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Impact of Artificial Intelligence on Students' Learning: A Survey

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ABSTRACT: Artificial intelligence can change the classrooms as technological implications are vast on the learning system. These days, students are finding learning through the computers much more convenient without making it to the classroom in person. The study has been undertaken to find out whether Artificial Intelligence can influence the students' learning. It also tries to find out the differences in students' views regarding the influence of Artificial Intelligence on students' learning. The Normative Survey method has been applied for the current study. Population for the current study comprises both the teachers and students of undergraduate level in Thrissur District of Kerala, India. A sample of 100 students and 62 teachers of the college level were selected by following the purposive sampling method. Two separate self-structured questionnaires – one for the students and another for the teachers were used. Both the questionnaires are 4 point Likert scale with the response of "Strongly Agree", "Agree", "Disagree" and "Strongly Disagree". Collected data were analyzed by applying Mean, SD and t-test in the SPSS 20 Version software. Findings of the study indicate that both the teachers and students agree that there is a significant impact of Artificial Intelligence on the students' learning.

KEYWORD: Technology, Artificial Intelligence, Human Intelligence, Teaching, Learning.

INTRODUCTION

Artificial intelligence (AI) has grown more pervasive in our lives over the last several decades and has had a big influence on a lot of different areas, including education. "Education has undergone a series of changes and under the impact of artificial intelligence that brings with it the opportunity to transform, to adapt the way the teaching/learning process is carried out. There is a need to research the impact that artificial intelligence is having on education as we know it, and how we can use this discovery to improve the experiences of students and teachers. Therefore, we start this study with the definition and characteristics of artificial intelligence. Thus, artificial intelligence refers to the development of systems and machines that can simulate intelligent human behavior, such as learning, reasoning, and problem-solving. It involves the use of algorithms and complex mathematical models to enable machines to learn and improve their performance autonomously and the fundamental purpose of AI is to enable machines to exhibit traits specific to human intelligence" (Anyoha, 2017).

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Education has traditionally been regarded as the most relevant and honourable profession worldwide. This is the only area that has altered the state of the world to the extent that it has; all human advancements, whether in technology or humanity, are ultimately the result of this. As a result, artificial intelligence is one of humanity's greatest and most transformative achievements, and it will soon be rewarded. But for decades, futurists, science fiction writers, and filmmakers have all been prophesying the incredible—and sometimes disastrous—changes that would accompany the broad use of artificial intelligence. AI hasn't caused any major waves yet and has, in many respects, quietly permeated many facets of our everyday life. Even while we haven't yet developed self-aware robots like those that appear in blockbuster films, we have cleverly and often significantly applied AI technology to a variety of fields that, although not as revolutionary as androids, still have a profound impact on our daily lives. Although artificial intelligence (AI) has been around for about 30 years, educators are still unsure of how to use it pedagogically on a larger scale and how it can truly have a meaningful impact on teaching and learning in higher education. This makes education one area where AI is poised to make significant changes. These days, artificial intelligence is a part of everyday life. We are surrounded by technology, which includes personal help, sophisticated sensors for amazing picture capture, and automated parking systems. In a similar vein, artificial intelligence is beginning to influence education, and the conventional approaches are evolving significantly. Although it's unlikely that we'll see humanoid robots teaching in the next ten years, a number of initiatives are now underway that leverage computer intelligence to improve learning outcomes for both instructors and pupils. Actually, a lot of experts think that machine learning and artificial intelligence can raise educational standards. Applications of artificial intelligence (AI) in education are becoming more common and have drawn a lot of attention in recent years. It has already been used in education, mostly in testing systems and some instruments that aid in skill development. With the further development of AI educational solutions, it is hoped that AI will assist close gaps in knowledge and instruction and enable educators to do more than in the past for both instructors and schools. The many uses of AI in education are making the academic environment more individualized and comfortable. Due to the increased accessibility of educational resources via computers and smart devices, this has altered how individuals study. It is crucial that our educational institutions expose students to and use AI technology since the students of today will need to work in a future when the technology is a reality (Chawla, 2020).

