The Interplay Between Artificial Intelligence and Human Cognition

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Abstract:

The rapid advancement of Artificial Intelligence (AI) has profound implications for the human mind, influencing cognitive processes, emotional well-being, and social interactions. Nowadays, in every field, AI has been influencing. It makes the shorter path to save time and effort. This helps the faster growth and development of any field. On the other hand, overdependence on AI decreases the sharpness of creativity and also makes people lazy. The spoon-fed nature of AI is dangerous for the deep rooting of creation. Creation of something with high effort and energy makes one's mind expand to import and export more energy to discover and develop a new branch of knowledge. It creates people as a tree of knowledge. This paper examines the multifaceted impact of AI on human psychology, exploring both positive and negative effects. This study was conducted in Sivasagar district, Assam. Both Primary and Secondary data have been gathered to analyse the data. By using a simple random sampling technique, a mixed-method approach has been adopted to support the qualitative and quantitative data (quan+qual). A 5-Point Likert Scale has been used for the calculation of the responses gathered from the 100 sample. Both positive and negative impacts have been found from the analysis. QGIS is used for making the study area map. This study highlights the need for a balanced approach to AI adoption, emphasising mindful design, human-AI collaboration, and ongoing research into the psychological consequences of AI integration.

Keywords: artificial intelligence, human cognition, impact analysis, Sivasagar.

1. Introduction:

AI is the shortest and fastest way to solve a question or an exclamatory. It is the most desired application or platform for human beings. In this technological era, people are very hurried in their social, political, economic, and cultural achievements. In that manner, knowingly or unknowingly, they have started to admire spoon-fed circumstances, which leads to achieving some relaxation. Globally, AI has started to suppress the cognitive, affective, and psychomotor domains from the school to the intelligence level. AI has been continuously trying to prove the phrase "the world is a small village" (Russell &Norvig, 2021). AI is also the saviour of financial stress. From the easily accessible point of view, certain individuals recognised AI as advantageous. An AI system can be trained on large datasets to make predictions, classify objects, and generate insights. They can be applied in various fields, including Virtual assistants, Image recognition, natural language processing, robotics, and expert systems. AI tries to mimic human thinking, learning, and problem-solving abilities so that artificial intelligence is the most demanding smart system in the world. (Topol,2019).

AI is performing the role of a book, translator, operator, editor, and a system of various software. Multicriteria-based learning has become possible through artificial intelligence. Before the rapid growth and acceptance of AI, individuals were preoccupied with the root

learning of a topic for proper creativity and reflection. Now, in some cases, AI decreases the intention and attention of deep-rooted learning, which is one of the dark sides of over-dependence on Artificial intelligence. (Devlin et al. 2019). Artificial intelligence has plenty of benefits and drawbacks regarding psychological challenges in the human mind. To become based on Bloom's taxonomy, AI stands as a hindrance in various states. Cultivation of meaningful connections with the rhythm of life, the role of AI technically highly needs a broad study of the state of affairs.

Significance of the Study: The impact of Artificial Intelligence (AI) on the human mind is a complex and multifaceted phenomenon, with far-reaching implications for cognitive processes, emotional well-being, and social interactions. As AI technologies become increasingly integrated into daily life, they exert a profound influence on human psychology, shaping perceptions, attitudes, and behaviours. While AI offers numerous benefits, such as enhanced productivity and personalised learning, it also poses significant risks, including cognitive decline, social isolation, and emotional manipulation. Understanding the psychological effects of AI is crucial for developing strategies to mitigate potential harm and promote healthy human-AI collaboration. By examining the intersection of AI and human psychology, researchers can inform the design of AI systems that support human well-being, foster resilience, and promote a harmonious coexistence between humans and technology.

The study area, Sivasagar district, is historically rich. It carries the glory and pride of 600 long years of the Ahom dynasty. Educationally the district is very sound, and it has continuously been getting the best educational district award from the Assam Government for six long years. The district also offers a strong higher education environment. From the educational point of view, the study of using AI is very necessary. hence, this study signifies.

2. Study Area:

The study area covers the Sivasagar district, Assam. The population of the study is the students of Sivasagar district (adopted the students from higher educational institutes.
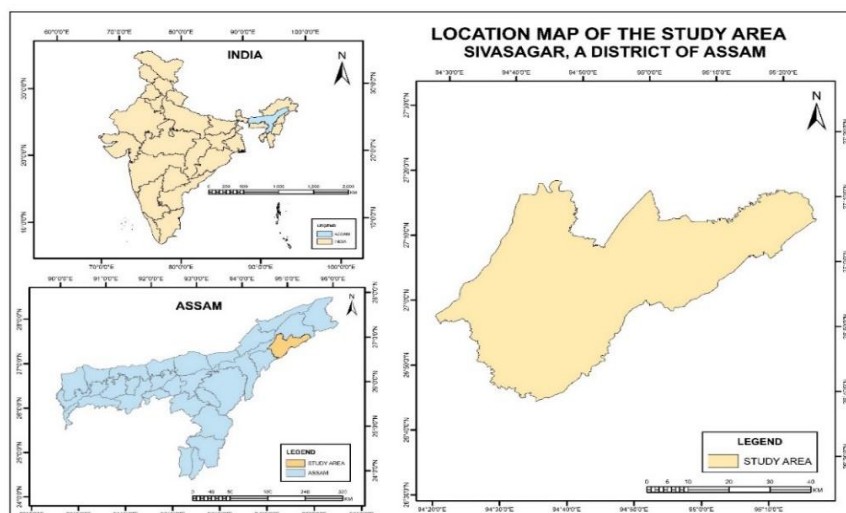

