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ARTIFICIAL INTELLIGENCE ADOPTION AND DIGITAL READINESS AMONG SCHOOL TEACHERS

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ABSTRACT

Artificial Intelligence (AI) is increasingly influencing the teaching–learning process by introducing innovative approaches to lesson planning, instructional delivery, student assessment, personalized learning and educational administration. The successful integration of AI into school education depends not only on the availability of technological resources but also on teachers' willingness, knowledge, confidence and preparedness to use emerging digital technologies. Digital readiness is therefore an essential prerequisite for the effective adoption of AI in educational settings. The present study aims to investigate artificial intelligence adoption and digital readiness among school teachers. It focuses on teachers' awareness of AI applications, perceived usefulness, ease of use, technological competence, digital confidence and preparedness to integrate AI into classroom practices. The study adopts a descriptive survey method with a proposed sample of 300 school teachers selected through a suitable sampling technique. Data may be collected using an Artificial Intelligence Adoption Scale and a Digital Readiness Scale. Percentage analysis, mean, standard deviation, t-test are proposed for analyzing the data. Findings are provided to demonstrate the presentation of statistical results. The study emphasizes the importance of strengthening teachers' digital competencies, AI literacy, professional development and ethical awareness to promote responsible and meaningful AI integration in school education.

KEYWORDS: Artificial Intelligence Adoption, Digital Readiness, School Teachers, AI Literacy, Digital Competence, Technology Integration, Educational Innovation.

1. INTRODUCTION

The rapid development of digital technologies has brought significant changes to the field of education. Traditional classroom practices are increasingly complemented by digital learning platforms, online resources, educational applications and intelligent technological systems. Among these developments, Artificial Intelligence has emerged as an important innovation with the potential to transform the planning, organization and delivery of educational activities. AI-based technologies can support teachers in preparing instructional materials, developing assessment activities, analyzing student performance and providing learning experiences suited to individual needs. Artificial Intelligence refers to computer-based systems designed to perform tasks that generally require human intelligence, including learning, reasoning, problem-solving, language processing and decision-making (Russell & Norvig, 2021). In education, AI applications include intelligent tutoring systems, automated assessment, adaptive learning platforms, educational chatbots and generative AI tools. These technologies can provide teachers with additional resources to improve instructional efficiency and support student learning. However, the availability of AI technology does not automatically ensure its effective adoption. Teachers must understand how these tools operate, recognize their educational value and develop the skills required to use them appropriately. Teachers also need to evaluate AI-generated information, protect student privacy, recognize potential biases and maintain human judgement in educational decision-making. UNESCO (2023) emphasizes the importance of a human-centred approach to the use of generative AI in education and research.

Digital readiness represents an individual's preparedness to understand, accept and use digital technologies confidently and effectively. It involves technological knowledge, digital skills, access to resources, willingness to learn and the ability to adapt to technological changes. In school education, digitally ready teachers are more likely to explore innovative instructional methods and make informed decisions about the integration of emerging technologies. The adoption of AI among school teachers is therefore closely associated with their digital readiness. Teachers who possess adequate technological competence and confidence may be better positioned to experiment with AI-supported teaching practices. On the other hand, inadequate training, limited infrastructure, concerns about accuracy and privacy, and resistance to technological change may restrict adoption. In this context, investigating AI adoption and digital readiness among school teachers is important for understanding the opportunities and challenges associated with the digital transformation of school education.

2. Theoretical and Conceptual Background

2.1 Artificial Intelligence in Education

Artificial Intelligence in education refers to the application of intelligent computer systems to support teaching, learning, assessment and educational administration. These systems use computational techniques to process information, identify patterns and generate responses that can assist educational activities. Luckin et al. (2016) highlighted the potential of AI to support learning through personalized educational experiences and intelligent learning environments. Similarly, Holmes et al. (2019) discussed how AI can contribute to educational improvement through adaptive learning, assessment support and data-informed teaching.

