Assessing Students' Attitude Towards Artificial Intelligence with Respect to Gender and Use of Computer and Mobile Devices

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Abstract

Artificial Intelligence is playing a very crucial role now a days. Students are so much into the use of technology due to one or the other reasons and spend a lot of time on computer and mobile devices so this study is an attempt to find out the attitude of senior secondary students towards Artificial Intelligence (AI). The sample in this study consists of 200senior secondary students from Prayagraj. For this study a self-constructed Artificial Intelligence attitude scale has been used.The finding of the study revealed that there is significant difference in the attitude of male and female senior secondary students towards Artificial Intelligence and even it shows that 42% of the students are spending more than 3 hours oncomputer and mobile devices as well as the study revealed that there is significant difference in the attitude towards Artificial Intelligence of students spending different hours on computer and mobile devices.

Keywords*:* Attitude, Artificial Intelligence (AI), Senior secondary students

Introduction

Artificial intelligence (AI) can already predict the future. Many decisions in our lives require a good forecastand AI is almost always better at forecasting than we are. Yet for all these technological advances, we still seem to deeply lack confidence in AI predictions. Recent cases show that people don't like relying on AI and prefer to trust human experts, even if these experts are wrong.If we want AI to really benefit people, we need to find a way to get people to trust it. To do that, we need to understand why people are so reluctant to trust AI in the first place (IELTS Mentor, 2022) due to this reason it is important to know the attitude of people towards AI then only the advancement in technology will be faster than before.

The study (Visualizing Global Attitudes Towards AI) done by Marcus Lu (2023) in which data was based on a 28-country survey of 19,504 adults aged 18 to 74 which shows the attitude of people of different countries towards AI among which China is at first position and India is at third position it means we still have to be more aware about the attitude of Indian towards AI as developing economies such as China have a larger proportion of agricultural and industrial employment, while advanced

economies like the U.S. are typically more services oriented. Structural differences such as these could have an impact on how a population views AI (Lu, M. 2023) so being Indians, we also have to be concern about different aspects of AI so that we can improve the attitude of people towards it which will lead us from developing to developed nation.

Use of Artificial Intelligence (AI) is growing at a fast pace and permeates many aspects of people's daily lives, both in personal and professional settings (Makridakis, 2017; Olhede& Wolfe, 2018). Among the people, students are most influenced with AI as they are more enthusiastic, innovative and interested towards new technologies. Artificial Intelligence was coined in 1955 to introduce a new discipline of computer science. It is rapidly and radically changing the various areas of our daily lives as the market for AI technologies is demanding and flourishing. There is a significant race between many start-ups and internet giants to acquire them (Edureka, 2023). One of the leading writers on the benefits of artificial intelligence in education, Matthew Lynch ("My Vision for the Future of Artificial Intelligence in Education"), is careful to explore the potential pitfalls along with the benefits, writing that "the use of AI in education is valuable in some ways, but we must be hyper-vigilant in monitoring its development and its overall role in our world." Therefore, it is very important to know the attitude of male and female students towards AI as male are more logical, analytical, rational whereas females are more intuitive, holistic, creative and integrative which gives a difference in their attitude towards the way of life as well as towards AI. According to the latest available data, the average person spends six hours and 58 minutes per day on screens connected to the internet (Howarth. J, 2023) which shows that a large number of hours are spend on mobile devices as well as on computers.

