International Journal of Atharva
Vol. 2, No. 2, August 2024. Pages: 213-221
ISSN: 3021-9205 (Print) ISSN:3021-9299 (Online)
DOI: https://doi.org/10.3126/ija.v2i2.70295

Assessing Students' Affinity for Technology on Learning Outcomes with Artificial Intelligence

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Received: July 11, 2024 Revised & Accepted: August 19, 2024

Abstract

This study explores students' affinity for technology and its impact on learning outcomes with Artificial Intelligence (AI). Data from 123 students at Pokhara University were analyzed using a structured questionnaire with a 7-point Likert scale. The findings reveal a strong positive affinity for technology, with high mean scores indicating enjoyment in learning new technologies and staying current with tech trends. Participants also perceive AI as significantly enhancing their learning effectiveness, with mean scores reflecting positive impacts on learning outcomes. One-sample t-tests confirmed that both affinity for technology and AI's impact on learning are statistically significant, with p-values of 0.000. Despite the overall positive view of AI, a slight difference in mean scores suggests further investigation into additional factors affecting AI's influence on learning outcomes. The study highlights the beneficial role of AI

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in education and emphasizes the need for ongoing research to optimize its integration into learning environments.

Keywords: Affinity, Artificial, Intelligence, Learning, Technology

Introduction

Artificial intelligence (AI) has become so integrated into daily life that it is now used frequently without even realizing it. It provides solutions to our issues and eases our lives. Artificial Intelligence (AI) has been used in everything from medical diagnostics to self-driving cars to smart home appliances to news anchors. Artificial intelligence, before most of us even realized what it was, was first shown to us in several movies as robots with artificial intelligence. Plus, some people may find it difficult to understand the intelligence.

AI is also becoming more and more prevalent in education, offering teachers and students a variety of tools that they can utilize to their benefit. AI is changing how students approach their studies. AI technologies can be advantageous to many research topics in different ways. These resources can help dyslexic students write code, help them save time, serve as tutors, and even adapt to their preferred method of learning. This research also discusses the risks and drawbacks that artificial intelligence (AI) may have on education, including moral issues.

The advancement of artificial intelligence (AI) has raised important and moral questions for everyday living. Although artificial intelligence (AI) has the potential to increase efficacy and production, it also could disrupt educational opportunities and supplant prior knowledge. Nowadays, the emergence technologies under the Fourth Industrial Revolution (4IR), such as Artificial Intelligence (AI), Internet of Things (IoT), Cyber Security, and Unmanned Aerial Vehicle (UAV), can bring technological qualities which can revolutionize the trend people executed things in daily work (Raska, 2019; Neupane & Dawadi, 2018). Even if individuals are rushing to stay up to date with global technology, everyone needs to understand artificial intelligence (AI) and its implications.

Artificial intelligence (AI) has a huge impact and effect that cannot be disregarded as it develops and finds more and more applications (Wang & Siau, 2018; Yang & Siau, 2018). As this new, revolutionary technology develops, higher education is regrettably one of the sectors that has not changed with the times. AI has been rapidly replacing labor and activities across a range of industries (Siau, 2018; Neupane, Joshi, Acharya, & Acharya, 2018). MIT researchers discovered that around six workers were replaced for each robot deployed in the workplace (Acemoglu & Restrepo, 2017; Neupane, Pant, & Bhattarai, Preferred Learning Techniques among Bachelor's Level Students, 2023). According to a 2017 McKinsey Global Institute estimate, automation and robotics will replace between 400 and 800 million current job functions. Those in these roles will either need to retrain in new abilities or find other employment.

Every element of human life is being profoundly impacted by AI, and this impact will only grow with time. Higher education institutions must keep up with the technological advancements in our society to ensure that their graduates can collaborate and work in tandem

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with AI and robots, that their students are competitive in the labor market, and that their alumni are employable (Ma & Siau, 2018). When it comes to precision and reliability, machines outperform humans' hands down. Machines are able to process and gather information consistently and continuously (24/7), calculate more quickly, and produce information more quickly and accurately. Teaching pupils to compete with machines in these dimensions is pointless (Paudel, Agal, & Kumar, 2021; Neupane & Subedi, 2018). To remain competitive in the employment market, they must generate information that can enhance AI capabilities and skill sets that are challenging for AI to learn (Siau, 2018; Acharya, 2024; Neupane, Joshi, & Dawadi, 2018). Based on this background, the following objective has been set.

