

A Study on Adoption and Effectiveness of EdTech Tools among Teachers

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Abstract:

The Integration of Educational Technology (EdTech) tools have significantly transformed teaching practices in modern classrooms by enhancing instructional delivery and improving student engagement. With the growing emphasis on digital learning, schools are increasingly adopting technologies such as smart boards, digital content platforms, and online assessment tools to support interactive and efficient teaching methods. This study aims to examine the adoption, usage patterns, and perceived effectiveness of EdTech tools among school teachers. The study follows a descriptive research design and relies on primary data collected through a structured questionnaire administered to 108 teachers. The collected data were analysed using statistical tools such as Percentage Analysis, ANOVA, Chi-square, and Correlation through SPSS. The analysis explores the relationship between teachers' demographic characteristics, infrastructure support, management encouragement, and the effectiveness of EdTech tools in the teaching-learning process. The Findings reveal that teachers moderately adopt EdTech tools and generally perceive them as effective in enhancing classroom engagement and teaching efficiency. The results also indicate that teaching experience influences perceptions of workload reduction and training effectiveness, while infrastructure and management support significantly contribute to technology adoption. The study concludes that strengthening training programs, improving digital infrastructure, and encouraging institutional support can further enhance the effective use of EdTech tools in education.

Keywords—EdTech Tools; Technology Adoption; Teaching Effectiveness; Digital Learning; Teacher Perception; Educational Technology Integration

I. INTRODUCTION

The rapid advancement of digital technology has significantly influenced the education sector, leading to the widespread integration of Educational Technology (EdTech) tools in modern classrooms. EdTech tools such as smart boards, digital learning platforms, learning management systems (LMS), and online assessment software have transformed traditional teaching methods into more interactive and technology-driven learning experiences. These tools enable teachers to deliver content more effectively, improve classroom engagement, and provide students with enhanced learning opportunities through multimedia resources and digital collaboration.

In recent years, the adoption of EdTech solutions has accelerated due to the increasing availability of internet connectivity, digital devices, and institutional investments in technology-enabled education. Educational institutions are increasingly recognizing the potential of digital tools to improve instructional quality, support personalized learning, and facilitate real-time monitoring of student performance. The integration of technology in teaching not only enhances the learning experience but also helps educators manage classroom activities, assessments, and communication more efficiently.

However, the successful implementation of EdTech tools largely depends on teachers' acceptance and effective utilization of these technologies. Factors such as teachers' technological skills, availability of training programs, institutional support, and digital infrastructure play a crucial

role in determining the level of adoption. Teachers' perception regarding the usefulness and ease of using EdTech tools can significantly influence their willingness to integrate technology into their daily teaching practices.

Therefore, it becomes essential to examine the adoption, usage patterns, and perceived effectiveness of EdTech tools among teachers. Understanding these aspects can help educational institutions identify existing challenges and develop strategies to improve the implementation of digital learning technologies. This study aims to analyse how teachers adopt and utilize EdTech tools and evaluate their impact on teaching performance and classroom effectiveness.

II. OBJECTIVES OF THE STUDY

Primary Objective

To analyse the adoption and effectiveness of EdTech tools among teachers and evaluate their contribution to teaching performance.

Secondary Objectives

- To measure the extent and pattern of EdTech tool usage among teachers.
- To assess the perceived impact of EdTech tools on classroom efficiency and student learning outcomes.

- To analyse the organizational and individual factors influencing the adoption of EdTech tools.
- To examine the association between teachers' demographic characteristics and their level of EdTech adoption.

III. REVIEW OF LITERATURE

Koehler & Mishra (2012)

Introduced the TPACK framework, emphasizing that successful technology integration requires the combination of technological, pedagogical, and content knowledge.

Trust & Whalen (2020)

Reported that during rapid digital transitions, continuous professional development and institutional support are critical for sustained EdTech adoption.

Bond et al. (2021)

Identified that digital tools positively impact student engagement, but effectiveness depends on structured implementation and teacher readiness.

Zhao & Watterston (2022)

Highlighted that technology improves learning outcomes when aligned with curriculum objectives rather than used as a supplementary tool.

IV. RESEARCH METHODOLOGY

The present study adopts a descriptive research design to examine the adoption, usage patterns, and perceived effectiveness of EdTech tools among teachers. The study primarily relies on primary data collected through a structured questionnaire designed to gather information regarding teachers' usage of digital teaching tools, perceptions of effectiveness, and factors influencing technology adoption in the classroom.

