A STUDY ON THE IMPACT OF AI TOOLS ON EDUCATION

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Abstract

Artificial intelligence is reshaping the landscape of education, ushering in a new era of innovation and transformation. AI technologies are reshaping traditional educational models, offering innovative tools that adapt to individual student needs, streamline administrative tasks, and provide valuable insights. From intelligent tutoring systems to immersive virtual reality experiences, AI is transforming how knowledge is imparted and acquired. While the potential benefits are immense, there are also ethical considerations, concerns about data privacy, and challenges associated with equitable access. In this context, this research was carried out to study the impact of AI tools on education.

Keywords: Education, AI tools, Device, personalized learning, Data privacy, Cognitive ability.

Introduction

Artificial intelligence is reshaping the landscape of education, ushering in a new era of innovation and transformation. AI technologies are reshaping traditional educational models, offering innovative tools that adapt to individual student needs, streamline administrative tasks, and provide valuable insights. Artificial intelligence (AI) is a vast branch of computer science concerned with developing intelligent computers capable of doing tasks that typically need human intelligence. Siri, Alexa, self-driving cars, Robo-advisors, talking bots, and email spam filters are examples of AI. AI is the world's new trend as it has proved more efficient in many fields, mainly during the COVID-19 pandemic. AI helped fight the virus and globally rescued jobs and educational systems.

Review of Literature

1. AI-powered platforms, such as adaptive learning systems, have been shown to enhance student engagement and performance by providing real-time feedback and customized learning pathways (Luckin et al., 2016; Zawacki-Richter et al., 2019).

2. The rapid advancement of Artificial Intelligence (AI) is transforming various sectors, and education is no exception. AI plays a significant role in both general and higher education, influencing students' academic development by offering a mix of opportunities and challenges (Edtech, 2020).

3. The integration of AI in academic environments raises critical questions related to equity, accessibility, and the evolving role of traditional teaching methods. The

influence of AI on education is transformative and multifaceted. AI enables personalized learning by adapting educational content to meet the unique needs of individual students (Hennekeuser et al., 2024).

Statement of the Problem

From intelligent tutoring systems to immersive virtual reality experiences, AI is transforming how knowledge is imparted and acquired. While the potential benefits are immense, there are also ethical considerations, concerns about data privacy, and challenges associated with equitable access. In this context, this research was carried out to study the impact of AI tools on education.

Objectives of the Study

The objectives of the present study are

1. To present the positive and negative effects of AI on education.
2. To exhibit the profile of the college students in Virudhunagar and to analyse the impact of the AI tools on education.
3. To offer suggestions on the basis of findings of the study.

Methodology

The study is based on primary and secondary data. Primary data have been collected from 120 college students in Virudhunagar town with the help of a questionnaire. Secondary data have been collected from various web sites and newspapers. The statistical tools such as average and ranking were used for analysis. Convenience sampling technique was used.

Positive Impact of AI on Education

1. Personalization of learning

AI allows adapting study materials to the level of each student. This means that each individual can learn at their own pace, strengthening their weaknesses and advancing in areas where they show greater ability.

2. Administrative efficiency

Educational institutions can use AI to automate administrative tasks, allowing educators to focus more on teaching and less on bureaucracy.

3. Accessibility

AI facilitates student access to high-quality educational resources, regardless of economic status or geographic location.

4. Continuous assessment

AI can assess each student's progress and provide real-time feedback, helping them identify their strengths and areas for improvement.

Negative Impact of AI on Education

1. Technological dependency

With the integration of AI, there is a risk that both educators and students will become too dependent on technology, affecting the development of what we know today as power skills.

2. Privacy issues

When using AI-based platforms, student data may be at risk if not properly managed.

3. Depersonalization

While AI can personalize learning, it can also cause the educational process to become mechanized and unnatural.

4. Memory weakening

Previously, students were forced to memorize all types of data such as historical dates, authors, philosophical currents… etc. The Internet has made knowledge ubiquitous and easily accessible, therefore the ability and habit of memorization has gone decreasing as the Internet advanced. This process of "collective forgetting" will increase exponentially with AI.

Data Analysis and Interpretation

Table 1: Gender

Gender	No of Respondents	Percentage
Male	35	29.2
Female	85	70.8
Total	**120**	**100**

Source: Primary Data

From the table 1, it is inferred that 85 respondents are female.

Table 2: Type of College

College	No of Respondents	Percentage
Co-education college	58	48.3
Women's college	62	51.7
Total	**120**	**100**

Source: Primary Data

Table 2 shows that 62 respondents are studying in women's college.

Table 3: Year of Study

Year	No of Respondents	Percentage
I UG	20	16.7
II UG	34	28.3
III UG	37	30.8

I PG	17	14.2
II PG	12	10
Total	**120**	**100**

Source: Primary Data

From the table 3, it is noted that 37 respondents are studying III UG.

Table 4: Siblings

Siblings	No of Respondents	Percentage
Having	57	47.5
Not having	63	52.5
Total	**120**	**100**

Source: Primary Data

From the table 4, it is inferred that 63 respondents are not having any siblings.