Figure 1: Map of the study area.

3. Research Questions:

1. How has AI been influencing Human cognition?

2. What are the impacts of AI on Human Cognition?

3. What could be the suggestive measures to mitigate the negative impact of AI on Human Cognition?

4. Objectives:

1. To study the impacts of Artificial Intelligence on human Cognition.

2. To suggest suitable measures to mitigate the negative impact of AI on Human Cognition.
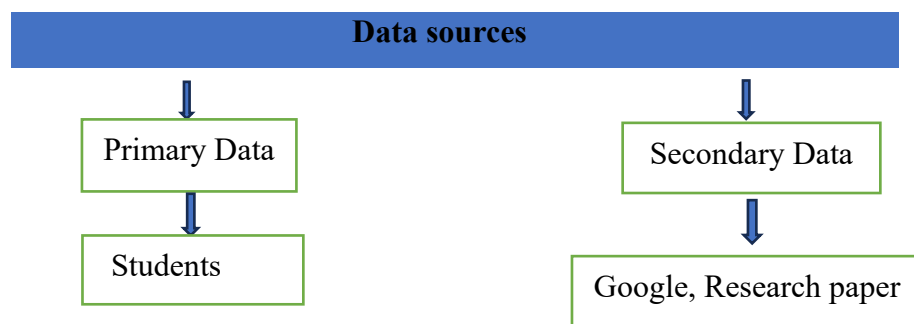
4. Literature Review:

 Existing literature related to this study has been reviewed from various published papers and articles and summarised below:

AI tools like virtual assistants (e.g., Siri, Alexa) and decision-support systems improve efficiency and accuracy in tasks (Brynjolfsson & McAfee, 2017). For example, AI-powered chatbots in customer service can resolve queries faster, reducing stress for users. AI-driven educational platforms adapt to individual learning styles, enhancing engagement and retention (Li & Chen, 2020). Platforms like Duolingo use AI to personalise language learning, improving outcomes. AI chatbots (e.g., Woebot) offer accessible mental wellness resources and coping strategies (Fitzpatrick et al., 2017). Studies show such tools reduce anxiety in users.

Overreliance on AI may reduce problem-solving skills and memory retention (Carr, 2015). Heavy smartphone uses correlates with decreased cognitive abilities in some studies. Excessive AI interaction (e.g., social media algorithms) can lead to decreased human connection and increased anxiety (Twenge & Campbell, 2018). Cyberbullying and AI-driven echo chambers are growing concerns AI systems may perpetuate biases, influencing thoughts and behaviours (Noble, 2018). Biased AI hiring tools have been shown to discriminate against certain groups.

6. Methodology:

To conduct the present study, both primary and secondary data have been collected. Primary data were collected through questionnaires, and secondary data were collected from Google and research papers. The study employs a mixed-methods approach, incorporating both qualitative and quantitative methods. A simple random sampling approach was used to gather data. The study sample size is 100.

Data sources

Primary Data → Students

Secondary Data → Google, Research paper

7. Results and Discussion:

To analyse the effects of Artificial Intelligence on human Cognition, data has been collected from 100 students (from different schools of different universities) who are aware of using AI.

A 5-point Likert Scale is being used to analyse the information gathered through the questionnaire. Accordingly, the 5-point range is from 1-5.

Here,

1 = Strongly Agree 2= Agree 3= Neutral 4 = Disagree 5= Strongly disagree.