2.2 Meaning of AI Adoption

AI adoption refers to the willingness, acceptance and actual use of artificial intelligence applications for professional and instructional purposes. In the teaching profession, it includes using AI tools to prepare lesson plans, generate learning materials, design assessments, provide feedback and support students' learning needs. AI adoption is influenced by perceived usefulness, perceived ease of use, technological confidence, institutional support and individual attitudes towards innovation.

2.3 Meaning of Digital Readiness

Digital readiness refers to the extent to which teachers are prepared to understand, access, adopt and effectively use digital technologies in their professional activities. It includes technical knowledge, digital literacy, confidence, adaptability and the willingness to participate in continuous technology-related learning. Digital readiness is not limited to operating computers or mobile devices. It also involves selecting appropriate digital resources, evaluating online information, protecting personal data and applying technology to achieve meaningful educational outcomes.

2.4 Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), provides an important theoretical foundation for understanding technology adoption. The model identifies two major factors:

- Perceived usefulness: The extent to which an individual believes that using a particular technology will improve job performance.
- Perceived ease of use: The extent to which an individual believes that using a technology will require relatively little effort.

These factors influence an individual's attitude and intention towards technology use. In the present study, TAM helps explain why teachers may accept or hesitate to adopt AI-based educational applications.

2.5 Technological Pedagogical Content Knowledge Framework

The Technological Pedagogical Content Knowledge (TPACK) framework proposed by Mishra and Koehler (2006) explains the knowledge teachers require to integrate technology meaningfully into teaching. It combines technological knowledge, pedagogical knowledge and content knowledge. For AI integration, teachers need more than basic technical skills. They must understand how AI tools relate to subject content, teaching methods, students' learning requirements and ethical responsibilities.

3. Review of Related Literature

3.1 AI Integration and Teaching Practices

Holmes et al. (2019) explained that artificial intelligence has the potential to support teachers through intelligent tutoring, automated assessment and personalized learning. Their work emphasized that AI should complement teachers' professional knowledge rather than replace their educational responsibilities. Luckin et al. (2016) highlighted the opportunities offered by intelligent technologies for improving the quality of learning experiences. Their discussion emphasized the importance of using AI to understand learners' needs and provide appropriate educational support.

3.2 Digital Competence among Teachers

Redecker (2017), through the European Framework for the Digital Competence of Educators (DigCompEdu), identified important areas of educators' digital competence, including professional engagement, digital resources, teaching and learning, assessment, empowering learners and facilitating learners' digital competence. This framework demonstrates that teachers' digital preparedness requires a combination of technological, pedagogical and professional competencies.

3.3 AI Literacy and Professional Development

UNESCO (2024) emphasized the need for a human-centred approach to AI competency development among teachers. Its AI competency framework identifies important areas such as human-centred mindset, ethics of AI, AI foundations and applications, AI pedagogy and AI for professional development. These competencies are particularly relevant to school teachers because the responsible use of AI requires both technological understanding and professional judgement.

3.4 Challenges in AI Adoption

UNESCO (2023) identified concerns relating to privacy, age appropriateness, human agency, equity and the reliability of generative AI in education. These concerns indicate that teachers require appropriate guidance and training before integrating AI into classroom practices. The literature suggests that successful AI adoption requires a supportive environment in which technological access, teacher competence, institutional policies and ethical considerations are addressed together.

4. Dimensions of Artificial Intelligence Adoption

The adoption of AI among school teachers can be understood through the following dimensions.

4.1 Awareness of Artificial Intelligence

AI awareness refers to teachers' understanding of the meaning, functions, applications and limitations of artificial intelligence. Teachers should be familiar with different AI-based educational applications and understand how these technologies can support instructional activities.

4.2 Perceived Usefulness of AI

Perceived usefulness refers to teachers' beliefs about the extent to which AI applications can improve their professional performance. Teachers may consider AI useful for lesson preparation, question-paper development, classroom activities, assessment and individualized feedback.

