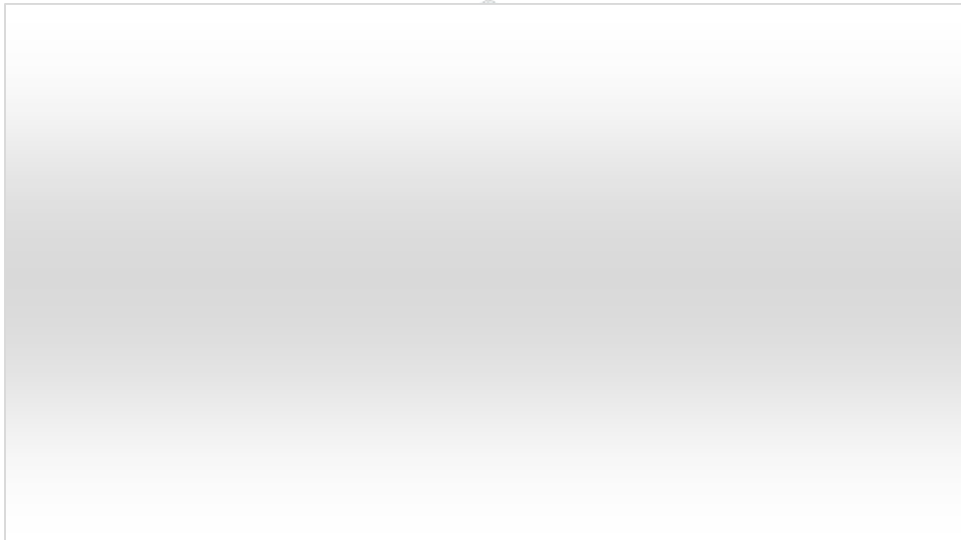
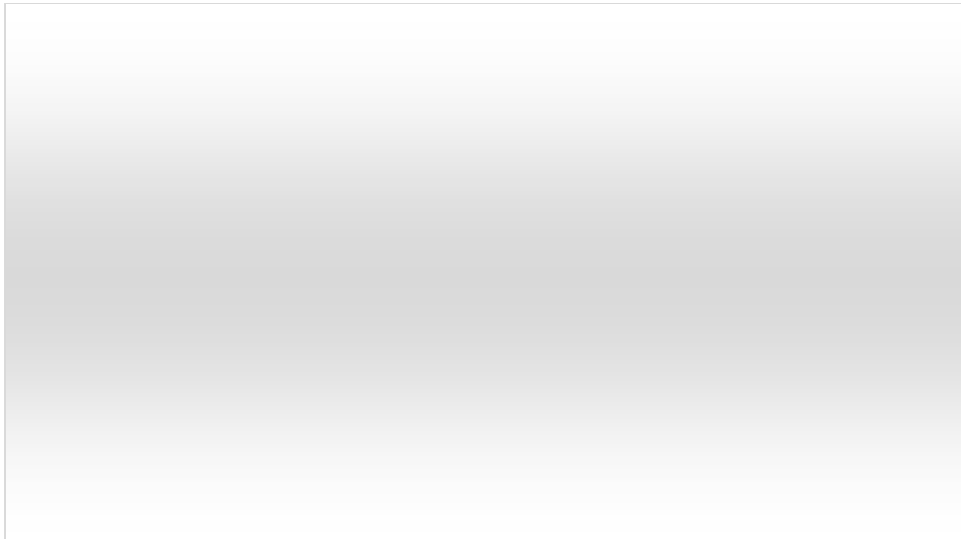
- 1) What is your primary job function/department?
- 2) How often are you currently using AI-powered tools or platforms in your work?
- 3) Which of the following Gen AI tools or technologies have you used for work-related tasks?