- To assess the perception of students towards Affinity for Technology and learning outcomes
- To examine the significant difference in perceived learning outcomes influenced by participants' affinity for technology

Research Methods

This study used descriptive and comparative research design. The target of the study is both male and female students. The sample unit of this study is the students of different semesters of different colleges affiliated to Pokhara University. The questionnaire was administered to 130 students, however, 123 students only responded to the questionnaire. Therefore, the sample size is 123 students, and the respondent rate is 94.62%. The sampling was done by convenience sampling technique by using google forms. The study was conducted through structured questionnaire as research instrument. Study adopted Likert scale with 7 points scale to score each item, 1 (Strongly Disagree), 2(Disagree), 3(Somewhat Disagree), 4(Neutral), 5(Somewhat Agree), 6(Agree) and 7 (Strongly Agree). In this study, descriptive statistics and inferential statistics was used. The Statistical Package for Social Science (SPSS) program was used to analyze the data.

Results and Discussion

Demographic

A floating questionnaire was used to gather data from students at various colleges. The demographic profile of the respondents is covered in this section, along with an analysis and interpretation of it based on the primary data acquired via questionnaires. The profile of the respondents consists of the respondent's gender, age, field of study and how much they know about artificial intelligence.

Table 1 Demographic Information (Gender)

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	58	47.2	47.2	47.2
	Female	65	52.8	52.8	100.0
	Total	123	100.0	100.0	

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Field Survey

The table provided shows the frequency and percentage distribution of gender in a dataset. There are 58 respondents who identified as male, which is 47.2% of the total respondents and there are 65 respondents who identified as female, which is 52.8% of the total respondents. The total number of respondents is 123.

In summary, this table provides a clear breakdown of gender distribution within the dataset, indicating that females make up a slightly larger proportion than males.

Table 2 Demographic Information (Age)

Age (in Years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 18	13	10.6	10.6	10.6
	18-20	26	21.1	21.1	31.7
	21-24	72	58.5	58.5	90.2
	25 & above	12	9.8	9.8	100.0
	Total	123	100.0	100.0	

Field Survey

The above table shows the respondents profile according to their age. The respondents of the age group 21-24 are found to be valid as a greater number of respondents have given validity in the collection of the data.

Table 3 Demographic Information (Field of Study)

Field of Study					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	51	41.5	41.5	41.5
	Information Technology	20	16.3	16.3	57.7
	Health & Welfare	18	14.6	14.6	72.4
	Hospitality	7	5.7	5.7	78.0
	Others	27	22.0	22.0	100.0
	Total	123	100.0	100.0	

Field Survey

The above table shows the respondents profile according to their field of study. The respondents of the field of study business are found to be valid as a greater number of respondents have given validity in the collection of the data.

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Table 4: Students Affinity for Technology

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I enjoy learning new computer programs and hearing about new technologies.	123	1	7	5.64	1.229
People expect me to know about technology and I donâ€™t want to let them down.	123	1	7	4.46	1.709
If I am given an assignment that requires that I learn to use a new program or how to use a machine, I usually succeed.	123	1	7	5.03	1.207
I relate well to technology and machines.	123	1	7	4.99	1.315
I am comfortable learning new technology.	123	1	7	5.67	1.163
I know how to deal with technological malfunctions or problems.	123	1	7	4.37	1.439
Solving a technological problem seems like a fun challenge.	123	1	7	4.83	1.458
I find most technology easy to learn.	123	1	7	4.72	1.452
I feel as up to date on technology as my peers.	123	1	7	4.68	1.422
I feel it is important to be able to find any information whenever I want online.	123	1	7	5.59	1.279
I feel it is important to be able to access the Internet any time I want.	123	1	7	5.51	1.479
I think it is important to keep up with the latest trends in technology.	123	1	7	5.80	1.336

Field Survey

The study on affinity for technology collected responses from 123 participants, assessing various aspects of their relationship with technology. The results indicate a strong enjoyment

