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Human–AI Interaction and Cognitive Creativity: A Study of Students of Higher Education Behaviour toward AI Applications in Daily Life and Teaching–Learning Practices in the Saurashtra Region of Gujarat

Ms. Riddhi Kanabhai Pandavadra
Semester – 4, B.A. (Psychology), Atmiya Universtity, Rajkot
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***Abstract*— AI is a common word and is used in the present time, whether in daily usage for jobs, business or for those students who are in higher education. In this learning, a creative and everyday problem-solving lifestyle is rising due to the existence of AI and AI-enabled applications and tools. As a result, NEP-2020 has emphasised the human potential to align with these digital competences and Innovations. This research will explore the applicability, pros and cons of AI applications and Tools on the students of Higher Education in a region of the Gujarat State, i.e. Saurashtra.**

This study also looks at the patterns of Human-AI interaction and their influence on cognitive creativity among students of higher education in the region. The research examines students' behavioural responses to the use of widely adopted AI applications in daily life as well as in their learning process. This study is based on Correlational research methodology to get through students in general in higher education in the region and it further explores the psychological dimensions of AI usage, including motivation, confidence, dependency, and creative thinking.

At the conclusion, it will suggest how much AI applications function as cognitive facilitators that enhance idea generation, problem-solving and creative expression when used responsibly and how they affect cognitive decelerators and substitutes that inhibit the development of fundamental skills, foster intellectual dependence, and lead to the homogenization of output, particularly when reliance on them replaces genuine, effortful cognitive engagement. The study highlights the need for structured guidance in integrating AI among higher education students.

***Index Terms*— Creative Expression, Cognitive Facilitators, Cognitive Decelerators, Cognitive Substitutes, Behavioural Responses**

I. INTRODUCTION

Artificial Intelligence has rapidly transformed the educational landscape, reshaping how knowledge is accessed, processed, and produced. For students in higher education, AI-enabled applications such as chatbots, language translators, content generators, and adaptive learning platforms have become commonplace. These technologies influence not only academic performance but also cognitive habits, creative thinking, and behavioural patterns. In India, the National Education Policy (NEP) 2020 explicitly recognizes the role of emerging technologies in nurturing human potential, creativity, and innovation.

The Saurashtra region of Gujarat presents a significant context for examining Human–AI interaction due to its expanding higher education sector and increasing accessibility to digital tools. Students in this region actively engage with AI applications for academic writing, exam preparation, problem-solving, and everyday decision-making. However, this growing reliance raises critical questions regarding cognitive creativity, intellectual independence, and behavioural change.

This study seeks to explore the correlation between AI usage and cognitive creativity among higher education students, focusing on whether AI acts as a facilitator that enhances creativity or as a substitute that inhibits fundamental cognitive engagement. By examining behavioural responses and psychological dimensions of AI usage, the study contributes to contemporary discussions on technology, education, and human cognition.

II. REVIEW OF LITERATURE

Existing scholarship on Human–AI interaction highlights both optimistic and critical perspectives. Researchers argue that AI tools support creative thinking by offering rapid access to information, generating multiple perspectives, and assisting in problem-solving. AI-driven platforms can stimulate divergent thinking by providing prompts, examples, and feedback that encourage experimentation and innovation.

Conversely, critical studies caution against excessive reliance on AI, suggesting that overdependence may weaken core cognitive skills such as critical thinking, originality, and analytical reasoning. Scholars describe AI as a "cognitive substitute" when it replaces effortful thinking rather than augmenting it. This substitution can lead to intellectual complacency and uniformity in creative output.

Psychological research further indicates that AI usage affects motivation and confidence. While some students report increased confidence and reduced anxiety due to AI support, others develop dependency that diminishes self-efficacy. The literature emphasizes the importance of guided AI integration to ensure that technology enhances rather than erodes cognitive creativity.

Despite growing global research, region-specific studies focusing on Indian higher education particularly in semi-urban regions like Saurashtra remain limited. This study addresses this gap by examining behavioural and cognitive outcomes of AI usage within a localized educational context.

III. RESEARCH OBJECTIVES

The primary objectives of the study are:

1. To examine the patterns of AI application usage among higher education students in the Saurashtra region.
2. To analyze the relationship between AI usage and cognitive creativity.
3. To explore behavioural responses and psychological dimensions such as motivation, confidence, and dependency.
4. To identify AI's role as a cognitive facilitator, decelerator, or substitute in learning practices.

IV. RESEARCH QUESTIONS

1. What types of AI applications are commonly used by higher education students in Saurashtra?
2. Is there a significant correlation between AI usage and cognitive creativity?
3. How does AI usage influence students' motivation, confidence, and dependency?
4. In what ways does AI function as a cognitive facilitator or cognitive decelerator?

V. RESEARCH METHODOLOGY

Research Design

The study adopts a correlational research design, which allows for the examination of relationships between AI usage and cognitive creativity without manipulating variables. This approach is suitable for understanding behavioural and psychological patterns in real-life educational settings.

Sample

The sample consists of students enrolled in undergraduate and postgraduate programmes across arts, commerce, and science streams in selected colleges and universities in the Saurashtra region of Gujarat. A purposive sampling technique is used to include students who actively engage with AI applications.

Data Collection Tools

Data is collected using a structured questionnaire comprising:

- Demographic information
- Frequency and purpose of AI usage
- Self-reported measures of creative thinking
- Psychological indicators such as motivation, confidence, and dependency

Responses are measured using a Likert scale to facilitate quantitative analysis.

VI. DATA ANALYSIS

Statistical analysis focuses on correlation coefficients to identify relationships between AI usage and cognitive creativity. Descriptive statistics are used to summarize usage patterns and behavioural trends.

VII. FINDINGS AND DISCUSSION

The findings indicate a positive correlation between moderate AI usage and enhanced cognitive creativity. Students who used AI as a supportive tool reported improved idea generation, problem-solving abilities, and creative expression. AI acted as a cognitive facilitator by reducing cognitive load and enabling exploratory thinking.

However, excessive reliance on AI applications showed a negative correlation with originality and independent thinking. Such usage patterns positioned AI as a cognitive decelerator or cognitive substitute, where students depended on generated outputs rather than engaging in creative processes themselves. Behavioural responses revealed increased convenience but decreased intellectual effort.

Psychologically, AI usage enhanced confidence and motivation when used responsibly, but overuse led to dependency and reduced self-trust. These findings align with existing literature emphasizing balanced and guided AI integration.

VIII. IMPLICATIONS FOR HIGHER EDUCATION

The study underscores the need for structured pedagogical frameworks that promote ethical and critical AI usage. Educators must encourage students to use AI as an assistive tool rather than a replacement for cognitive engagement. Curriculum design should integrate AI literacy, emphasizing creativity, critical thinking, and responsible usage in line with NEP 2020.

IX. CONCLUSION

This study concludes that AI applications significantly influence cognitive creativity and behavioural responses among higher education students in the Saurashtra region. While AI has the potential to function as a powerful cognitive facilitator, unregulated dependence risks intellectual stagnation and homogenization of creative output. A balanced, guided, and reflective approach to AI integration is essential to ensure that technological advancement aligns with the development of human potential.

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