International Journal of Recent Development in Engineering and Technology
Website: www.ijrdet.com (ISSN 2347-6435(Online) Volume 15, Issue 02, February 2026)

"Effect of Technology Integrated Teaching on Students' Academic Achievement and Classroom Engagement"

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***Abstract*-- The rapid advancement of digital technologies has significantly influenced contemporary educational practices. Technology-integrated teaching has emerged as a vital pedagogical approach aimed at enhancing students' academic achievement and classroom engagement. The present study examines the effect of technology-integrated teaching on students' academic performance and their level of engagement during classroom instruction. A descriptive survey and quasi-experimental design were employed, involving secondary school students. Data were collected using achievement tests and classroom engagement questionnaires. The findings reveal that students exposed to technology-integrated teaching demonstrated higher academic achievement and improved engagement compared to those taught through traditional methods. The study highlights the importance of effective technology integration in teaching-learning processes and provides implications for educators, institutions, and policymakers.**

I. Introduction

Education in the twenty-first century is undergoing a paradigm shift due to the widespread integration of technology in teaching and learning. Traditional teacher-centered approaches are increasingly being replaced by learner-centered and technology-supported instructional strategies. Technology-integrated teaching refers to the systematic use of digital tools such as multimedia presentations, smart boards, learning management systems, educational apps, and online resources to facilitate effective learning experiences.

Students today are digital natives who are accustomed to interactive and multimedia-rich environments. Integrating technology into classroom instruction has the potential to make learning more meaningful, engaging, and effective. Academic achievement and classroom engagement are two critical indicators of educational quality. While academic achievement reflects students' mastery of subject matter, classroom engagement represents their behavioral, emotional, and cognitive involvement in learning activities.

Despite the increasing availability of technological resources in educational institutions, the effectiveness of technology-integrated teaching in improving learning outcomes remains a subject of ongoing research. This study aims to explore the impact of technology-integrated teaching on students' academic achievement and classroom engagement, thereby contributing to the growing body of educational research in this area.

II. Need And Significance Of The Study

The integration of technology in education has become a necessity rather than a choice. However, mere availability of technological tools does not guarantee improved learning outcomes. There is a need to examine whether and how technology-integrated teaching actually influences students' academic achievement and engagement. The present study is significant as it provides empirical evidence on the effectiveness of technology-based instructional practices.

The findings of this study will be beneficial to teachers by guiding them in adopting appropriate technological tools for instruction. Educational administrators can use the results to plan professional development programs and infrastructure investments. Policymakers may also draw insights to formulate strategies that promote meaningful technology integration in schools.

III. Objectives Of The Study

1. To study the effect of technology-integrated teaching on students' academic achievement.
2. To examine the impact of technology-integrated teaching on classroom engagement of students.
3. To compare the academic achievement of students taught through technology-integrated teaching and traditional teaching methods.
4. To analyze the relationship between classroom engagement and academic achievement in a technology-integrated learning environment.

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IV. Review Of Related Literature

Several studies have explored the role of technology in enhancing teaching and learning. Previous research indicates that technology-integrated teaching can improve students' understanding of concepts, motivation, and academic performance. Multimedia resources and interactive tools have been found to cater to diverse learning styles and promote active participation.

Research conducted by various scholars has shown that students exposed to digital learning environments demonstrate higher levels of engagement and improved problem-solving skills. Studies also highlight that technology facilitates collaborative learning and immediate feedback, which positively affects academic achievement.

However, some researchers point out that ineffective integration of technology or lack of teacher training can limit its potential benefits. The review of literature suggests a need for context-specific studies to understand the actual impact of technology-integrated teaching in classroom settings, which the present study attempts to address.

V. Research Methodology

The study adopted a descriptive survey and quasi-experimental research design. The sample consisted of 100 secondary school students selected using a random sampling technique. The students were divided into an experimental group and a control group. The experimental group was taught using technology-integrated teaching methods, while the control group received traditional classroom instruction.

Tools used for data collection included an academic achievement test prepared by the investigator and a standardized classroom engagement questionnaire. The tools were validated and tested for reliability prior to administration. Data were collected over a period of eight weeks.

VI. Data Analysis

The collected data were analyzed using both descriptive and inferential statistical techniques. Mean, standard deviation, and percentage analysis were used to describe students' academic achievement and engagement levels. The t-test was employed to compare the mean scores of the experimental and control groups.

The analysis revealed a significant difference in academic achievement scores between students taught through technology-integrated teaching and those taught through traditional methods.

Similarly, classroom engagement levels were found to be significantly higher among students in the experimental group.

VII. Findings Of The Study

The major findings of the study are as follows:

- Technology-integrated teaching has a positive effect on students' academic achievement.
- Students exposed to technology-integrated teaching show higher levels of classroom engagement.
- There is a significant relationship between classroom engagement and academic achievement.
- Technology-integrated teaching promotes active participation and sustained interest in learning.

VIII. Educational Implications

The findings of the study have important implications for educational practice. Teachers should be encouraged to integrate technology meaningfully into their instructional strategies. Training programs and workshops should be organized to enhance teachers' digital competencies.

Educational institutions should ensure adequate technological infrastructure and support systems. Curriculum planners may incorporate technology-based activities to foster active learning. Overall, effective technology integration can contribute to improved educational quality and student outcomes.

IX. Limitations Of The Study

The study was limited to a specific sample size and educational level, which may restrict the generalizability of the findings. The duration of the intervention was relatively short. Future studies may consider larger samples, longer duration, and different educational contexts.

X. Conclusion

The present study concludes that technology-integrated teaching plays a significant role in enhancing students' academic achievement and classroom engagement. When used effectively, technology can transform the teaching-learning process by making it more interactive, learner-centered, and meaningful. The study reinforces the need for thoughtful integration of technology in education to meet the demands of modern learners.

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