There are limited number of studies done on attitude towards Artificial Intelligence. Somehow there are studies done on topics such as 'Development and Validation of a Scale Measuring Student Attitudes Towards Artificial Intelligence' (Suhl, W. & Ahn 1, S. 2022) and 'Attitude towards Artificial Intelligence of high school students' in Korea' (Kim, S.W & LEE, Y. 2020) as this study was done in Korea as well as 'The effect of the use of an educational software based on the strategy of artificial intelligence on students' achievement and their attributes towards it.' (Alomari, M. and Jabr, M. 2020) was done in Northern Jordan and 'Artificial Intelligence in education- Romanian students' attitudes towards AI and its impact on their career development' (Fotea, S. et al. 2019) in which the study's findings show a higher level of assurance in the ability of artificial intelligence to support Romanian respondents in pursuing their ideal careers. Although the Romanian respondents don't seem overly concerned about the potential effects of AI in general, they do believe that the influence on privacy and data is a negative effect. As concluded, there are very limited studies done on attitude towards AI inIndia however studies were conducted on AI in different countries and in different fields such as environment, neurosurgery, dermatology, financial, etc. and these studies were done on teachers, dermatologist, doctors, adults in different field, etc. There should be more concern given on studiesfor measuring the attitude towards AI for students, parents, teachers, etc. not just in education field but also in various other fields. Students are the future of the nation and Artificial Intelligence is the tool that is influencing the life of those students at a faster rate especially after covid-19 from when almost everything depend on technology.

Research Methodology

For the present study a self-constructed Artificial Intelligence Attitude scale has been used. After exploratory factor analysis 29 items related to 4 dimensions were retained for the Artificial Intelligence attitude scale. The most commonly used reliability coefficient that is Cronbach's Alpha was calculated for the scale was found to be 0.743. The content validity of the present scale was found out on the basis of expert judgement given by 5 experts. Construct validity of the scale was found with the help of exploratory factor analysis which consist of percentage variance and cumulative percentage of the factors.

The sample of this study consists of 200 (100 male and 100 female) senior secondary students of Prayagraj. In the present study, stratified random sampling technique has been used to select the sample. At first Prayagraj was selected for the study,then 10 senior secondary schools were selected out of which 20 students from each school were selected randomly for the study.

Results and Discussion

In order to find out attitude of male and female senior secondary students towards Artificial Intelligence, t-value for each dimension along with mean and Standard deviation (SD) was calculated and the results of analysis are shown in table 1.

Table1: Mean, SD and t-value of Attitude towards Artificial Intelligence of male and female secondary school students

Dimensions	Male (N=100)		Female (N=100)		t	P	Df
	Mean	SD	Mean	SD			
AI as a way of life	34.09	4.39	34.43	4.58	0.54	0.59	198
AI as a system	19.66	3.29	18.94	2.69	1.69	0.09	198
Pessimism in AI	22.67	5.66	19.73	4.75	3.98*	0.00	198
AI as a controller	27.59	3.93	26.09	4.47	2.52*	0.01	198
Overall Attitude towards AI	104.01	9.81	99.19	8.9	3.64*	0.00	198

