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A Descriptive Study to Assess the Utilization of Artificial Intelligence in Education: A Study among Educators in Kerala

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ABSTRACT

Artificial Intelligence (AI) is increasingly being integrated into educational practices worldwide. This study investigates the utilization, perceptions, and challenges of AI in education among educators in Kerala, a region known for its progressive educational framework and high literacy rates. The aim was to assess the extent of AI adoption, identify facilitators and barriers, and explore educators' perceptions of AI's effectiveness in the teaching-learning process. A descriptive cross-sectional design was employed, involving 61 educators from various disciplines. Data swere collected through a structured questionnaire distributed via Google Forms. The questionnaire covered socio-demographic details, awareness, utilization, perceived benefits, barriers, and perceptions of AI in education. Ethical approval was obtained, and informed consent was secured from all participants. The study revealed that most respondents were female (83.6%), aged 31–40 years (53%), and employed in private institutions (96.7%). Awareness of AI in education was nearly universal (98.4%), with 45.9% rating their knowledge as "Very Good." Common applications included audiovisual aids (80.3%) and grading assignments (83.6%). However, significant barriers to adoption were identified, such as a lack of knowledge and training (82%), high costs (45.9%), and insufficient institutional support (24.6%). Despite these challenges, 49.2% of educators rated AI tools as "Very Effective" in enhancing teaching and learning, and 44.3% believed AI would become essential in education. The findings underscore the transformative potential of AI in education while highlighting critical barriers to its adoption. These measures are crucial for fostering broader adoption and maximizing the educational impact of AI. In conclusion, AI demonstrates significant potential to enhance educational practices in Kerala. Addressing

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challenges through strategic interventions can enable widespread adoption and improve the quality and effectiveness of teaching-learning processes. Future research should focus on longitudinal studies and broader samples to provide more generalizable insights.

Keywords: Artificial Intelligence, Education, utilization, Educators

The advent of AI has revolutionized various sectors, including education, offering adaptive learning platforms, automated grading, and virtual tutors. Kerala's high literacy rate and progressive educational framework make it an ideal context to explore AI integration in teaching practices. This study aims to assess the extent of AI adoption, identify facilitators and barriers, and explore educators' perceptions of AI in teaching and learning.

METHODOLOGY

Study Design A descriptive cross-sectional study was conducted.

Participants Educators from Arts, Science, Commerce, Nursing, Pharmacy, and Allied Health Sciences were selected through convenience sampling. The sample included 61 educators from Kerala's government, private, and aided institutions.

Samples

Educators working in the arts, pharmacy, nursing and allied health sciences across the state of Kerala are the samples of the study

Sample size

61 teachers working in arts, pharmacy, nursing and allied health sciences across the state of Kerala are the samples of the study

Sampling technique

Convenience sampling technique is used in this study.

Inclusion Criteria

Educators currently teaching in Kerala.

Participants from government, private, and aided institutions.

Data Collection Tool A structured questionnaire comprising six sections: socio-demographic variables, awareness, utilization, perceived benefits, barriers, and perceptions of AI in education, was used. Data were collected via Google Forms.

Method of data collection

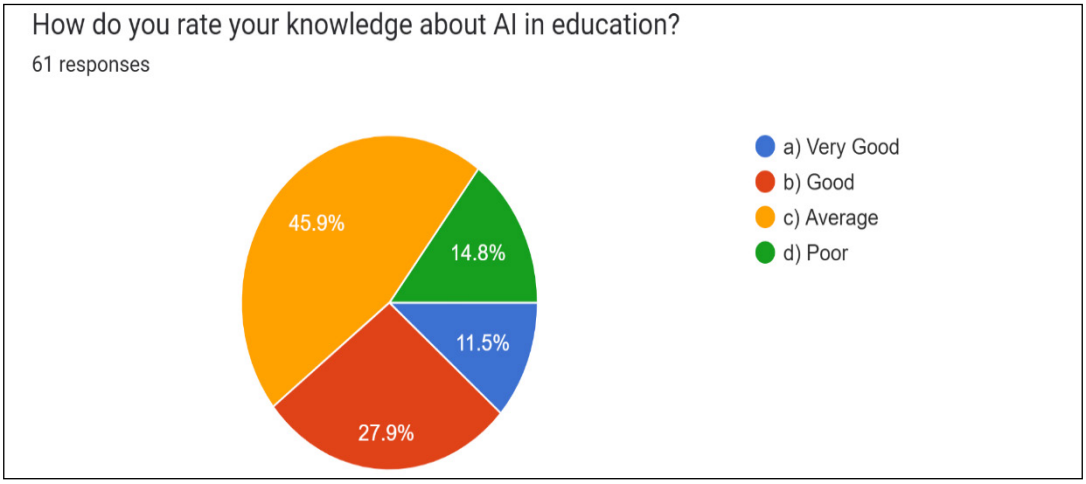
Data is collected using the given questionnaire. Google form link is created and sent to the participants of the study.