The target population for the study consists of school teachers who actively use digital teaching tools in their instructional practices. A convenience sampling method was employed to select respondents, and a total of 108 valid responses were collected for analysis. The questionnaire included demographic questions along with a mix of multiple-choice and five-point Likert scale questions to measure teachers' perceptions and usage patterns.

The collected data were analysed using Statistical Package for the Social Sciences (SPSS). Various statistical techniques such as percentage analysis, ANOVA, Chi-square test, and correlation analysis were applied to interpret the data and examine the relationships between variables. These analytical tools helped in identifying patterns of EdTech adoption and assessing the factors influencing its effectiveness in the teaching–learning process.

Primary Data

Primary data for the study were collected directly from respondents through a structured questionnaire. The questionnaire was designed to gather information regarding teachers' adoption, usage patterns, and perceived effectiveness of EdTech tools in classroom teaching. A combination of multiple-choice questions and five-point Likert scale statements was used to capture respondents' opinions and experiences. A total of 106 valid responses were collected and used for statistical analysis.

Secondary Data

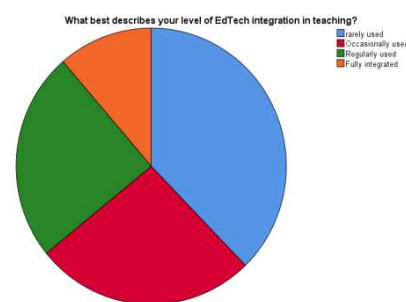
Secondary data were collected from existing academic sources such as research journals, books, educational reports, and credible online publications related to EdTech adoption and technology integration in education. These sources helped in developing the literature review, understanding industry trends, and framing the research objectives of the study.

V. DATA ANALYSIS AND INTERPRETATION

Percentage Analysis

Percentage analysis was used to examine the demographic characteristics of respondents and general patterns of EdTech tool usage among teachers. The analysis helped in identifying the distribution of respondents based on variables such as gender, teaching experience, and teaching level. The results provided an overview of how frequently teachers use EdTech tools and their general perception regarding the effectiveness of digital teaching methods.

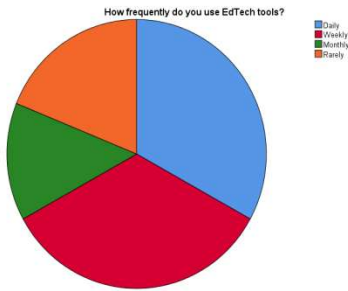
Percentage Analysis of Level of EdTech Integration



Inference:

Most teachers (37.7%) reported that EdTech tools are rarely used, indicating that full integration of technology into teaching practices is still limited

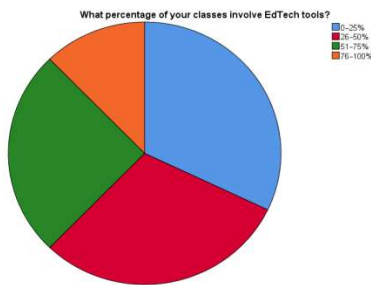
Percentage Analysis of Frequency



Inference:

The majority of teachers use EdTech tools either weekly or daily, showing that technology has become a regular component of classroom instruction.

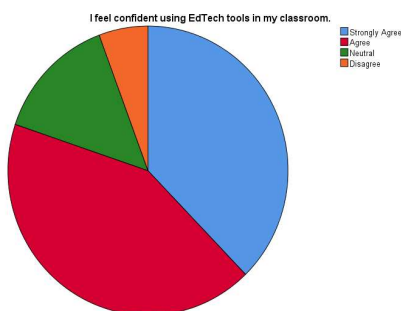
Percentage Analysis of Classes Using EdTech Tools



Inference:

Most teachers use EdTech tools in less than half of their classes, indicating moderate adoption rather than full technology integration

Percentage Analysis of Confidence



Inference:

A significant majority of teachers (80.2%) feel confident using EdTech tools, suggesting that teachers possess the necessary skills to adopt digital teaching methods.

CHI-SQUARE TEST

Chi-square Test was used to examine the association between teaching level and teachers' perception of the effectiveness of EdTech tools compared to traditional

teaching methods. The results showed a significant relationship between these variables, indicating that teachers at different teaching levels perceive the usefulness of EdTech tools differently.

Null Hypothesis (H₀):

There is no significant association between teaching level and teachers' perception of the effectiveness of EdTech tools compared to traditional teaching methods.

Alternative Hypothesis (H₁):

There is a significant association between teaching level and teachers' perception of the effectiveness of EdTech tools compared to traditional teaching methods.