4.3 Perceived Ease of Use

Perceived ease of use indicates the extent to which teachers believe that AI applications can be operated without excessive difficulty. User-friendly interfaces, clear instructions and adequate training may encourage teachers to explore AI tools.

4.4 Attitude towards AI Adoption

Attitude towards AI adoption refers to teachers' positive or negative perceptions of integrating AI into educational practices. Interest, confidence, acceptance, curiosity and concerns about technological change may influence their attitudes.

4.5 Actual Utilization of AI Tools

Actual utilization refers to the practical use of AI applications for professional and classroom-related activities. Examples include generating educational content, preparing lesson plans, creating worksheets, developing assessment questions and supporting differentiated instruction.

5. Dimensions of Digital Readiness

5.1 Digital Literacy

Digital literacy refers to teachers' ability to access, understand, evaluate and use digital information effectively. It also involves identifying reliable online resources and using digital platforms for educational purposes.

5.2 Technological Competence

Technological competence represents the practical ability to operate computers, smartphones, educational software, online learning platforms and AI-based applications. It enables teachers to select appropriate technological resources for classroom instruction.

5.3 Digital Self-Efficacy

Digital self-efficacy refers to teachers' confidence in their ability to perform educational tasks using digital technologies. Teachers with greater confidence may be more willing to explore unfamiliar applications and overcome technological difficulties.

5.4 Digital Adaptability

Digital adaptability refers to the ability to adjust to changing technological environments and learn new digital applications. It is particularly important because AI technologies and educational platforms continue to evolve.

5.5 Ethical and Responsible Digital Practices

Responsible digital practices involve protecting student information, respecting intellectual property, identifying inaccurate information, recognizing algorithmic bias and using digital technologies appropriately. UNESCO's AI Competency Framework for Teachers (Miao & Cukurova, 2024) emphasizes human-centred thinking, AI ethics, AI foundations, AI pedagogy and professional learning as five major competency dimensions.
UNESCO+1

6. Objectives of the Study

1. To assess the level of artificial intelligence adoption among school teachers.
2. To identify the level of digital readiness among school teachers.
3. To find out the significant difference in AI adoption among school teachers with respect to gender.
4. To find out the significant difference in digital readiness among school teachers with respect to locality.
5. To examine the relationship between AI adoption and digital readiness among school teachers.

6. To determine the contribution of digital readiness towards predicting AI adoption among school teachers.
7. To examine the influence of selected demographic variables on AI adoption and digital readiness.

7. Hypotheses of the Study

1. There is no significant difference in AI adoption among school teachers with respect to gender.
2. There is no significant difference in digital readiness among school teachers with respect to locality.
3. There is no significant relationship between AI adoption and digital readiness among school teachers.
4. Digital readiness does not significantly predict AI adoption among school teachers.
5. There is no significant difference in AI adoption among school teachers based on teaching experience.
6. There is no significant difference in digital readiness among school teachers based on the type of school management.

8. METHODOLOGY

Research Design

The present study employs a descriptive survey method to investigate artificial intelligence adoption and digital readiness among school teachers. The method is appropriate for collecting information about teachers' existing attitudes, competencies, technological preparedness and adoption practices.

Population of the Study

The population comprises teachers working in government, government-aided and private schools. Both male and female teachers teaching at different school levels may be included.

Sample Size

A proposed sample of 300 school teachers may be selected from different schools. The sample should include teachers representing different gender groups, localities, school management types and teaching experiences.

Sampling Technique

Stratified random sampling may be adopted to ensure appropriate representation of teachers from different categories of schools and geographical locations.

Research Tools

Two research instruments may be developed or adapted for data collection.

Tool 1: Artificial Intelligence Adoption Scale

- Awareness of artificial intelligence
- Perceived usefulness
- Perceived ease of use
- Attitude towards AI
- Actual utilization of AI tools

Tool 2: Digital Readiness Scale

- Digital literacy
- Technological competence
- Digital self-efficacy
- Digital adaptability
- Ethical and responsible digital practices

Both instruments may use a five-point Likert scale ranging from Strongly Agree to Strongly Disagree. Expert validation, pilot testing and reliability analysis should be completed before administering the final instruments.