Ethical Considerations Ethical clearance was obtained, and informed consent was secured from participants.

RESULTS

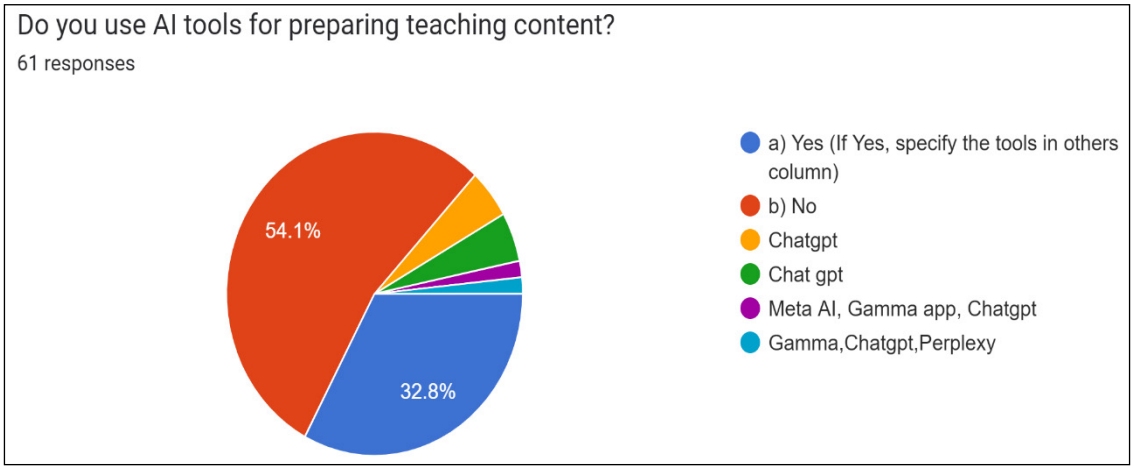
The study revealed that 53% of the respondents were aged 31-40 years, followed by 21% aged 20-30 years. The older age groups accounted for smaller percentages, with 16% aged 41-50 years, 8% aged 51-60 years, and 2% aged 61 years and above. Females constituted 83.6% of the respondents, while males made up 16.4%. Regarding educational qualifications, 86.9% held a Master's degree, followed by 8.2% with a Bachelor's degree, 3.3% with an M.Phil, and 1.6% with a Ph.D. Most respondents (96.7%) were employed in private institutions, with only 3.3% in government or aided institutions. Teaching experience was predominantly less than five years (39.3%), followed by 31.1% with 11-15 years of experience, 19.7% with 6-10 years, and smaller proportions with 16-20 years (6.6%) and over 20 years (3.3%).

Awareness of AI in education was nearly universal, with 98.4% having heard about it. Knowledge levels varied, with 45.9% rating their knowledge as "Very Good," 27.9% as "Good," 14.8% as "Average," and 11.5% as "Poor." Familiarity with AI tools was mixed, with 44.3% aware of AI-based content creation tools and 42.6% unfamiliar with any AI tools. Other tools like AI-driven presentation aids (13.1%) and virtual tutors (6.6%) were less commonly known. Usage of AI tools was highest for audiovisual aids (80.3%), with 16.4% using text-to-speech software and only 16.4% not using any aids. AI tools were frequently used for content preparation (24.6%) and presentations (24.6%), occasionally for audiovisual aids (32.8%), and rarely for assessing student performance (9.8%) and administrative tasks (6.6%).