Conceptual Framework:

The term "artificial intelligence" has numerous meanings. AI is portrayed in media headlines as a computer that can think, comprehend languages, solve issues, identify medical disorders, maintain traffic safety on highways, play chess, and create impressionistic replicas of works by Vincent van Gogh. A computer system that can carry out activities often associated with intelligent individuals is said to possess artificial intelligence (AI). Artificial intelligence is now generally defined as a scientific discipline; as the activity that creates machines that can function appropriately and with foresight in their environment (Nilsson, 2009). This definition is somewhat problematic as it requires us to define intelligence and is inconveniently tautological. The Rockefeller Foundation received the first formal definition of artificial intelligence in a 1955 grant application. It was based on the “conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it.” This early definition sparked intense debates right away. Early AI researchers effectively defined human intelligence as the calculation of truth values because they saw intelligence and thought as the mechanical processing of logical propositions. This view presented significant issues about the philosophical underpinnings of artificial intelligence (AI) even though it was historically consistent with logical positivism and attempted to formalize mathematics via merely syntactic methods. (Built In contributors. 2019).

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Statement of the Problem:

Artificial Intelligence is becoming more and more common in the field of education. It is becoming more and more obvious to everyone that it provides a plethora of fascinating opportunities for students' learning outcomes and already has significant promise for aiding in the accomplishment of contemporary educational objectives. Artificial Intelligence (AI) enhances education by enabling customized learning, offering immediate feedback, and streamlining the evaluation process. Therefore, by integrating artificial intelligence into online learning platforms, it is possible to tailor activities and material to the individual requirements and knowledge levels of each student. Artificial intelligence may be used by learning management systems to track student progress, provide customized suggestions, and generate automated feedback. In this regard the problem stated is "**Impact of Artificial Intelligence in Students' Learning: A Survey".**

Significance of the Study:

These days, artificial intelligence is a part of everyday life. We are surrounded by technology, which includes personal help, sophisticated sensors for amazing picture capture, and automated parking systems. In a similar vein, artificial intelligence is beginning to influence education, and the conventional approaches are evolving significantly. Although it's unlikely that we'll see humanoid robots teaching in the next ten years, a number of initiatives are now underway that leverage computer intelligence to improve learning outcomes for both instructors and pupils. Actually, a lot of experts think that machine learning and artificial intelligence can raise educational standards. Applications of artificial intelligence (AI) in education are becoming more common and have drawn a lot of attention in recent years. It has already been used in education, mostly in testing systems and certain programmes that support skill development. The present study is significant enough since it is an attempt to assess the impact of artificial intelligence on the students' learning. The teacher educators, scholars and the policy makers will be benefited from this study.

Objectives: The study has been undertaken to find out whether Artificial Intelligence can influence the students' learning. It also tries to find out the difference of students' views regarding the influence of Artificial Intelligence on students' learning.

Method: Normative Survey method has been applied for the current study.

Population: Population for the current study comprises both the teachers and students of college level of Thrissur District of Kerala. Using the purposive selection approach, a sample of 100 college students and 62 professors were chosen in order to meet the study's goals.

Tools: Two separate self structured questionnaires – one for the students and another for the teachers were used. Both the questionnaires are 4 point likert scale with the response of " Strongly Agree", "Agree", "Disagree" and "Strongly Agree". Before use the questionnaires were validated and their reliability was tested.

Statistical Techniques: Using the Mean, SD, and t test functions in the SPSS 20. Version programme, the collected data were examined.

Hypothesis:

Hp1-There is significant impact of artificial intelligence on the students' learning.

Hp2-There is no significant difference between male and female students regarding the impact of AI on students learning.

Hp3-There is no significant difference between rural and urban students regarding the impact of AI on students learning.

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Hp4-There is no significant difference between male and female teachers regarding the impact of AI on students learning.

Hp5-There is no significant difference between rural and urban teachers regarding the impact of AI on students learning.

DATA ANALYSIS AND INTERPRETATION:

Table 1-Students Views on the impact of Artificial Intelligence on students' Learning

Parameters	Values
N	100
Minimum	10
Maximum	26
Mean	18.45
SD	4.17
SEM	0.41
Skewness	0.08
Kurtosis	1.97

To find out whether the artificial intelligence can impact the students' learning the students were tested with the structured questionnaire. The above table shows that the mean score of the students' views is 18.45 with the minimum value of 10 and the maximum value of 26. The SD value is 4.17. The calculated SEM is 0.41 with the skewness value of 0.08 and the kurtosis value of 1.97. It is clearly indicated that the mean value is higher the mid value 14 which proves that the students are highly agreed with the matter that artificial intelligence can impact their learning.