Variables of the Study

Variable type	Variables
Independent / predictor variable	Digital Readiness
Dependent / outcome variable	AI Adoption
Demographic variables	Gender, locality, age, teaching experience, qualification, subject, school management and AI training

Statistical Techniques

The following statistical techniques are proposed:

Percentage analysis, Mean and standard deviation, Independent-samples t-test, One-way ANOVA

9. Analysis and Interpretation of Data

The following statistical tables are illustrative examples based on a hypothetical sample of 300 school teachers.

Table 1. Level of Artificial Intelligence Adoption among School Teachers.

Level	Number	Percentage
High	75	25.00
Moderate	153	51.00
Low	72	24.00
Total	300	100.00

Table-1 showing that the 51% of school teachers have a moderate level of AI adoption, 25% have a high level and 24% have a low level. The findings indicate that the majority of teachers demonstrate a moderate degree of acceptance and utilization of AI applications. However, the relatively large proportion of teachers with low adoption suggests the need for greater awareness, practical training and institutional encouragement.

Table 2. Level of Digital Readiness among School Teachers.

Level	Number	Percentage
High	84	28.00
Moderate	150	50.00
Low	66	22.00
Total	300	100.00

Table-2 showing that the 50% of school teachers possess a moderate level of digital readiness, while 28% have a high level and 22% have a low level. This suggests that many teachers have developed basic digital skills but may require further opportunities to improve technological competence, digital confidence and adaptability.

Table 3. Difference in AI Adoption Based on Gender.

Gender	N	Mean	SD	t-value
Male	140	78.45	10.25	1.68
Female	160	76.20	11.15	

Table-3 showing that the t-value of 1.68 is not statistically significant at the .05 level. Therefore, the null hypothesis is retained in this example. It indicates that male and female school teachers do not differ significantly in their AI adoption scores. This suggests that gender may not be an important differentiating factor in AI adoption within the hypothetical sample.

Table 4. Difference in Digital Readiness Based on Locality.

Locality	N	Mean	SD	t-value
Rural	170	72.60	10.80	2.45
Urban	130	76.10	11.20	

Table-4 showing that the t-value of 2.45 indicates a statistically significant difference in digital readiness between rural and urban school teachers at the .05 level. Urban teachers demonstrate a higher mean score than rural teachers. This difference may be associated with variations in internet access, technological infrastructure, availability of digital resources and opportunities for professional training. These possible explanations would require additional investigation.

Table 5. Difference in AI Adoption Based on Teaching Experience.

Source of variation	Sum of squares	df	Mean square	F-value
Between groups	1,080	2	540	4.32
Within groups	37,125	297	125	
Total	38,205	299		

Table5 showing that the F-value of 4.32 is statistically significant at the .05 level. Therefore, a significant difference exists in AI adoption among teachers belonging to different teaching-experience groups. This finding suggests that professional experience may be associated with variations in teachers' acceptance and use of AI applications. A post-hoc test would be required to identify which specific groups differ.

10. Major Findings of the Study

Based on the illustrative statistical analysis, the following findings are presented:

1. A majority of school teachers (51%) demonstrate a moderate level of artificial intelligence adoption.
2. Half of the school teachers (50%) possess a moderate level of digital readiness.
3. No significant difference is observed in AI adoption between male and female teachers.
4. A significant difference is observed in digital readiness between rural and urban school teachers.
5. A significant difference is observed in AI adoption based on teaching experience.

11. DISCUSSION OF THE FINDINGS

- The findings indicate that the majority of school teachers possess a moderate level of AI adoption. This suggests that teachers are gradually becoming familiar with AI-based educational applications, although their level of practical utilization may differ.
- The results reveal that half of the teachers possess a moderate level of digital readiness.
- The analysis reveals no statistically significant difference in AI adoption between male and female teachers.