Table 5: Marital Status

Marital Status	No of Respondents	Percentage
Married	22	18.3
Unmarried	98	81.7
Total	**120**	**100**

Source: Primary Data

From the table 5, it is noted that 98 respondents are unmarried.

Table 6: Number of Degree Holders in the Family

Degree holders	No of Respondents	Percentage
Less than 2	33	27.5
2-3	74	61.7
More than 3	13	10.8
Total	**120**	**100**

Source: Primary Data

Table 6 indicates that there are2-3 degree holders in the family of respondents.

Table 7: Mostly Used AI Tool for Education

AI tools	No of respondents	Percentage
ChatGpt	66	55
Grammarly	16	13.3
Google Gemini	2	1.7
Notion AI	1	0.8
Canva	5	4.2
Mendeley	2	1.7
Meta AI	28	23.3
Total	**120**	**100**

Source: Primary Data

According to 66 respondents, the mostly used AI tool for education is ChatGPT

Table 8: Device Mainly Used for AI Tools Usage

Device Used	No of Respondents	Percentage
Computers and Laptops	20	16.7
Tablets	9	7.5
Mobile phones	87	72.5
Wearables	4	3.3
Total	**120**	**100**

Source: Primary Data

As per table 8, Mobile phone is the mainly used device for AI tools usage.

Table 9: Reasons for Using AI Tool for Education

Reasons	No of Respondents	Percentage
Improving writing skills	18	6.1
Doing projects and Assignments	75	25.6
Getting instant answers	109	37.2
Creating visual aids and designing work sheet	15	5.1
Understanding complex concepts and personalized learning	40	13.7
Language translation	36	12.3
Total	**293**	**100**

Source: Primary Data

Note: Since the respondents preferred more than one option for using AI tool for education, the total number of responses exceeds 120.

According to 109 respondents, getting instant answers is the main reason for using AI tools for education.

Table 10: AI Uses Better Learning and Teaching Styles than Human

Opinion	No of respondents	Percentage
Strongly Agree	23	19.2
Agree	41	34.2
Neutral	5	4.1
Dis agree	26	21.7
Strongly dis agree	25	20.8
Total	**120**	**100**

Source: Primary Data

41 respondents agree that, AI uses better learning and teaching styles than human.

Table 11: AI is More Effective, Accurate and Objective

Opinion	No of respondents	Percentage
Strongly Agree	21	17.5
Agree	37	30.8

Neutral	8	6.7
Dis agree	32	26.7
Strongly dis agree	22	18.3
Total	**120**	**100**

Source: Primary Data

37 respondents agree that, AI is more effective, accurate and objective.

Table 12: AI Impacts on Future Careers

Impact	No of Respondents	Percentage
Positive	41	34.2
Negative	71	59.2
No impact	8	6.6
Total	**120**	**100**

Source: Primary Data

According to 71 respondents, there is negative impact of AI on future careers.

Table 13: Concepts that will be Impacted by AI

Concepts	No of respondents	Percentage
Ethics	5	4.2
Cognitive abilities	16	13.3
Humanity	4	3.3
Ethics, Cognitive abilities and humanity	95	79.2
Total	**120**	**100**

Source: Primary Data

As per the opinion of 95 respondents, Ethics, Cognitive abilities and humanity concepts are impacted by AI

Table 14: Replace Academic Staff with Robots

Opinion	No of Respondents	Percentage
Strongly Agree	12	10
Agree	9	7.5
Neutral	10	8.3
Dis agree	62	51.7
Strongly dis agree	27	22.5
Total	**120**	**100**

Source: Primary Data

62 respondents disagree the fact that 'Replace Academic Staff with Robots'

Table 15: Opinion about Negative Impact of AI on Education

Opinion	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total score	Mean score	Rank
Data privacy concerns	37 (185)	38 (152)	19 (57)	10 (20)	16 (16)	120 (430)	3.58	V
Over reliance on technology	57 (285)	30 (120)	15 (45)	16 (32)	2 (2)	120 (484)	4.03	I
Lack of emotional connection	39 (195)	38 (152)	19 (57)	13 (26)	11 (11)	120 (441)	3.68	III
Bias and inequality	48 (240)	41 (164)	14 (42)	7 (14)	10 (10)	120 (470)	3.92	II
Ethical concerns	32 (160)	32 (128)	18 (54)	21 (42)	17 (17)	120 (401)	3.34	VI
Memory loss	36 (180)	39 (156)	19 (57)	15 (30)	11 (11)	120 (434)	3.62	IV

Source: Primary Data

From the above table, it is seen that the opinion about negative impact of AI on education, 'Over reliance on technology' gets the first rank and the opinion 'Bias and inequality' gets the second rank.

Suggestions
1. Academic staff should be well trained in using AI to equip learners with the required skills to face future career challenges.
2. Instead of using AI tools, the students may refer books, magazines and newspapers to develop their core skills.
3. Students are advised to use AI tools only when the need arises. This will help to avoid memory loss.

Conclusion

Finding a balance between traditional teaching and AI-based tools is critical to ensure successful implementation. Technology should be a complement, not a substitute, for human interactions in the classroom. Ethics must be a primary consideration during the implementation of AI in education.

Reference
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