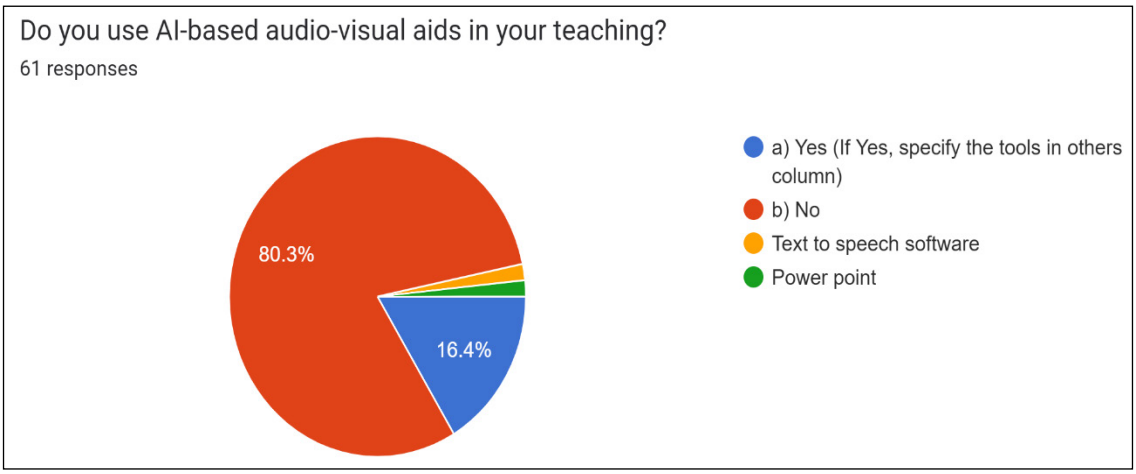


The study identified significant challenges in adopting AI tools, with 82% of respondents citing a lack of knowledge and training as a major barrier. High costs were reported by 45.9%, while 29.5% noted the complexity of AI tools. Privacy and security concerns were mentioned by 27.9%, and lack of institutional support by 24.6%. Despite these challenges, 49.2% of respondents rated AI tools as "Very Effective" in enhancing the teaching-learning process, while 34.4% found them "Moderately Effective." Confidence levels in using AI tools were relatively high, with 39.3% being "Very Confident" and 34.4% "Moderately Confident." Furthermore, 49.2% strongly agreed that AI would become essential in education, and 44.3% agreed with this sentiment.

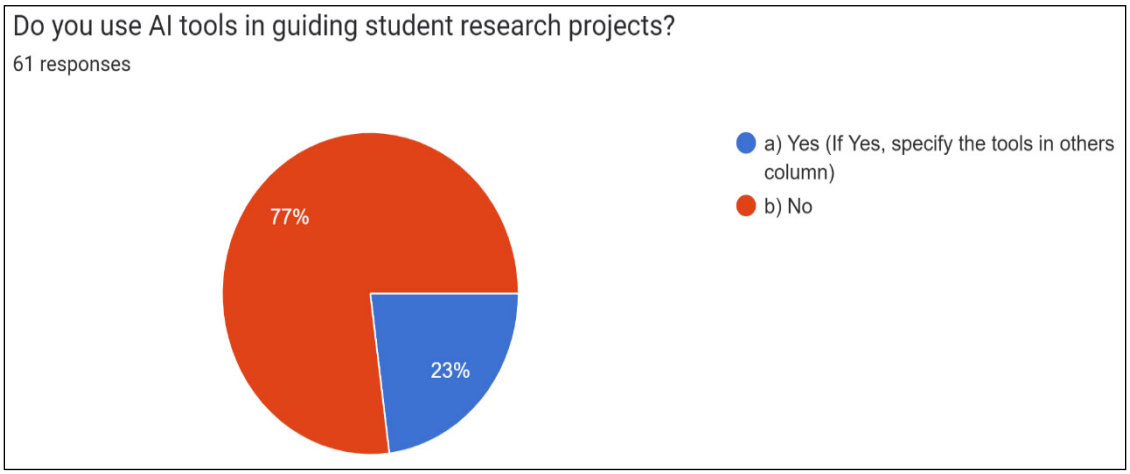
The pie chart shows how respondents rated their knowledge about AI in education. 45.9% rated their knowledge as "Very Good," 27.9% as "Good," 14.8% as "Average," and 11.5% as "Poor.



The pie chart shows how respondents rated that 32.8% of participants are using AI tools for content preparation and 54.1% of them were not using the AI tools for preparing the teaching content



The pie chart shows that 80.3% of the respondents do not use AI-based audio-visual aids in their teaching, and only 16.4% of respondents do not use such aids



The pie chart shows that 77% of the 61 respondents use AI tools in guiding student research projects, while 23% do not.