Significant at 0.05 level

From table 1 it is clear that the calculated t-value of attitude towards AI is 3.64 which is more than the table value (1.96) significant at 0.05 levelwhich indicates that there is significant difference between male and female senior secondary student attitude towards AI. The probable reason may be that male embrace technological innovation much more significantly than females because they think they are more skilled in computer related tasks and more attracted to modern technology than females (He, J., and Freeman, L. A. 2010). The calculated t-value of the different dimensions of attitude towards AI are 'Pessimism in AI' is 3.98 and 'AI as a controller' is 2.52 is also greater than the table value (1.96) at 0.05 significance level but the t-value for 'AI as a way of life is 0.54' and 'AI as a system is 1.69' is not significant at 0.05 level. Hence there is significant difference in attitude of senior secondary students towards AI for its dimensions (Pessimism in AI and AI as a controller) and there is no significant difference in dimensions (AI as a way of life and AI as a system) of male and female senior secondary students of Prayagraj. Graphical representation of the same is given in figure 1.
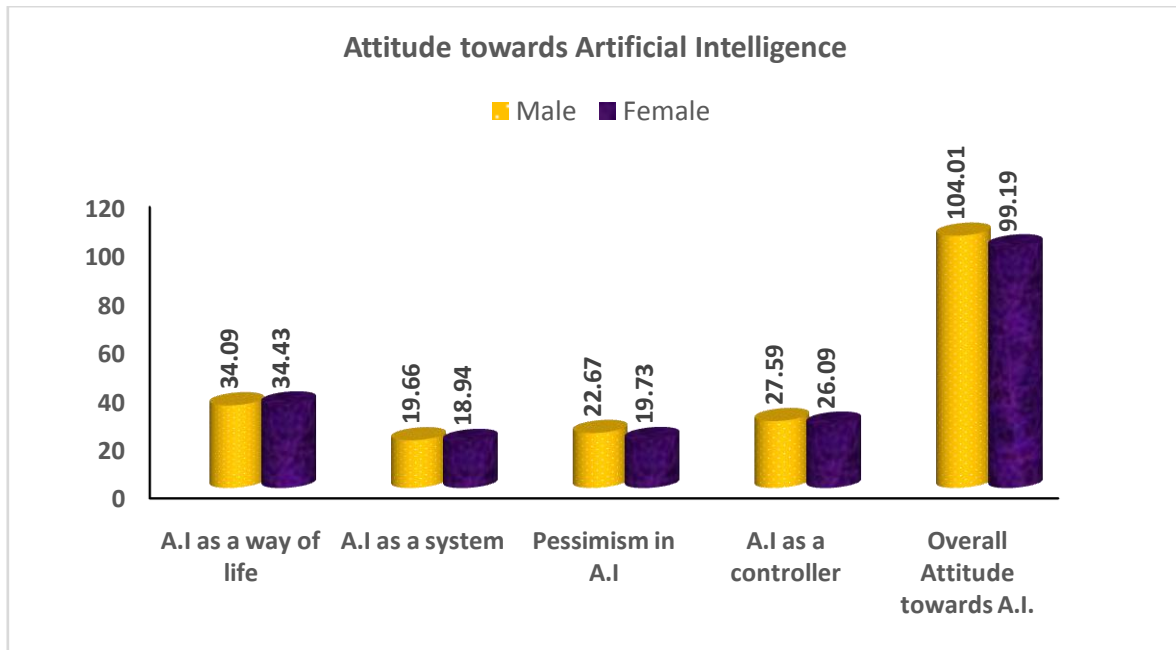
Figure 1: Mean Score of Attitude towards Artificial Intelligence of male and female secondary school students

The overall mean value of Attitude towards Artificial Intelligence of male senior secondary school students is 104.01 which is more than the Attitude towards Artificial Intelligence of female secondary school students that is 99.19. This indicates that the Attitude towards Artificial Intelligence of male senior secondary school students is more than female senior secondary students for all the dimensions.

To analysis the responses given by students regarding the time they spend on Computer and Mobile devices were categorized into three groups – more than 3 hours (G1), between 1-3 hours (G2) and less than 1 hour (G3).

Table 2: Percentage of students spending time on Computers and mobile devices

Time Spend on Computer and Mobile devices	Percentage of Students
More than 3 Hours (G1)	42%
Between 1-3 Hours (G2)	40%
Less than 1 Hour (G3)	18%

Table 2 indicates the percentage analysis of the time spend on computer and mobile devices. The percentage of students spending more than 3 Hours (G1) is 42%, percentage of students spending between 1-3 Hours (G2) is 40% and percentage of students spending less than 1 Hour (G3) is 18%. The pie chart representation of the same is shown in figure 2.
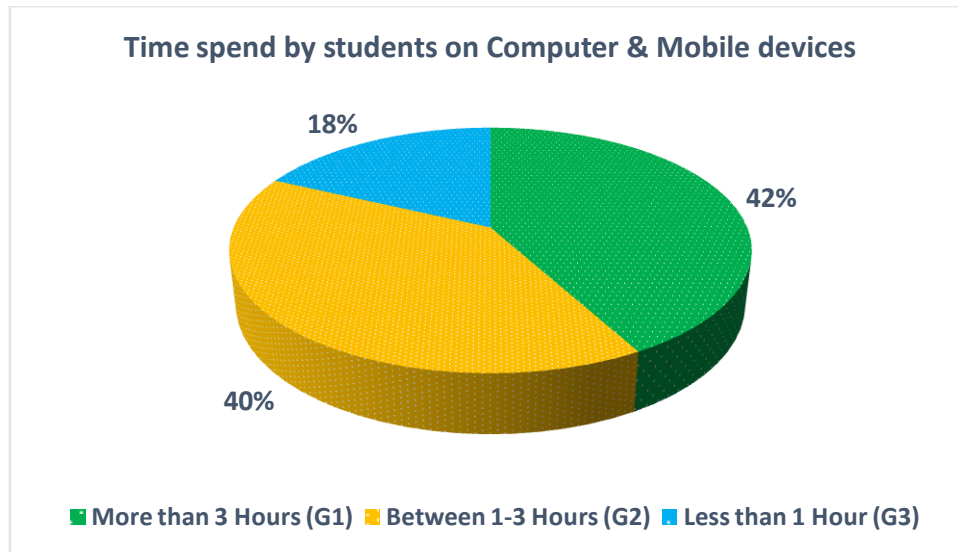
Figure 2- Percentage of students showing time spend on computers and mobile devices

