Exploring the Integration of AI Tools Among Secondary Teachers in Kerala

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***Abstract*—The present study focusses identify the cognitive dimension of secondary school teachers in Kerala towards AI tools. In the study survey cum descriptive method is used and data consists of validated questionnaire that was given to a convenient sample of 30 teachers from different districts in Kerala through google form. The outcomes indicated that more than 50% of teachers had a moderate level of knowledge and have adopted AI tools for teaching-oriented tasks, including lesson planning and curricula to be developed. High standard deviation on impact of AI tools on teaching effectiveness and workload shows the varied level of comfort, confidence and familiarity with AI among teachers. Most of the teachers are using AI for academic related tasks like content creation, lesson planning and preparation of worksheets The findings highlight the need for systematic professional development programs among teachers on the effective and ethical use of AI in education. Teachers need training for doing their administrative works like grading with the AI tools. This will be helpful for the teachers allowing focus more on creativity, mentorship, and human connection.**

***Index Terms*—Artificial Intelligence, Teacher Awareness, AI Tools, Secondary Education Kerala**

I. INTRODUCTION

Artificial intelligence (AI) has changed the educational scenario by enabling tailored learning experiences catering student's needs, requirements and learning preferences. AI systems are capable of analysing student performance data using the cutting - edge technologies like machine learning and natural language processing to produce individualised learning experience ,focused feedback and adaptive recommendations capable of improving students' academic performance and learner engagement (Harry, 2023).The Artificial intelligence(AI) technology is characterised by adaptive platforms capable of modifying instructional content according to learners' proficiency level ,increasing the enjoyment and efficiency of learning process (Alneyadi, Alkaabi & Alhosani 2023).Artificial Intelligence is transforming education by improving teaching and learning process , claim Gocen and Aydemir (2020). A few examples are intelligent content tools, presentation translators, automated evaluation tools, global courses, virtual mentors, intelligent tutoring systems, voice tutors and educational games.

II. LITERATURE REVIEW

Artificial intelligence can stimulate creativity and thinking with a structured pedagogical framework by promoting reflection, inquiry, equitable access and adaptive learning. Additionally, it gives teachers the ability to AI-enhanced learning environments (Shahzad et al., 2025). Students can engage in solving complex engineering problems, alter historical events and conduct challenging scientific experiments in interactive and immersive environments free from physical constraints. Artificial intelligence can tackle this with latest technology and maintain a balance between creativity and compassion. Ginn (2024) claim the significance of ethical AI use, reflective learning and its practical application. She also highlights the method of incorporating Artificial intelligence into their classrooms to achieve best results.

The current trends aim to integrate formative assessments, personalised assessments and adaptive tests supported by AI system and also address ethical concerns of equity, fairness and minimising bias in learning (Muckson Sesay & Sesay, 2024). Bessas et al. (2023) discussed the High school students' opinion

regarding the use of ChatGPT by giving the benefits and drawbacks of the program. Mustofa et al. (2024) demonstrated how Chat GPT and other AI -based tutoring programs are capable of helping students with challenging problems and their detailed explanation. These models enable the students to learn at their own pace, revising the topic repeatedly.

2.1 Objectives of the study

- To assess the level of awareness and familiarity of school teachers with Artificial Intelligence (AI) in the context of education.
- To identify the extent of usage of AI tools by secondary school teachers on teaching effectiveness.
- To determine the overall perception of using AI tools in school education.
- To find out the need of training on effective and ethical use of AI tools in Education.

2.2 Hypotheses

- Teachers will possess a moderate level of familiarity with AI in education.
- More than 50% of teachers will use AI tools for teaching-related tasks.
- The average will perceive a positive impact of AI in school education.
- More than or equal to 50% of teachers will express interest in training in AI.

III. METHODOLOGY

Design of Research: To obtain quantitative information on teachers' awareness, knowledge, and use of AI tools in the classroom, a descriptive survey method was used.

Population and the sample: Teachers from Kerala's secondary schools were among the population. Convenient sampling technique was used to choose a sample of 30 teachers from government and aided schools in different districts.

Instrument for Gathering Data: A questionnaire on 'Knowledge and Usage of AI Tools among Secondary School Teachers' prepared by the investigator was used to collect data. It was conducted as a structured Google Form survey. The tool consisted of 16 questions covering demographics, awareness, usage, perceived impact, and challenges were included in the tool.