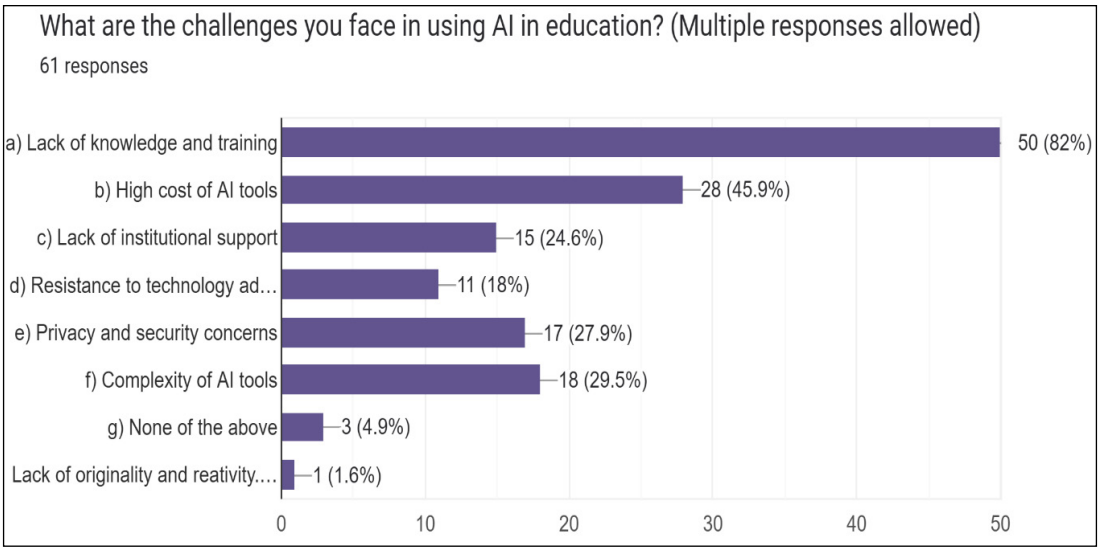
Table 1: Shows percentage distribution of usage of AI in teaching and learning by the samples

Activities	Frequently Used	Rarely Used	Occasionally Used
Content Preparation	24.60%	36.10%	32.80%
AI-Based AV Aids	23.00%	29.50%	32.80%
Presentations	24.60%	36.10%	36.10%
Assessing Performance	9.80%	19.70%	14.80%
Admin Tasks	6.60%	16.40%	8.20%
Student Engagement	1.60%	9.80%	3.30%

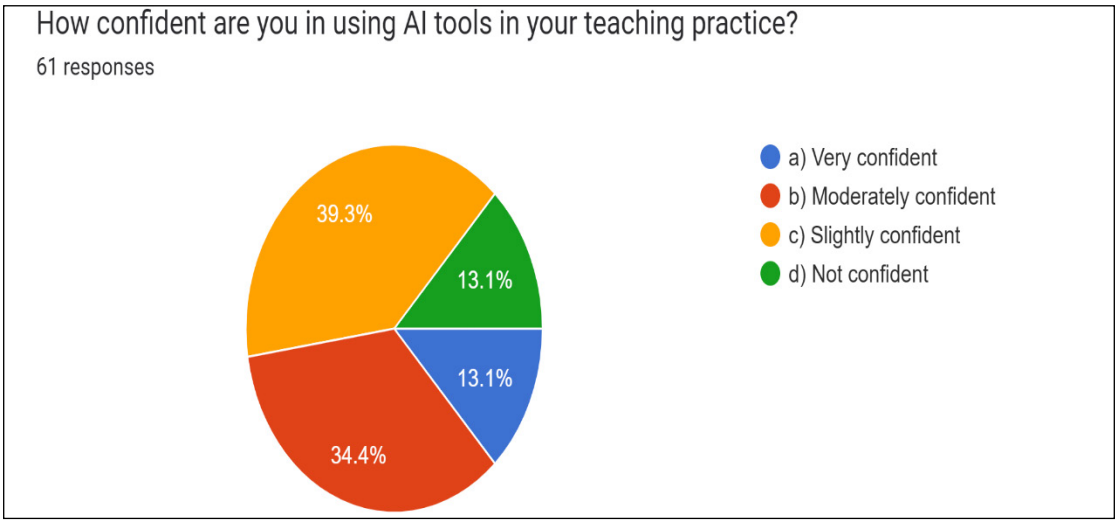
The majority of respondents use AI tools for content preparation, presentations, and AI-based AV aids at a frequency of 24-25% "Frequently" and 32-36% "Occasionally." AI tools are used less frequently for assessing student performance, admin tasks, and student engagement.

The survey respondents identified several key challenges in using AI in education. The most significant challenge was the lack of knowledge and training, cited by 82% of respondents. This suggests a need for increased professional development opportunities for educators to effectively integrate AI into their teaching practices.

