

## **IMPACT OF ARTIFICIAL INTELLIGENCE TOOL ON LEARNING BEHAVIOR OF LEARNERS**

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### **Abstract:**

There is a lot of interest in discovering how artificial intelligence (AI) tools affect students' learning behaviors as a result of their integration into educational environments. This study examines the various ways that AI tools affect students' motivation, engagement, and cognitive functions in online learning settings. Important revelations about the revolutionary potential of artificial intelligence (AI) in education are revealed by means of an extensive literature study and empirical research. Among the main areas of investigation are the dynamics of collaborative learning environments, the effectiveness of individualized learning interventions made possible by AI algorithms, and the moral issues raised by AI-driven educational systems. This research advances our knowledge of the intricate connection between AI technology and student learning behavior by tackling these subjects. There includes a discussion of the practical ramifications, providing guidance for educators.

**Keywords:** Artificial Intelligence, AI Tools, Learning Behavior, Student Engagement, Personalized Learning, Educational Technology, Student Motivation, Collaborative Learning, Ethical Considerations, Academic Outcomes.

### **Introduction:**

Artificial intelligence (AI) tools have become a disruptive force in education today, changing old learning paradigms and providing never-before-seen potential to improve academic achievement and student engagement. The introduction of artificial intelligence (AI) into education has the potential to completely transform how students engage with course materials, get tailored feedback, and participate in group projects. It is crucial to investigate how AI technologies affect students' learning behaviors and determine the complex dynamics influencing their educational journey as educators and policymakers navigate this quickly changing world.

Several artificial intelligence tools are significantly impacting the learning behavior of students. Here are some important AI tools:

**Adaptive Learning Platforms:** These platforms tailor each student's learning experience according to their skills, shortcomings, and learning speed using AI algorithms. To match the demands of each unique student, adaptive learning platforms instantly modify the material, degree of difficulty, and instructional techniques.

**Intelligent Tutoring Systems (ITS):** By mimicking the functions of a human tutor, ITS give pupils individualized instruction and feedback. They assess student responses, spot misconceptions, and offer individualized coaching and support using AI techniques like machine learning and natural language processing.

**Chatbots:** Natural language processing and machine learning techniques are used by educational chatbots to have real-time talks with pupils. They give prompt answers to questions from students, give clarifications, give learning resources, and assist students with a variety of areas of their educational process.

**Virtual Reality (VR) and Augmented Reality (AR):** Immersion learning experiences are produced using VR and AR technology, which improve student comprehension and engagement. AI-driven

algorithms provide dynamic and immersive learning experiences by adjusting VR/AR environments according to student interactions, preferences, and learning goals.

**Content Recommendation Systems:** In order to propose pertinent educational materials, tools, and activities, AI-driven content recommendation systems examine student preferences, behaviors, and learning patterns. By encouraging self-directed learning and inquiry, these systems assist students in finding new content that is in line with their interests and learning objectives.

**Plagiarism Detection Tools:** AI-based plagiarism detection technologies compare student work to a large database of scholarly sources and publications to assist educators determine how unique a student's work is. These resources give feedback on possible plagiarism cases, support academic integrity, and inspire students to write ethically and critically.

**Language Learning Apps:** Speech recognition, language processing, and adaptive algorithms are used by AI-powered language learning applications to provide students with individualized language training and practice exercises. To improve language competency and acquisition, these applications provide interactive activities, pronunciation feedback, and real-time language assessment.

### Objectives:

To examine the difference in perception of user on the basis of their purpose for using AI.

To assess the relation between gender and the purpose of using AI.

To assess the frequency and duration of AI tools usage among students.

### Review of Literature:

**Beal et al., 2019** in his research titled “The future is personalized: How artificial intelligence can help individualize education. Educational Technology & Society” research indicates that AI-powered adaptive learning platforms have the potential to personalize learning experiences for students by tailoring content, pacing, and assessments to individual needs.

**Woolf, 2010** in his research titled “Building intelligent interactive tutors: Student-centered Research suggests that AI-powered tutoring systems can lead to significant improvements in student learning outcomes, including gains in knowledge acquisition and problem-solving skills strategies for revolutionizing e-learning”

**Selwyn, 2019** in his research titled “What’s the problem with learning analytics” observed that despite the potential benefits, the integration of AI tools in education presents challenges related to data privacy, algorithmic bias, and ethical concerns

**Graesser et al., 2014** Studies have shown that AI-driven educational technologies can support students with different learning profiles, including those with disabilities or special educational needs

**Research Methodology:** Primary data is collected from students through structured questionnaire. Responses collected from 200 students through convenience sampling method. Data analysis is done through SPSS software.