Tool Validation: The face validity was established to ensure the accuracy and appropriateness of the tool. Three experts in education reviewed the questionnaire's content to make sure it was appropriate, relevant, and clear. Before distributing the completed form, modifications were made in response to their suggestions.

IV. ANALYSIS INTERPRETATION OF DATA

Data collected were analysed using descriptive statistics. Percentage responses of each item were calculated. The result of the analysis is presented based on the hypothesis formulated.

4.1 Assessment of the level of awareness and familiarity of school teachers with Artificial Intelligence (AI) in the context of education. To assess the familiarity of the teachers with AI, they were asked how familiar they were with the concept of AI and AI tools in education. The percentage analysis of the responses is given in table 4.1.

Table 4.1: Familiarity with AI in Education (N=30)

Response	No. of teachers	percentage
Not familiar at all	2	6.7
Slightly familiar	10	33.3
Moderately familiar	12	40
Very familiar	5	16.7
Expert	1	3.3
Total	30	100

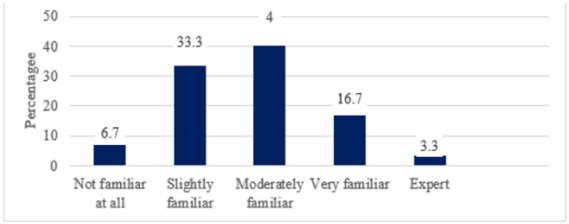


Figure 4.1: Familiarity with AI in Education

From the table and the graph, it is clear that more than 50% of teachers are familiar with artificial intelligence in the classroom. At 3.3 percent, the expert level is relatively low. And almost 6.7 % of them were unaware of AI.

4.2 To know the depth of familiarity, the participants were asked to mark the specific AI tools which they use in their daily teaching learning process. The percentage analysis of the responses is given in table 4.2.

Table 4.2: Awareness and Usage of Selected AI Tools

Tool	I know what it is (%)	I have heard the name (%)	I am using this tool (%)	Not Aware (%)
Chat GPT	23.3	3.3	76.7	3.3
Gemini (formerly Bard, by Google)	43.3	23.3	33.3	6.7
Microsoft Copilot	20	46.7	6.7	26.7
Canva AI	16.7	23.3	23.3	43.3
Grammarly	23.3	33.3	13.3	33.3
Quill Bot	20	23.3	3.3	56.7
ChatPDF / AI PDF Sum	23.3	33.3	16.7	26.7
Kahoot! AI	16.7	20	6.7	60
Khan Academy (AI tutor)	13.3	20	6.7	63.3
DALL-E / Midjourney (AI Image Generators)	13.3	16.7	3.3	66.7
Duolingo	20	26.7	6.7	53.3

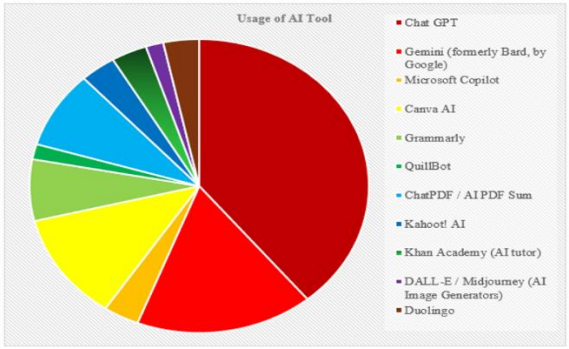


Figure 4.2: Awareness and Usage of Selected AI Tools

From the above analysis, it is evident that majority of the teachers (76.7%) use ChatGPT in their teaching-learning process. The other AI tools popular among teachers are Gemini (33.3%) and Canva (23.3%). The results reveal that some of the most effective AI tools in education such as Duolingo, Kahoot, DALL-E / Midjourney etc. are not being used widely by the teachers.

4.3 Determining the extent of usage of AI tools by secondary school teachers on teaching related tasks

The usage of AI tools among teachers were found to be relatively high, indicating the indicating the growing acceptance and integration of technology in teaching practices. To know the extent of usage of AI tools by teachers in teaching related tasks, they were asked to specify the areas where they use them. The percentage analysis of the responses is given table 4.3

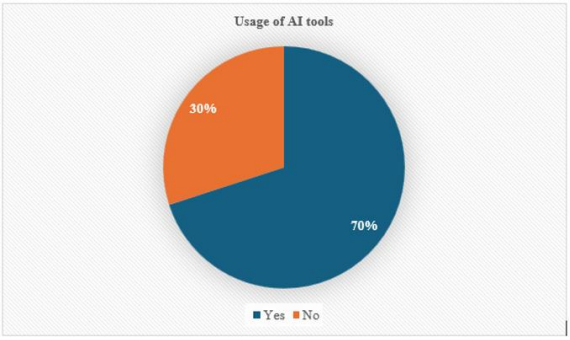


Figure4.3(a): Teaching tasks supported by AI (multiple responses)

