Teachers' Perspectives towards Artificial Intelligence Enabled Classrooms in School Education

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Abstract

Education shapes the nation and today's education is driven by the science and technology. With the advent of new technologies, the education system also gets restructured and lots of new practices are followed and many old and unused practices are discarded off. Artificial Intelligence is one such new technology that has attracted the attention of all scientists across the world. Seeing the potential of AI, scientists take it as the technology of the century. Though we are in the initial phases of the AI era, many new educational technologies is knocking the door each day that can make big difference in the teaching learning practice in the class. Highly influenced by the new technology, the researcher intends to take a research work on AI enabled classrooms and tools that can be implemented in the classroom to modernize the teaching learning process. In this research, the researcher carried out a survey research to find the teachers' awareness towards AI and their perspectives towards AI in school education. The result shows that 76.19% of teacher possesses high level of AI awareness. They have idea of the current AI advancements in the field of education. And know the steps taken by the educational institutions integrating AI with the school curriculum. The result also shows that teachers are optimistic with the new technology and are of the opinion that it is going to make the teaching and learning more interactive.

Key Words- Artificial Intelligence, Teachers' Perspectives, Machine Learning, Pedagogy

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Introduction

There is no field which is untouched by the disruptive effect of Artificial Intelligence. Alan Turing's definition would have fallen under the category of "systems that act like humans". At its simplest form, artificial intelligence is a field, which combines computer science and robust datasets, to enable problem-solving. Artificial Intelligence works on the principal of algorithms, which keeps on changing and adapting as per its experiences received, while interacting with human. It is said that Artificial Intelligence will completely change the structure of Education system. AI has the potential to make a greater impact on all the domains of learning (Cognitive, Reflective and Psychomotor). AI can be exploited to make learning more interactive and effective. It can provide support in various dimensions of school educations be it administration, financial management, students attendance, assessments, results making, keeping track of students' performance, inclusive education, personalization of learning materials for remediation purpose for weak students.

Operational Definitions-

Teachers' Perspectives- It refers to the teachers' viewpoint towards AI enabled classroom in school education as assessed by the researcher prepared questionnaire.

AI Enabled Classroom-It refers to a classroom in which many or at least anyone AI or machine language technology (a computer program) is used to perform human tasks such as thinking and learning and participate in the process of classroom teaching and learning.

AI Tools for Classrooms:

1. **VF and Learning Environments –** The University of Southern California (USC) Institute for Creative Technologies is a pioneer in creating smart virtual environments

and applications that draw on AI, 3-D gaming, and computer animation to develop authentic virtual characters and realistic social interactions

2. **Virtual Boards-** These virtual boards can replace the traditional Black-Boards and White Boards and enable the teacher to perform multiple tasks like browsing webpage, accessing remote contents, creating a virtual 3-D image of living or non-living objects along with writing on the board.

3. **Fingerprints access for attendance and data security-** This will enable a student to to safely mark his attendance which can be instantaneously retrieved by the teacher.

NITI Aayog has partnered with the National Association of Software and Services Companies (NASSCOM) and has created an AI-based module to bolster artificial intelligence education in India. The module was launched by NITI Aayog under Atal Innovation Mission (AIM) and contains activities, videos and experiments to bolster academic knowledge of big data analytics and artificial intelligence amongst the students. The National Education Policy (NEP) 2020 has recommended introducing contemporary subjects like Artificial Intelligence in curriculum, at relevant stages.

Research Question:

The researcher wants to find out

1. Are teachers aware of the Artificial Intelligence and its implementation in education?
2. Do teachers possess sufficient knowledge about the current advancements of AI Technology in education?
3. What is teacher's opinion towards the Future classrooms enabled with Artificial Intelligence tools?
4. Can Artificial Intelligence replace the teachers from classrooms?

Objectives:

The objective of this paper is to find the teachers' perspectives, towards the Artificial Intelligence enabled classrooms in school education.

METHODOLOGY

Research Design

In this research, quantitative methodology was used to collect and analyze the data obtained from all the respondents. The researcher developed the questionnaire and finalized it before being distributed to the targeted group of respondents. Few sections on the questionnaire were designed specifically to address research objectives in regard with 'the teachers' perspectives towards AI enabled classrooms in teaching and learning

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process'. Besides, this study also investigates the relationship between teachers' awareness about the AI.

Sample

Sample of the given Research work consisted of 42 secondary school teacher, selected through simple purposive sampling technique. Out of these 42 teachers, 17 are female teachers and 25 are male teachers. They voluntarily completed the questionnaires, circulated through Google form. All of the samples were teaching at secondary schools located in the different geographic region and had the same organizational and hierarchical structure, which makes no formal distinction between teachers' duties and position in school. As due to COVID lockdown physical movement is not possible the questionnaire was circulated to teachers through the Google form.

Instrument

The researchers utilized a self prepared questionnaire to collect the teacher's awareness and their opinion towards the Artificial Intelligence enabled classroom. The questionnaire consists of 3 sections. The first section consisted of 7 question, related to the teacher's profile, basic demographic question such as the participant's sex, age, years of teaching experience and subjects of teaching was included; it was followed by 14 questions on the AI awareness, in context with school education. The third sections in the questionnaire focus more into teacher's perception toward AI enabled classroom and its impact in the teaching and learning process. As for the scale used, the last section of the questionnaire adopted a five-point scale format to assess teachers' responses for each related question. (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

Data Collection Procedure

The researchers distributed the questionnaire from to the target group of respondents, teachers teaching in secondary schools. The data was collected through Google form 31st May 2021 to 6 June 2021 . The respondents were given 6-7 days to complete the questionnaire and submit to the researcher for data analysis. Total 42 complete filled-up questionnaires were gathered and collected for further data analysis by the researcher to get the output and findings for the research.

