ENHANCING READING SKILLS AND ACADEMIC ACHIEVEMENT THROUGH SMART CLASSROOM TECHNOLOGY: AN EXPERIMENTAL STUDY OF PRIMARY SCHOOL STUDENTS WITH READING DIFFICULTIES

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Abstract

The integration of technology in education has significantly transformed teaching–learning practices in recent years. Smart classrooms provide interactive learning environments that facilitate better comprehension, engagement, and academic performance among students. The present study investigates the impact of smart classroom technology on the reading skills and academic achievement of primary school students with reading difficulties. An experimental research design was employed, involving an experimental group and a control group of students. The experimental group received instruction through smart classroom technology, while the control group was taught using traditional teaching methods. Pre-test and post-test measures were used to assess improvements in reading skills and academic achievement. The findings revealed significant improvement in the performance of the experimental group compared to the control group. The results indicate that smart classroom instruction can play a vital role in enhancing reading abilities and overall academic achievement among primary school students. The study highlights the potential of technology-integrated teaching strategies in improving learning outcomes and supporting effective classroom practices.

Keywords: Smart Classroom Technology, Reading Skills, Academic Achievement, Primary Education, Educational Technology, Technology-Enhanced Learning

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Introduction

Education in the twenty-first century has been greatly influenced by technological advancements. The traditional classroom environment is gradually transforming into a technology-supported learning environment where digital tools and multimedia resources enhance teaching and learning processes. Smart classrooms represent one such innovation that integrates audio-visual aids, interactive boards, digital content, and multimedia presentations to facilitate effective learning.

Reading is one of the fundamental skills required for academic success. Students with reading difficulties often face challenges in comprehension, vocabulary development, and academic performance. The integration of smart classroom technology offers opportunities to present information through multiple sensory channels, thereby improving students' understanding and engagement.

Smart classroom instruction provides visual demonstrations, animations, interactive activities, and multimedia content that support students in developing better reading skills and conceptual understanding. Therefore, the present study attempts to examine the effectiveness of smart classroom technology in improving the reading skills and academic achievement of primary school students with reading difficulties.

Review of Literature

Previous research indicates that technology-integrated instruction can significantly enhance students' learning outcomes. Studies have shown that the use of multimedia resources and digital tools increases student motivation, engagement, and comprehension.

Research on educational technology suggests that interactive learning environments provide opportunities for collaborative learning and active participation. Smart classrooms, equipped with interactive boards, projectors, and digital content, allow teachers to present information in a visually appealing and structured manner.

Several studies have also highlighted the effectiveness of multimedia-based instruction in improving reading skills. Visual representations, animations, and audio-supported texts help students understand complex concepts and improve comprehension abilities. These findings suggest that technology-supported instruction can be particularly beneficial for students experiencing reading difficulties.

However, despite increasing adoption of smart classroom technology in schools, limited research has examined its impact on the reading skills of primary school students. The present study therefore seeks to fill this gap by investigating the effectiveness of smart classroom instruction in improving reading skills and academic achievement.

Objectives of the Study

The study was conducted with the following objectives:

1. To compare the pre-test scores of experimental and control groups in academic achievement.
2. To examine the effect of smart classroom instruction on the reading skills of primary school students.
3. To determine the impact of smart classroom technology on students' academic achievement.

Hypotheses of the Study

1. There is no significant difference between the pre-test scores of experimental and control groups in academic achievement.
2. There is no significant difference between the post-test scores of experimental and control groups in reading skills.
3. There is no significant difference between the post-test scores of experimental and control groups in academic achievement.

Methodology

Research Design

The study employed an **experimental research design** consisting of an experimental group and a control group.

Sample

The sample consisted of **120 primary school students**, divided into:

- Experimental Group: 60 students
- Control Group: 60 students

Students with reading difficulties were identified through preliminary assessment.

Tools Used

1. Academic Achievement Test
2. Reading Skills Test (Word Reading and Reading Comprehension)

Procedure

The experimental group received instruction through smart classroom technology using multimedia presentations, digital content, and interactive learning resources. The control group was taught using traditional teaching methods. The intervention was conducted over a period of eight weeks. Pre-tests and post-tests were administered to measure improvements in reading skills and academic achievement.

Results and Discussion

Table 1

Comparison of Pre-Test Scores of Experimental and Control Groups (Academic Achievement)

Group	N	Mean	SD	t-value	Significance
Experimental	60	101.50	5.49	1.14	Not Significant
Control	60	103.95	7.90		

df =118

The calculated t-value is less than the table value, indicating no significant difference between the groups before the intervention.

Table 2

Comparison of Post-Test Scores of Experimental and Control Groups (Academic Achievement)

Group	N	Mean	SD	t-value	Significance
Experimental	60	14.10	11.84	8.09	Significant
Control	60	1.65	1.33		

The experimental group performed significantly better than the control group after the smart classroom intervention.

Table 3

Comparison of Word Reading Skills

Group	N	Mean	SD	t-value	Significance
Experimental	60	3.30	4.04	5.90	Significant
Control	60	0.17	0.74		

The results indicate significant improvement in word reading skills among students exposed to smart classroom instruction.

Table 4

Comparison of Reading Comprehension Skills

Group	N	Mean	SD	t-value	Significance
Experimental	60	2.35	4.27	3.98	Significant
Control	60	0.07	1.19		

The experimental group showed higher reading comprehension scores than the control group.

Educational Implications

The findings of the study have important implications for teachers, schools, and policymakers. The integration of smart classroom technology can enhance students' reading skills and improve their academic performance. Teachers can utilize multimedia resources, animations, and interactive presentations to create engaging learning environments. Educational institutions should promote the use of technology-integrated teaching methods to support effective classroom practices.

Conclusion

The present study demonstrates that smart classroom technology has a positive impact on the reading skills and academic achievement of primary school students with reading difficulties. The use of multimedia and interactive learning resources enhances student engagement and comprehension. The findings suggest that integrating smart classroom technology in teaching practices can significantly improve learning outcomes in primary education.

Limitations of the Study

1. The study was limited to a small sample of students.
2. The duration of the intervention was limited to eight weeks.
3. The study focused only on primary school students.

Future studies may include larger samples and longer intervention periods to obtain more comprehensive results.

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