Table 4.3: Teaching tasks supported by AI (multiple responses)

Purpose	No. of teachers	Percentage
Lesson Planning	18	60
Content Creation	9	30
Worksheet & Question Paper Preparation	12	40
Personalized Learning	6	20
Administrative Work	2	6.7
Research & Self-Learning	6	20
Image/Video Creation	3	10
Proof reading & Editing	3	10

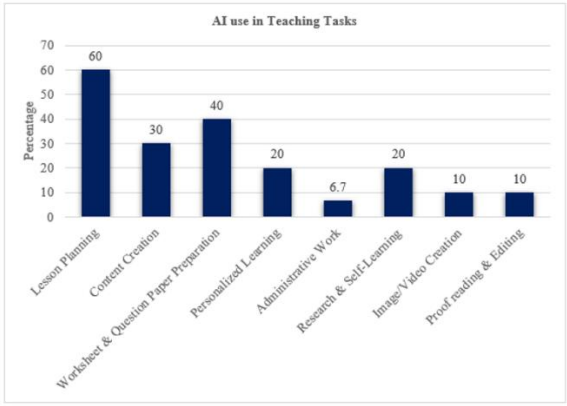


Figure 4.3 (b):AI use in teaching tasks

The analysis shows that AI tools are being used in the classroom by 70% of teachers. Sixty percent of educators use AI to plan their lessons. Forty percentage of the teachers are using AI for worksheet and question paper preparation. Only10% of teachers use AI to create images or videos.

4.4. Determine the impact of using AI tools in school education.

To know the challenges faced by teachers in using AI in education, they were asked to specify the difficulties they face while using them, the data was analysed and is given in table 4.4(a).

Table 4.4(a): Challenges faced while using AI tools (Multiple response)

Challenges	No. of teachers	Percentage
Lack of reliable internet access.	6	20
Lack of time to learn and experiment.	17	56.7
Concerns about accuracy and fact-checking AI-generated content.	10	33.3
Fear of technology or complexity of tools.	2	6.7
Ethical concerns (e.g., plagiarism, over-dependence)	3	10
Lack of institutional support or guidelines.	2	6.7
Cost of premium features.	8	26.7
I have not faced any significant challenges	0	0

The findings revealed that teachers spotted lack of time as the major hindrance in mastering and using AI in education. Many of them were doubtful about the authenticity of the AI content and quite a number of teachers found it expensive.

Table 4.4(b): Impact of AI tools on your teaching effectiveness and workload (N = 30)

No. of teachers	Mean	Standard Deviation
30	3.1	1.96

The mean score for perceived impact was found to be 3.1, which indicates that teachers perceive AI to have a moderate positive impact on their teaching effectiveness and workload. Whereas the standard deviation of 1.96 reflects variation in responses, suggesting that even though a number of teachers view AI to be effective in their teaching and to reduce workload, there are teachers who do not think so. The results reveal that AI is being recognized as a beneficial tool in teaching learning process.

4.5 The overall perception of using AI tools in school education was also analysed. The responses are listed in the table below. To determine the impact of AI tools in school education, mean and standard deviation of the responses were calculated.

Table 4.5: Overall perception of using AI tools in school education (N = 30)

Perception	No. of teachers	Percentage
Very positive	8	26.7
Somewhat positive	17	56.7
Neutral	3	10
Somewhat negative	1	3.3
Very negative	1	3.3

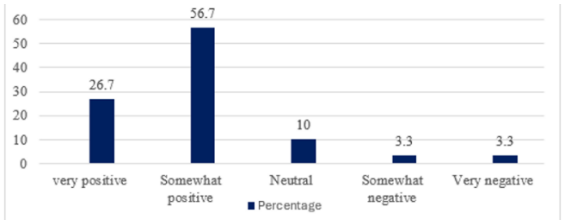


Figure 4.5: Teachers' perception of AI in EducationDescriptive statistics was calculated to examine how teachers view the impact of AI tools on their workload and effectiveness as educators. The results showed that teachers generally thought using AI tools had a positive impact on their instruction, with a mean score of 3.10 and SD = 1.96 shows their varying levels of comfort, confidence, and familiarity with AI-assisted teaching methods. Teachers' responses appear to vary significantly, as indicated by the comparatively high standard deviation. All things considered, more than 56.7% of the educators had positive or somewhat positive views about the application of AI tools in the classroom. The challenge faced by most of the teachers is due to the lack of time to learn and experiment.