### Data Analysis:

Use of AI by students

Particulars	Frequency	Percentage
Daily	40	20
Frequently (Once a week)	32	16
Occasionally (2-3 times a month)	40	20
Rarely (Once a month or less)	77	38.5
Regularly (2-3 times a week)	11	5.5
<b>Grand Total</b>	<b>200</b>	

From the above table it can be observed that maximum (38.5%) respondents used AI tools rarely in their learning process, 20% of respondents used it occasionally and daily. Above table indicate that use of AI tools is becoming popular among learners.

Purpose of using AI

Purpose of using AI	Frequency	Percentage
For making presentation	24	12
For making projects and completing assignments	97	48.5
Understanding concept	79	39.5
<b>Grand Total</b>	<b>200</b>	

Frequency of using AI	Purpose of using AI			
	For making presentation	For making projects and completing assignments	Understanding concept	Grand Total
Daily	4	2	-	6
Frequently (Once a week)	3	13	16	32
Never	6	18	10	34
Occasionally (2-3 times a month)	4	22	14	40
Rarely (Once a month or less)	7	34	36	77
Regularly (2-3 times a week)	-	8	3	11
<b>Grand Total</b>	<b>24</b>	<b>97</b>	<b>79</b>	<b>200</b>

**H<sub>0</sub>:** There is no significant difference in perception of learners with respect to effectiveness of AI on the basis of their purpose of use.

**H<sub>1</sub>:** There is significant difference in perception of learners with respect to effectiveness of AI on the basis of their purpose of use.

**In your opinion, how effective are AI-based tutoring systems in holding your attention during learning sessions compared to traditional methods? \* For what purpose you use AI Cross tabulation**

Count		For what purpose you use AI			Total
		Understanding concept	For making projects and completing assignments	For making presentation	
In your opinion, how effective are AI-based tutoring systems in holding your attention during learning sessions compared to traditional methods?	Much more effective	12	13	4	29
	Somewhat more effective	20	24	3	47
	Equally effective	26	42	6	74
	Less effective	17	13	6	36
	Much less effective	4	5	5	14
<b>Total</b>		<b>79</b>	<b>97</b>	<b>24</b>	<b>200</b>

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.718 <sup>a</sup>	8	.089
Likelihood Ratio	11.857	8	.158
Linear-by-Linear Association	1.487	1	.223
N of Valid Cases	200		

Since P value is 0.089, which is higher than 0.05 hence we do not have enough evidence to reject null hypothesis. Hence we can conclude that there is no significant difference in perception of learners with respect to effectiveness of AI on the basis of their purpose of use.

Symmetric Measures					
		Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Nominal by Nominal	Phi	.262			.089
	Cramer's V	.185			.089
Interval by Interval	Pearson's R	.086	.078	1.221	.224 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	.065	.076	.918	.360 <sup>c</sup>
N of Valid Cases		200			

Above table indicate weak relation between two variables, namely purpose of using the AI and perception on its effectiveness.

**H<sub>0</sub>:** There is no significant relation between gender of learners and purpose of using AI.

**H<sub>1</sub>:** There is significant difference relation between gender of learners and purpose of using AI.

Gender * For what purpose you use AI Crosstabulation					
Count					
		For what purpose you use AI			Total
		Understanding concept	For making projects and completing assignments	For making presentation	
Gender	Male	33	45	15	93
	Female	46	52	9	107
Total		79	97	24	200

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.180 <sup>a</sup>	2	.204
Likelihood Ratio	3.190	2	.203
Linear-by-Linear Association	2.612	1	.106
N of Valid Cases	200		

Since P value is 0.204, which is higher than 0.05 hence we do not have enough evidence to reject null hypothesis. Hence we can conclude that there is no significant relation between gender of learners and purpose of using AI.

In conclusion, the lack of a substantial relationship between learners' gender and the aim of utilizing AI emphasizes the necessity of inclusive, individualized, and equal approaches to AI teaching. Educational stakeholders can create a supportive atmosphere where all learners may flourish and use

AI technology to achieve their learning objectives and aspirations by embracing variety and individuality.

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