(Calculation = individual points gathered through responses multiplied by the indexed value).
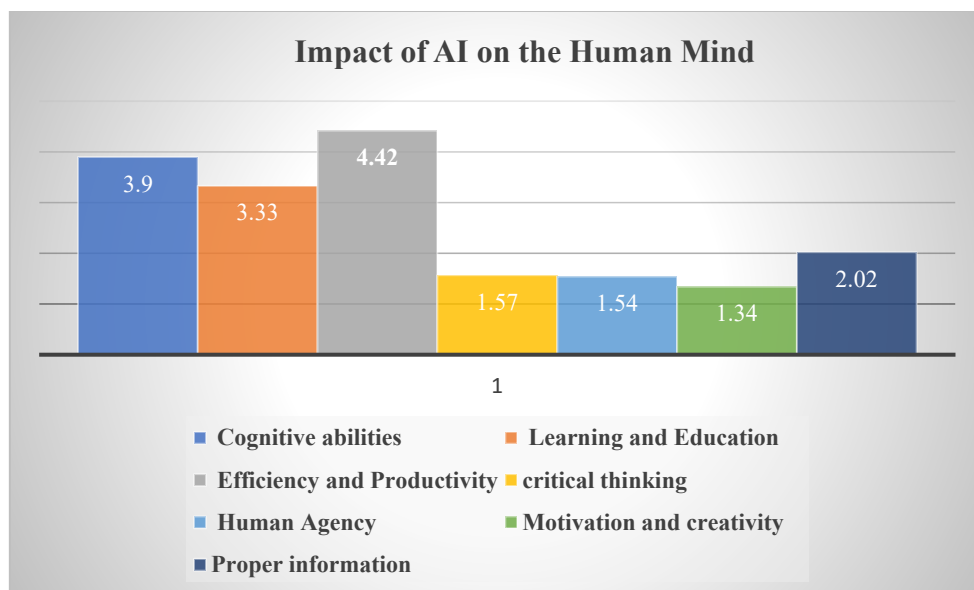
Table 1: Impact of AI on the human mind.

Impacts	Index					Total	Mean
	1	2	3	4	5		
Cognitive abilities	-	-	22	66	12	390	3.90
Learning and Education	-	8	12	54	13	333	3.33
Efficiency and Productivity	-	-	14	30	56	442	4.42
critical thinking	50	43	7	-	-	157	1.57
Human Agency	48	50	2	-	-	154	1.54
Motivation and creativity	66	34	-	-	-	134	1.34
Proper information	44	26	20	4	6	202	2.02

Source: Primary Survey.

Mean values above 3 are categorised as positive effects, and mean values below 3 indicate adverse impact.

It has been discovered that cognitive abilities, learning, and productivity are the positive effects of artificial intelligence on the human mind. Conversely, Critical thinking, Human agency, motivation, and creativity, proper information are recognised as negative effects of AI on the human mind according to the mean value from the table1.

Graph 1: Impacts of AI on Human Minds.

Positive Impacts:

- **Cognitive Abilities:** Enhanced Cognitive Abilities are one of the positive impacts of AI on the human mind. AI can process a vast amount of data, freeing humans to focus on creative and emotional challenges. This collaboration is known as augmented intelligence, enabling individuals to solve problems more efficiently and make informed decisions. Through the study, it has been revealed that AI is creating more strong cognitive abilities in students.

- **Learning and Education:** AI can provide personalised learning experiences, helping students learn faster and retain information more effectively. Hence, the calculation shows that AI is one of the positive sources for better learning and education.

- **Efficiency and Productivity**: AI automates routine tasks, allowing humans to focus on complex problem-solving and creative endeavours. AI started increasing efficiency and productivity, according to the students.

Negative Impacts:

- **Critical Thinking:** Diminished critical thinking is one of the strongest negative effects of AI on the human mind. Over-reliance on AI can lead to decreased critical thinking skills, as individuals may accept AI-generated responses without questioning their validity. So, it is one of the negative impacts of artificial intelligence.

- **Human Agency:** Excessive dependence on AI for decision-making can result in decreased human control and autonomy, which leads to poor management of the human mind. Which hinders the deep rooting of a creation.

- **Motivation and Creativity:** AI systems can be addictive, leading to decreased motivation and creativity. Due to the spoon-feeding opportunity of AI, it started creating laziness and dullness of the brain and thinking capacity.

- Information: AI can perpetuate biases and spread false information, which can be detrimental to individuals and society; It has started facing according to the students.

Suggestive measures to mitigate the negative impact of AI on Human Cognition:

i. Educate People about AI, its capabilities and limitations to promote critical thinking and responsible use.

ii. AI should only be used for reference. Deep rooting should be continued on a topic of study.

iii. Screen time management should be maintained.

iv. People should not rely completely on AI. Need to foster emotional intelligence, empathy, and social skills through education, training and helping humans interact effectively with AI.

8. Conclusion:

The impact of AI on the human mind is a double-edged sword, bringing both benefits and drawbacks. On the one hand, AI enhances productivity, supports personalised learning, and improves access to information, empowering individuals to achieve more. On the other hand, excessive reliance on AI can lead to cognitive decline, social isolation, and increased stress, underscoring the need for a balanced and mindful approach to technology use. Based on the analysis of this paper, "The interplay between Artificial Intelligence and Human Cognition", it has been clearly identified that AI plays a dual role in human Cognition. Both positive and negative impacts have been found according to the study, and it provided some suitable strategies to mitigate the negative impacts of AI. This will be valuable for future research and knowledge sharing processes, and cultivate new greenery towards the workaholic environment.

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