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in learning new computer programs and staying informed about new technologies, with an average rating of 5.64 out of 7. Participants generally feel a moderate expectation from others to be knowledgeable about technology, scoring an average of 4.46. When tasked with learning new programs or machines, they usually succeed, evidenced by an average rating of 5.03. They relate well to technology, scoring 4.99 on average, and feel comfortable learning new technologies, with a high average of 5.67. Participants believe they can handle technological malfunctions, scoring 4.37, and see solving technological problems as a fun challenge, with an average score of 4.83. Most find technology easy to learn, scoring 4.72, and feel up to date with their peers at an average of 4.68. They place significant importance on being able to find information online (5.59) and access the Internet anytime (5.51). Finally, participants consider keeping up with the latest technology trends important, with the highest average score of 5.80.

Table 5: Students learning outcomes

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Artificial Intelligence (AI) helps me learn and study things more effectively.	123	1	7	5.32	1.369
The results from learning with the help of AI are of the same or higher quality than without AI.	123	1	7	4.56	1.386
Artificial Intelligence (AI) is not affecting my ability to preserve and remember things I learn.	123	1	7	4.39	1.497
I am equally motivated to educate myself both with and without the use of AI.	123	1	7	5.25	1.303
I am not worrying about AI affecting my learning outcomes.	123	1	7	4.74	1.431
AI doesn't affect my analytical, problem-solving, or research skills.	123	1	7	4.33	1.627

Field Survey

The descriptive statistics for learning outcomes related to the use of Artificial Intelligence (AI) were gathered from 123 participants, who rated various statements on a scale from 1 to 7. The findings reveal that participants believe AI helps them learn and study more effectively, with an average rating of 5.32. They also perceive that the quality of learning results with AI is comparable to or better than without AI, scoring 4.56 on average. Participants generally feel that AI does not negatively impact their ability to preserve and remember learned information,

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with a score of 4.39. Their motivation to educate themselves remains high, both with and without AI, reflected in an average rating of 5.25. Concerns about AI affecting their learning outcomes are relatively low, with an average score of 4.74. Lastly, participants do not believe AI adversely impacts their analytical, problem-solving, or research skills, scoring 4.33 on average.

Table 6: Perceived affinity for technology on learning outcomes

One-Sample Statistics						
	N	Mean	Std. Deviation	Std. Error Mean		
Affinity for Technology	123	5.1077	.89261	.08048		
Learning outcomes	123	4.7642	.90307	.08143		
One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Affinity for Technology	63.462	122	.000	5.10772	4.9484	5.2671
Learning outcomes	58.509	122	.000	4.76423	4.6030	4.9254

Field Survey

The analysis evaluates participants' affinity for technology and their perceived learning outcomes when using AI. The mean score for affinity for technology is 5.1077, with a standard deviation of 0.89261. The one-sample t-test results show a t-value of 63.462 and a significance level (p-value) of .000, indicating a highly significant positive affinity for technology. The 95% confidence interval for the mean difference ranges from 4.9484 to 5.2671, confirming this strong positive inclination.

In comparison, the mean score for learning outcomes is 4.7642, with a standard deviation of 0.90307. The one-sample t-test results yield a t-value of 58.509 and a p-value of .000, indicating a significant positive perception of learning outcomes when using AI. The 95% confidence interval for the mean difference is between 4.6030 and 4.9254, reinforcing the statistical significance of these positive learning outcomes.

The slight difference between the mean scores for affinity for technology (5.1077) and learning outcomes (4.7642) suggests that while participants have a high affinity for technology, their perceived learning outcomes with AI, though still positive and significant, are slightly lower. This indicates that participants are very comfortable with technology and view it positively, but there may be additional factors influencing their learning outcomes with AI that warrant further exploration.

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Conclusion

This study assessed the perception of students towards their affinity for technology and the impact of AI on their learning outcomes. The results demonstrated a strong positive affinity for technology, with participants enjoying learning new computer programs and staying updated with the latest technological trends. The analysis also revealed that students perceive AI as a beneficial tool in enhancing their learning effectiveness and maintaining the quality of learning outcomes. However, the slight difference in mean scores suggests that while students are highly comfortable with technology, there may be additional factors affecting their learning outcomes with AI that require further investigation.

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