In reference to table 2 there are 3 groups with respect to time spend on computer and mobile devices, sothe analysis of variance (ANOVA) is calculated and the results of analysis are shown in table 3.

Table 3 Analysis of Variance (ANOVA) - Attitude towards Artificial Intelligence between G1, G2 & G3

Variable		Sum of Squares	df	Mean Square	F	P
Attitude towards Artificial Intelligence	Between Groups	908.03	2	454.03	5.07*	0.007
	Within Groups	17619.93	197	89.44		
	Total	18528	199			

Significant at 0.05 level

From table 3 it is clear that F-value of the variable is 5.07 which is more than the critical value that is 2.92 therefore our result is statistically significant at 0.05 levelwhich means there is significant difference in attitudetowards artificial intelligencewith respect to time spend on computer and mobile devices.

In order to find out attitude towards Artificial Intelligence among different groups based on the time spend on computer and mobile devices, t-value for two different groups along with mean and Standard deviation (SD) of each group was calculated and the results of analysis are shown in table 4.

Table 4 Mean, SD and t-test of Attitude towards Artificial Intelligence among different groups (time spend on computer and mobile devices)

Group	No. of Hours	Number	Mean	SD	t-value	df	P
G1 & G2	More than 3 Hours	84	104.10	8.52	3.00*	162	0.00
	Between 1-3 Hours	80	99.95	9.14			
G1 & G3	More than 3 Hours	84	104.10	8.52	2.41*	118	0.01
	Less than 1 Hour	36	99.44	11.94			
G2 & G3	Between 1-3 Hours	80	99.95	9.14	0.24	114	0.80

	Less than 1 Hour	36	99.44	11.94			

Significant at 0.05 level

From table 4 it is clear that the calculated t-value of G1 and G2 is 3.00 and G1 and G3 is 2.41 which is more than the table value (1.96) significant at 0.05 levelwhich means there is difference in the two groups.The probable reason may be the more you spend time on mobile devices and computers the more you get attracted and involved to it (Kumari, A. 2012) as if we know and aware of certain things then we spend more time to it as well as in order to know or have curiosity to learn new things then also we spend time on it and this specially happened with students however the t-value for G2 and G3 is 0.24 which is not significant at 0.05 level it means there is no significant difference in attitude of G2-G3 towards artificial intelligencewith respect to time spend on computer and mobile devices.

Conclusion

People's lack of confidence in AI and their reluctance to accept what AI has to offer. Trust in other people is often based on our understanding of how others think and having experience of their reliability. AI is still fairly new and unfamiliar to most people. Even if it can be technically explained (and that's not always the case), AI's decision-making process is usually too difficult for most people to comprehend. And interacting with something we don't understand can cause anxiety and give us a sense that we're losing control (Singh, J. 2023). The finding of the study revealed that there is significant difference in the attitude of male and female senior secondary students towards Artificial Intelligence (AI) which shows that some are more into the use of AI and some are still not, as this study helps us to find out the attitude of male as well as female towards the use of it and make them aware about the positive aspects of AI as AI is somehow becoming the back bone of any developed country which make this content more crucial now adays therefore it is very much necessary to know how much students are spending time on mobile devices and computers as this study gives a significant difference between different group of students based on time spend on mobile devices and computers.

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