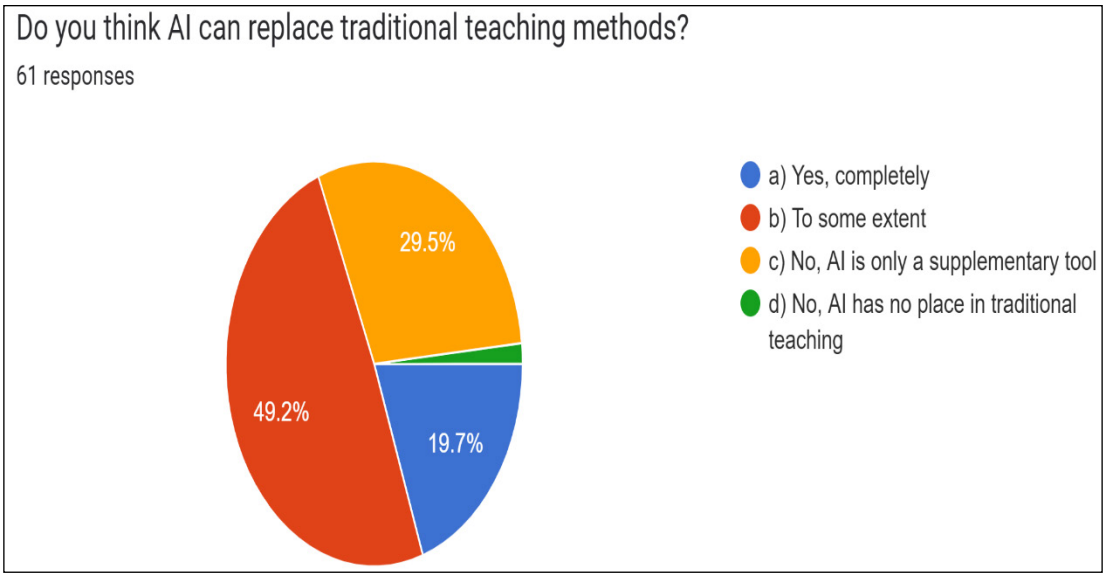
Another significant challenge was the high cost of AI tools, mentioned by 45.9% of respondents. This could hinder the adoption of AI in educational institutions, particularly those with limited budgets. To address this, there is a need for more affordable AI tools and solutions.



Other challenges included a lack of institutional support (24.6%), resistance to technology adoption (18%), privacy and security concerns (27.9%), and the complexity of AI tools (29.5%). These challenges highlight the need for clear guidelines, policies, and support systems to facilitate the effective and ethical use of AI in education.



The pie chart shows how respondents rated their confidence in using AI tools in their teaching practice. 39.3% are “Very Confident,” 34.4% are “Moderately Confident,” 13.1% are “Slightly Confident,” and 13.1% are “Not Confident.



The pie chart shows that 49.2% of the 61 respondents believe AI can replace traditional teaching methods to some extent, 29.5% think AI can completely replace traditional teaching methods, 19.7% think AI is only a supplementary tool, and 1.6% think AI has no place in traditional teaching.

DISCUSSION

Findings highlight moderate AI adoption among educators in Kerala, influenced by barriers such as lack of training and high costs. The predominance of private institution respondents underscores potential disparities in resource allocation. Despite challenges, educators exhibited optimism regarding AI's role in improving education quality. Aligning institutional policies and resources with AI integration goals is critical for addressing identified barriers.

This study highlights the moderate utilization of AI tools among educators in Kerala. Addressing barriers such as training gaps and resource limitations can enhance AI adoption. Future research should explore longitudinal data to assess changes over time and broader samples to generalize findings. This study highlights the potential of AI to transform education in Kerala while acknowledging the barriers that educators face. Addressing these challenges through targeted interventions can foster widespread adoption, ensuring that AI becomes a valuable asset in educational practices.

CONCLUSION

The study underscores AI's potential to transform educational practices in Kerala while identifying barriers to its adoption. Addressing training gaps, affordability, and institutional support can enhance AI utilization. Longitudinal studies with broader samples are recommended to assess changes over time and further generalize findings.

SUMMARY

This research reveals moderate AI utilization among educators in Kerala, emphasizing its potential and barriers. Training, resource allocation, and policy support are key to maximizing AI's educational impact. Findings contribute to the growing discourse on AI's role in shaping modern education systems.

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