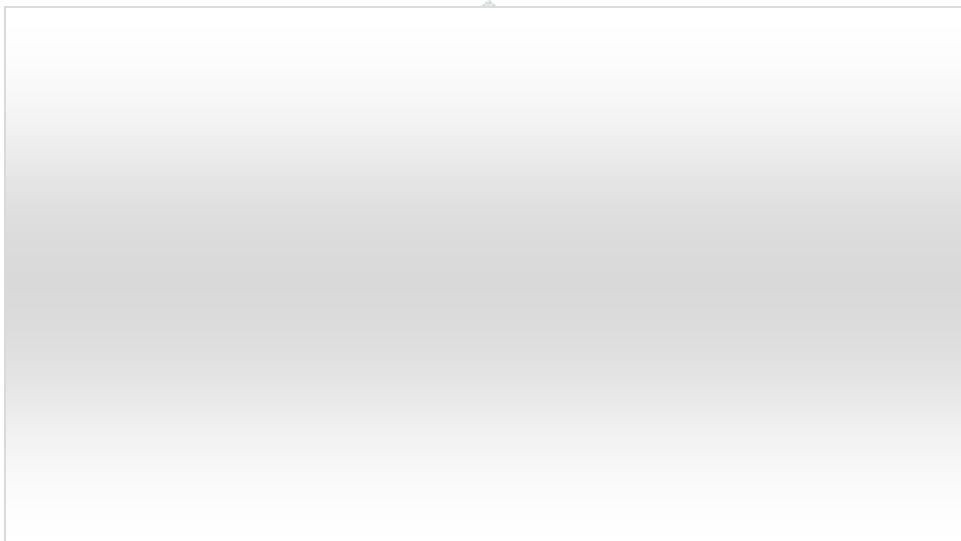
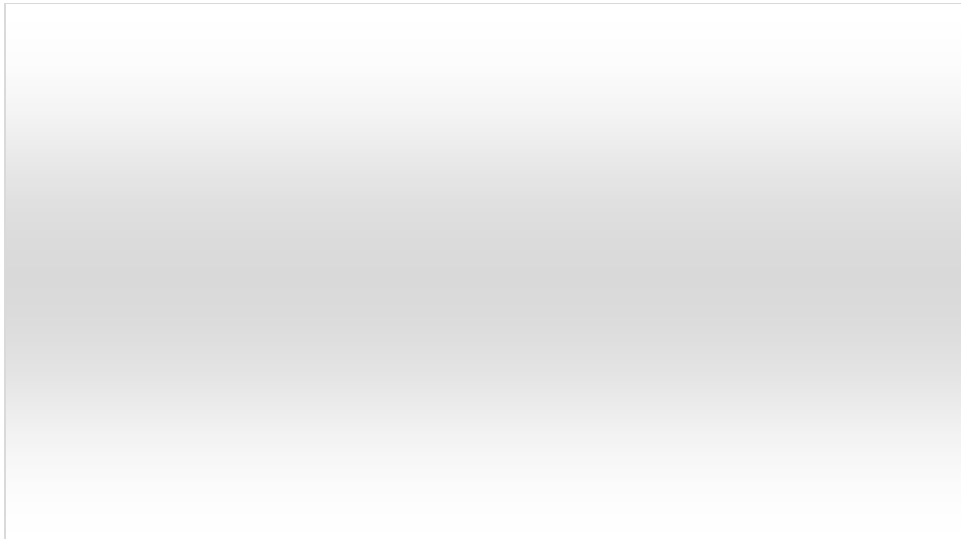
- 4) Approximately how much time do you save per week using Generative AI tools?
- 5) If you save time using AI, do you receive explicit guidance on how to repurpose that saved time for strategic or high-value tasks?
- 6) How would you rate your understanding of Gen AI applications relevant to your job? (1=Very Poor, 5=Excellent)
- 7) How well do you understand our company's current Gen AI usage policies (e.g., regarding data privacy and IP)? (1=Very Poor, 5=Excellent)
- 8) To what extent do you feel you have received adequate training/guidance on using AI effectively and responsibly? (1=Not at all adequate, 5=Fully adequate)
- 9) What is currently blocking you from adopting AI in your role, or what concerns you most? (Select all that apply)
- 10) I am concerned that my current job role may entirely change or disappear due to Gen AI within the next 10 years.

IX. DATA ANALYSIS AND INTERPRETATION









X. FINDINGS AND SUGGESTIONS

Findings:

- **Frequent AI Usage:** Most respondents from IT and student groups use Generative AI tools daily or weekly.
- **Common Tools:** ChatGPT, Google Gemini, and Internal Co-pilot are the most widely used tools.
- **Time Savings:** Majority of participants save 1–3 hours per week, while several save 4–8 hours using AI tools.
- **Policy Awareness:** Understanding of company AI policies is generally average, indicating a need for clearer communication.
- **Training Gap:** Many respondents feel they have not received adequate training on responsible and effective use of AI.
- **Major Concerns:** The most common concerns include data security, job anxiety, AI hallucinations, and lack of training.

Suggestions:

- **Provide AI Training Workshops:** Organizations should offer basic and role-specific training on using AI tools safely and effectively.
- **Improve Policy Awareness:** Clear communication about data privacy and allowed AI practices is needed.
- **Support mental health conversations to reduce stigma**
- **Guide Use of Saved Time:** Managers should help employees redirect AI-saved time towards high-value tasks.
- **Skill Development Programs:** Conduct sessions to reduce job insecurity and encourage upskilling.
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XI. REFERENCES

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