Test Statistics		
	Teaching Level	Compared to traditional teaching, EdTech tools make your classes:
Chi-Square	18.642 ^a	15.132 ^b
df	2	3
Asymp. Sig.	.000	.002
a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 35.3.		
b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 26.5.		

Inference:

A significant majority of teachers (80.2%) feel confident using EdTech tools, suggesting that teachers possess the necessary skills to adopt digital teaching methods.

ANOVA

ANOVA (Analysis of Variance) was conducted to determine whether there is a significant difference in teachers' perceptions based on their teaching experience. The analysis examined variables such as workload reduction due to EdTech tools and the adequacy of training provided for effective usage. The results indicated that teaching experience significantly influences teachers' perception of EdTech benefits and training effectiveness.

Null Hypothesis (H₀):

There is no significant difference in teachers' perception regarding workload reduction and training effectiveness of EdTech tools based on teaching experience.

Alternative Hypothesis (H₁):

There is a significant difference in teachers' perception regarding workload reduction and training effectiveness of EdTech tools based on teaching experience.

ANOVA		
		Sum of Squares
EdTech tools reduce my workload	Between Groups	9.797
	Within Groups	89.118
	Total	98.915
The training provided was sufficient for effective usage.	Between Groups	3.948
	Within Groups	69.647

Inference:

There is a significant difference in teachers' perception regarding workload reduction and training effectiveness of EdTech tools based on teaching experience.

CORRELATION

Correlation analysis was performed to identify the relationship between infrastructure support and school management encouragement for the use of EdTech tools. The results revealed a positive and significant relationship, suggesting that better digital infrastructure is associated with stronger management support for technology adoption.

Null Hypothesis (H₀):

There is no significant relationship between infrastructure support and school management encouragement in the use of EdTech tools.

Alternative Hypothesis (H₁):

There is a significant relationship between infrastructure support and school management encouragement in the use of EdTech tools.

Correlations		
		Infrastructure (internet/devices) supports smooth functioning of EdTech tools.
Infrastructure (internet/devices) supports smooth functioning of EdTech tools.	Pearson Correlation	1
	Sig. (2-tailed)	
School management encourages the use of EdTech tools	N	106
	Pearson Correlation	.609**
	Sig. (2-tailed)	.000

Inference:

There is a strong positive relationship between infrastructure support and school management encouragement for the use of EdTech tools

VI. FINDINGS

The study reveals that a majority of teachers have adopted EdTech tools in their teaching practices, indicating a growing acceptance of technology in classroom instruction.

Teachers generally perceive that EdTech tools enhance classroom engagement and improve teaching effectiveness compared to traditional teaching methods.

The ANOVA results indicate that teaching experience significantly influences teachers' perception of workload reduction and training effectiveness related to EdTech tools.

The Chi-square analysis shows a significant association between teaching level and teachers' perception of EdTech effectiveness, suggesting variations in technology adoption across different teaching levels.

Correlation analysis reveals a strong positive relationship between infrastructure support and management encouragement for the use of EdTech tools.

Adequate training and institutional support play an important role in improving the effective usage of EdTech tools among teachers.

VII. SUGGESTIONS

Educational institutions should conduct regular training programs to improve teachers' digital skills and confidence in using EdTech tools.

Schools should ensure reliable internet connectivity and adequate digital infrastructure to support the effective use of technology in classrooms.

Management should encourage teachers to integrate EdTech tools into a larger portion of classroom activities to enhance teaching effectiveness.

Institutions should promote collaborative learning and knowledge sharing among teachers regarding innovative digital teaching practices.

Periodic evaluation and feedback mechanisms should be implemented to monitor the effectiveness of EdTech tools in the teaching-learning process.

VIII. CONCLUSION

The study concludes that the integration of EdTech tools has become an important component of modern teaching

practices. The findings indicate that teachers moderately adopt digital teaching tools and generally perceive them as effective in improving classroom engagement and instructional efficiency. The results also highlight that factors such as teaching experience, infrastructure availability, and management support significantly influence the adoption and effective use of EdTech tools. Although technology integration in classrooms is increasing, there is still a need for improved training programs and stronger institutional support to maximize the benefits of digital learning tools. Strengthening these aspects can further enhance technology-enabled teaching and contribute to improved educational outcomes.

IX. REFERENCES

Selvakumar, B., Manoj Kumar, M., Raupova, M., AbdulJaleel, H., Ismoilova, I., & Murugesan, A. (2025). Integrating Blockchain with Information Governance in Academic Institutions. *Indian Journal of Information Sources and Services*, 15(4), 217–229. <https://doi.org/10.51983/ijiss-2025.IJISS.15.4.25>