Data Analysis Process

All the data collected from the respondents were gathered together for analysis. The analysis includes inferential analysis.

Result and Interpretation

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The findings of this research will give the output needed by the researchers to answer the research questions. The findings are done according to the sections in the questionnaire.

Demographic background of respondents Factors	Frequency	Percentage (%)
Gender		
Female	17	41.46
Male	25	58.53
Teaching Experience		
0-10 years	19	45.23
11-20 years	16	38.10
21-30 ears	7	16.66
>30 years	0	00
Awareness towards Artificial Intelligence in Education		
High	32	76.19
Medium	7	16.66
Low	3	7.1

From the overall population (n=42) based on gender, there are 25 female respondents with a percentage of 45.40% as compared to 25 male respondents with 59.5%. From the overall population based on teaching experience, most of the respondents have 1-10 years of teaching experience with 19 (45.23) followed by 11-20 years of experience with 16 (38.10%), then 7 respondents with > 20 years of teaching experience with (16.66%). All respondents are teaching in secondary school. Result shows that 32 out 42 (76.19%) teachers have high level of awareness related to AI. 7 (16.66) have medium level of awareness and 3(7.1) have low level of awareness towards AI.

In the third section the survey result is tabulated below.

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No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Teacher's Perspectives Towards AI Enabled Classroom in Education at Secondary Schools
1	In coming future Artificial Intelligence tools will become very common in classroom	-	-	19	61.9	19
2	Artificial Intelligence will have no impact in Indian Education Classrooms	9.5	59.5	16.7	9.5	4.8
3	As far as I know currently no AI tools can be used in the field of Education	2.4	45.2	28.6	16.7	7.1
4	Even If AI tools will be available it will have no impact in classroom teaching learning process	11.9	52.4	28.6	4.8	2.4
5	If AI tools are provided in classroom I will able to make my teaching more effective.	-	-	4.8	61.9	33.3
6	AI enabled classroom will make teaching- learning more interactive in class.	-	-	7.1	59.5	33.3
7	AI enabled teaching will be more supportive for students with learning disabilities	-	2.4	4.8	59.5	33.3
8	AI will help in catering the needs of students with different learning abilities by providing personalised learning	2.4	2.4	2.4	52.4	40.5
9	In future AI will replace the teachers from the class	33.3	45.2	11.9	7.1	2.4
10	AI will reduce the teachers manual work, giving them more time to plan their lessons and adding more quality to teaching in classroom	2.4	7.1	11.9	52.4	26.2

11	AI will help teachers to connect more strongly to the class	-	-	4.8	66.7	28.6

The results of this study show that 61.9% teacher agrees and 19% teachers strongly agree that AI will become common technology in the class in future. The pace with which technology is penetrating in our life, AI can solve many headstrong work of the class. 19% teachers have given neutral response. 69% teachers accept that AI is going to put a lot of impact in Indian Education. Overall the result shows that teachers are hopeful with the introduction of the new technology in the class. 33.3% of the teacher strongly agrees and 61.9% agrees that AI tools make their teaching more effective and similar result is seen making a view that AI will make the teaching learning more interactive and create live experiences. Particularly in the field of inclusive education AI will fill the gap between teacher and students. Teachers are highly confident towards AI effectiveness in inclusive education. Overall 59.5% agree and 33.3% strongly agree that AI enabled classroom will be very supportive for students with learning disabilities. Teachers are optimistic that AI will be very beneficial for the slow learners who need to practice more because the AI tools will be very effective to make the learning personalized by providing ample of time and opportunity for the learner to practice as per his capacity irrespective of the other colleagues. 33.3% teachers strongly disagree and 45.2% disagree to the question that AI will replace the teachers from the class. In fact the role of the teacher will be crucial in managing the learning activities it will shift to a real facilitator instead of a lecturer. 26.2% teachers strongly agree and 52.4% agree that AI enabled classroom will add more quality to the teaching activity and instead of engagement into manual work teaching will reshape into a kind of managing job. 66.7% teachers are hopeful that they will able to connect more strongly and effectively in an AI enabled classroom because their attention will be fixed on to the learning activites instead of all other non-scholastic work.

Discussion:

The rise of AI makes it impossible to ignore a serious debate about its future role of teaching and learning in higher education and what type of choices universities will make in regard to this issue. The fast pace of technology innovation and the associated job displacement, acknowledged widely by experts in the field (source), implies that teaching in higher education requires a reconsideration of teachers' role and pedagogies. Teachers agree that AI helps to improve classroom management by keeping the record of performance of the students and keeping their students' more focused.

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Conclusion:

As AI advances in this domain, it seems there is more evidence to support the idea that both intelligent systems and humans are needed to manage different aspects of students' academic and social competencies. AI will likely not replace but will serve as an invaluable extension of the human expert, helping teachers to more effectively meet the diverse needs of many students simultaneously. Preparations of a technology-based teaching and learning begin with proper implementation and supports by the school top management. AI in schools will result in a huge success and benefits for both teachers and students. The use of AI especially in teaching and learning is more about practicality as compared to theories.

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