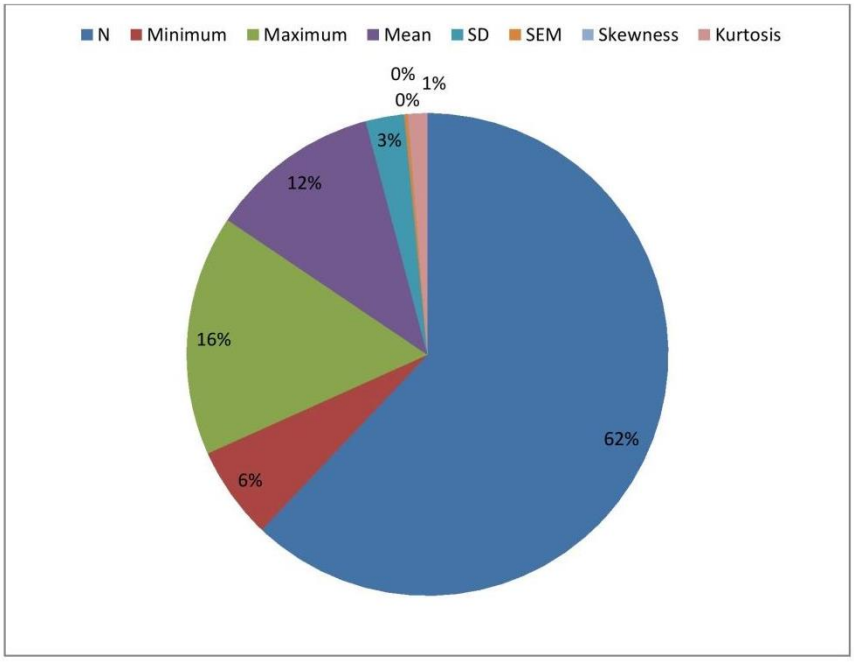

Fig.1: showing the descriptive statistics Students Views on the impact of Artificial Intelligence on students' Learning

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Table 2-Teachers views on the impact of Artificial Intelligence on students' Learning

Parameters	Values
N	62
Minimum	12
Maximum	26
Mean	20.08
SD	3.49
SEM	0.44
Skewness	-0.15
Kurtosis	2.34

To find out whether the artificial intelligence can impact the students' learning the teachers were tested with the structured questionnaire. The above table shows that the mean score of the Teachers' views is 20.08 with the minimum value of 12 and the maximum value of 26. The SD value is 3.49. The calculated SEM is 0.44 with the skewness value of 0.15 and the kurtosis value of 2.34. It is clearly indicated that the mean value is higher the mid value 14 which proves that the teachers are highly agreed with the matter that artificial intelligence can impact the students' learning.

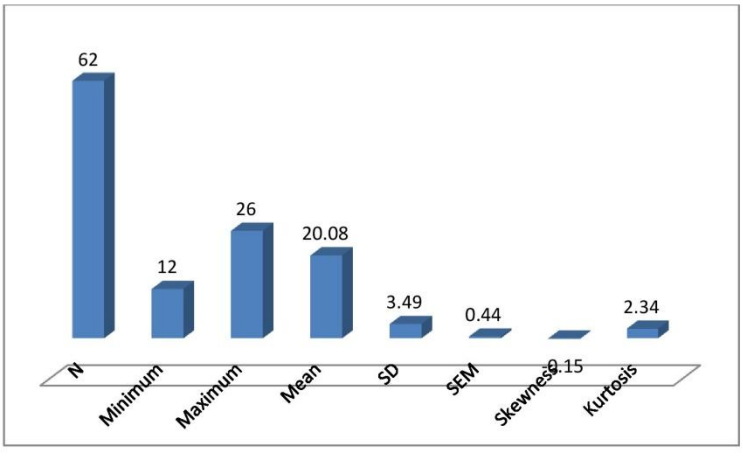

Fig.2: Showing descriptive statistics of Teachers views on the impact of Artificial Intelligence on students' Learning