4.6. Determine the need of training on effective and ethical use of AI tools in education.

To know the interest of teachers in training in AI tools especially to use it effectively and ethically, data was collected accordingly and analysed in table 4.6(a) and 4.6(b)

Table 4.6(a): Interest in AI training (N = 30)

Interest level	No. of teachers	Percentage
Very interested	13	43.3
Somewhat interested	9	30
Neutral	5	16.7
Not very interested	3	10
Not interested at all	0	0

Table 4.6(b): Preferred training topics (multiple responses)

Training topic	No. of teachers	Percentage
Basic introduction to popular AI tools (ChatGPT, Gemini, etc.)	12	40
Using AI for lesson and activity planning.	5	16.7
Using AI to create worksheets and assessment questions.	12	40
Using AI for administrative tasks.	3	10
Understanding the ethics and limitations of AI.	7	23.3
Using AI to support students with special needs.	9	30

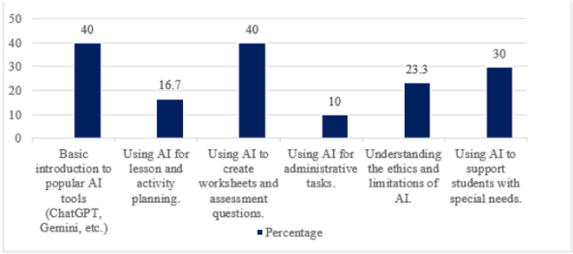


Figure 4.6: Preferred training topics

The findings reveal that 43.3 % of teachers are very interested in receiving AI training. Forty percent are interested in receiving training on the fundamentals of common AI tools (ChatGPT, Gemini, etc.). 40% are interested in receiving training on creating worksheets and test questions using AI. Thirty percent intend to support students with special needs through AI. 23.3 % wants to know about the ethics and limitations of AI. 16.7 % hopes the training will help them to use AI in lesson and activity planning. Whereas 10 % of teachers hope to use the knowledge in administrative tasks.

V. RESULTS AND DISCUSSIONS

The present study focused on determining the awareness and familiarity of AI among secondary school teachers in Kerala. It was an attempt to find out the use of AI in teaching learning process by the teachers, The analysis and interpretation of the data collected revealed that AI is being recognized as a beneficial tool in education by teachers. Many of them are using it in their teaching learning process. However, their knowledge in most effective AI tools that can be used in education is limited. Also, an important revelation from the analysis is that there was no one teacher, who had not faced difficulties while using AI in education. This reveals the need of training in AI for teachers to use it effectively for teaching learning process.

5.1 Educational Implications

The findings of the study show the usefulness of Artificial intelligence (AI) tools in teaching learning process. Awell-structured professional development program focused on AI literacy is to be conducted for teachers to improve the awareness and usage of AI tools. Educational institutions should organise training workshops and hands -on activities to assist teachers in understanding the pedagogical applications and ethical implications of artificial intelligence.

Educational institutions should design training workshops and hands-on activities to assist teachers in understanding the pedagogical applications and ethical implications of artificial intelligence. The curriculum planners and administrators should support collaborative learning communities where teachers can share their views and ideas for AI -based instruction and best practices to tackle the wide difference in teachers' perception and usage levels. The integration of AI (Artificial intelligence) can help the teachers to reduce their work load and involve in classroom instruction. The policy makers should also guarantee reasonable access to AI technologies in Kerala schools, especially in government and rural institutions to nullify digital divide and advance inclusive digital education.

VI. CONCLUSION

The aim of present study is to investigate the awareness, familiarity and the level of use of AI tools, as well as their general perceptions and training requirements by secondary school teachers. The results show that majority of the teachers had some knowledge of AI (Artificial intelligence), their

familiarity and practical application levels were only moderate. Teachers are using AI tools for lesson planning, content creation and assessment. A sizable portal still is not confident enough to use AI tools effectively. Teachers are of the opinion that the integration of AI in classroom will help them to improve instruction and workload. The study also found that there is a significant need for organising training courses and workshops on AI (Artificial intelligence) tools in class room.

In short, the implementation of AI tools, their meaningful responsible and equitable use in class rooms requires systematic professional development, institutional supports and awareness campaigns.

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