The results indicate a significant difference between rural and urban teachers in digital readiness. Urban teachers demonstrate a comparatively higher mean score.

12. Educational Implications

❖ Teachers should be provided with opportunities to understand the basic concepts, functions, applications and limitations of artificial intelligence. AI literacy programmes can help teachers make informed decisions about the selection and use of educational tools.

❖ Teachers should be encouraged to explore AI applications for lesson preparation, instructional material development, classroom questioning, differentiated learning and formative assessment. AI should support teachers' professional judgement rather than replace their instructional responsibilities.

❖ Schools should ensure access to computers, smart devices, reliable internet connectivity and appropriate educational software. Equal technological opportunities are particularly important for schools in rural and economically disadvantaged areas.

❖ Teacher training programmes should include practical activities related to AI applications, digital teaching methods, data protection and responsible technology use. Professional development should be continuous rather than restricted to occasional workshops.

❖ Teachers should be trained to identify inaccurate AI-generated information, protect student data, respect intellectual property and recognize potential algorithmic bias. Human judgement and student welfare should remain central to technology-supported education.

❖ School administrators should create a supportive environment that encourages teachers to experiment with innovative technologies. Adequate resources, technical assistance, peer learning and institutional guidance can strengthen teachers' confidence in adopting AI.

13. RECOMMENDATIONS

Based on the objectives and proposed findings, the following recommendations are suggested:

1. AI literacy programmes should be organized regularly for school teachers.
2. Digital competency training should be provided according to teachers' existing skill levels.
3. Special attention should be given to improving digital facilities in rural schools.
4. Teachers should receive practical training in generative AI, intelligent tutoring systems and AI-supported assessment.
5. School management should provide technical support and appropriate institutional guidelines for AI adoption.

6. Teachers should be encouraged to use AI as a supportive instructional resource while maintaining professional autonomy.
7. Ethical awareness and data privacy should be included in AI-related teacher training.
8. Collaboration between teacher education institutions, schools and technology experts should be strengthened.

14. Limitations of the Study

The proposed study has certain limitations:

- The study is restricted to school teachers.
- The proposed sample consists of 300 teachers and may not represent all school teachers.
- The study relies on self-reported information regarding AI adoption and digital readiness.
- The availability of digital infrastructure may differ across schools.
- The descriptive survey method identifies relationships but does not establish causal effects.
- AI technologies continue to develop, and teachers' adoption patterns may change over time.

15. Suggestions for Further Research

Future researchers may extend this investigation in the following directions:

1. AI literacy, digital competence and teaching effectiveness among secondary school teachers.
2. Generative AI awareness and ethical preparedness among school teachers.
3. Digital readiness and technology acceptance among government and private school teachers.
4. Artificial intelligence adoption and techno-pedagogical competence among B.Ed. student teachers.
5. AI-based teaching practices and professional development among teacher educators.
6. Digital self-efficacy, AI acceptance and innovative teaching behavior among school teachers.
7. Structural Equation Modelling of AI literacy, digital readiness and teaching effectiveness.
8. A comparative study of AI adoption among rural and urban school teachers.

16. CONCLUSION

Artificial Intelligence is creating new opportunities for improving teaching practices, supporting student learning and strengthening educational management. However, the successful integration of AI into school education depends largely on teachers' preparedness to understand, evaluate and use these technologies responsibly. Digital readiness provides an important foundation for this process by developing teachers' technological knowledge, digital literacy, confidence and adaptability. The present study emphasizes the importance of examining AI adoption and digital readiness as interconnected dimensions of teachers' professional development. Teachers need opportunities to develop practical AI skills, understand ethical responsibilities and explore innovative teaching approaches. At the same time, schools and educational authorities must provide adequate infrastructure, professional training and institutional support. Ultimately, the purpose of adopting AI in education should not be to replace the human role of teachers but to strengthen their professional capabilities and improve the quality of teaching and learning. A balanced combination of technological innovation, pedagogical knowledge and human values can help create an inclusive, responsible and future-ready school education system.

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