Table 3-Difference of Students Views based on gender regarding the impact of AI on students' Learning

Group	N	Mean	SD	SEM	DF	t
Male	48	19.26	3.96	0.5716	98	1.00
Female	52	18.45	4.12	0.5713		

t' test has been applied to find out whether there is any difference between male and female students regarding the impact of AI on students' learning. The above table shows that the mean value for Male and female students are 19.26 and 18.45 respectively. The obtained SD value for male and female students are 3.96 and 4.12 respectively. The calculated t value is 1.00. By conventional criteria, this difference is considered to be not statistically significant at 0.05 level of significance at 95% confidence of interval. Therefore the formulated hypothesis "There is no significant difference between male and female students regarding the impact of AI on students learning" is retained.

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Table 4-Difference of Students Views based on Residential area regarding the impact of AI on students' Learning

Group	N	Mean	SD	SEM	DF	t
Rural	44	18.96	4.62	0.69	98	1.49
Urban	56	20.24	3.94	0.52		

t' test has been applied to find out whether there is any difference between rural and urban students regarding the impact of AI on students' learning. The above table shows that the mean value for rural and urban students are 18.96 and 20.24 respectively. The obtained SD value for rural and urban students are 4.62 and 3.94 respectively. The calculated t value is 1.49. By conventional criteria, this difference is considered to be not statistically significant at 0.05 level of significance at 95% confidence of interval. Therefore the formulated hypothesis "There is no significant difference between rural and urban students regarding the impact of AI on students learning" is retained.

Table 5-Difference of Teachers' Views based on gender regarding the impact of AI on students' Learning

Group	N	Mean	SD	SEM	DF	t
Male	34	21.24	3.42	0.58	60	0.39
Female	28	20.86	4.21	0.79		

t' test has been applied to find out whether there is any difference between male and female teachers regarding the impact of AI on students' learning. The above table shows that the mean value for Male and female teachers are 21.24 and 20.86 respectively. The obtained SD value for male and female teachers are 3.42 and 4.21 respectively. The calculated t value is 0.39. By conventional criteria, this difference is considered to be not statistically significant at 0.05 level of significance at 95% confidence of interval. Therefore the formulated hypothesis "There is no significant difference between male and female teachers regarding the impact of AI on students learning" is retained.

Table 6-Difference of Teachers' Views based on residential area regarding the impact of AI on students' Learning

Group	N	Mean	SD	SEM	DF	t
Rural	18	18.69	4.65	1.09	60	2.07
Urban	44	20.84	3.26	0.49		

t test has been applied to find out whether there is any difference between rural and urban teachers regarding the impact of AI on students' learning. The above table shows that the mean value for rural and urban teachers are 18.69 and 20.84 respectively. The obtained SD value for rural and urban teachers are 4.65 and 3.26 respectively. The calculated t value is 2.07. By conventional criteria, this difference is considered to be statistically significant at 0.05 level of significance at 95% confidence of interval. Therefore the formulated hypothesis "There is no significant difference between rural and urban teachers regarding the impact of AI on students learning" is rejected. Therefore it can be concluded that rural teachers differ significantly from the urban teachers in respect of their views on the impact of AI on students' learning.

Findings: Main findings of the present study are as follows-

- Both the teachers and students agree that there is significant impact of Artificial Intelligence on the students' learning.
- Rural teachers differ significantly from the urban teachers in respect of their views on the impact of artificial intelligence on students' learning.

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- There exists no difference between male and female teachers as well as students regarding the impact of artificial intelligence on students learning.

Conclusion:

Today's educators and students employ AI technologies on a large scale. Artificial Intelligence (AI) enables individualized learning, offers universal access to high-quality education at all levels and across all platforms, and encourages distance, open, online, and digital learning. In the near future, the school system will be able to really support a lifelong learning process for every person on the planet with the aid of artificial intelligence. AI is capable of handling teaching and learning to a large degree, even if it cannot completely replace human instructors. In every aspect of social or personal life, artificial intelligence is here to stay, and the educational system has already embraced it. Education and lifelong learning will help increase public awareness of potentially disruptive technology.

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