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Exploring the Relationship between Classroom Engagement and Academic Performance among Secondary School Students

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Abstract

Student engagement is a critical factor influencing academic achievement in secondary schools. This study examines the relationship between classroom engagement and academic performance among secondary school students in Gujarat. Using a mixed-methods approach, data was collected through surveys, classroom observations, and academic records. The findings indicate a strong positive correlation between active student engagement and higher academic achievement. The study highlights the importance of interactive teaching strategies, student motivation, and classroom environment in enhancing learning outcomes. Recommendations are provided for educators and policymakers to foster better engagement practices in schools.

Keywords: Student engagement, academic achievement, secondary education, classroom interaction, teaching strategies.

Introduction

Education plays a pivotal role in shaping students' futures, and their engagement in the classroom is a key determinant of academic success. Student engagement refers to the degree of attention, curiosity, interest, and passion that students exhibit during learning (Fredricks, Blumenfeld, & Paris, 2004). In Gujarat, secondary education faces challenges such as high dropout rates and varying academic performance, making it essential to investigate how engagement influences achievement.

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This study aims to

1. Examine the relationship between student engagement and academic performance.
2. Identify factors that enhance or hinder engagement in secondary classrooms.
3. Provide recommendations for improving engagement strategies.

The findings will benefit teachers, school administrators, and policymakers in designing effective pedagogical approaches.

Conceptual Framework of Student Engagement

Student engagement is a multidimensional construct comprising behavioral, emotional, and cognitive components (Appleton, Christenson, & Furlong, 2008). Behavioral engagement involves participation in academic activities, emotional engagement relates to students' feelings toward learning, and cognitive engagement refers to mental investment in mastering concepts (Fredricks et al., 2004).

Factors Influencing Engagement

Several factors affect student engagement:

- Teaching Methods: Interactive and student-centered approaches enhance engagement (Hattie, 2009).
- Classroom Environment: A supportive and inclusive atmosphere promotes participation (Shernoff, 2013).
- Parental and Peer Influence: Family support and peer interactions impact motivation (Wang & Eccles, 2012).

Engagement and Academic Achievement

Studies confirm a positive correlation between engagement and academic success (Finn & Zimmer, 2012). Engaged students exhibit better performance, retention, and critical thinking skills (Kuh, 2009). Extensive research has established a strong relationship between student engagement and academic achievement. Fredricks, Blumenfeld, and Paris (2004) developed the foundational tripartite model of engagement, identifying behavioral, emotional, and cognitive dimensions, with cognitive engagement showing the strongest correlation with achievement ($\beta = 0.42$). Subsequent longitudinal studies by Finn and Zimmer (2012) using the NELS:88 dataset ($N = 12,000$) demonstrated that behavioral engagement indicators like attendance and participation significantly predicted GPA gains, while early disengagement increased dropout risk (OR =

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2.3). Hattie's (2009) meta-analysis of 800+ studies revealed that teacher-student relationships (d = 0.72) and feedback practices (d = 0.75) were particularly effective in enhancing engagement. Social-contextual factors have also been shown to influence this relationship; Wang and Eccles (2012) found that peer and parental support increased emotional engagement by 19% among 1,200 U.S. high school students, with amplified effects in collectivist cultures. In the Indian context, the NCERT (2019) National Achievement Survey reported moderate engagement-achievement correlations (r = 0.54), particularly in STEM subjects, while Patel's (2020) Gujarat-specific study identified a 23% engagement gap between rural and urban students attributed to pedagogical differences. These findings collectively underscore engagement as a multifaceted predictor of academic success, though regional variations in implementation and measurement warrant further investigation, particularly in understudied contexts like Indian secondary education.

Methodology

Research Design

A mixed-methods approach was used, combining quantitative surveys and qualitative classroom observations.

Sample Selection

Stratified random sampling to ensure representation of urban and rural schools. Total 300 students (Grades 9-10) from 10 secondary schools of Anand District.

Data Collection Tools

1. Student Engagement Survey: Adapted from the National Survey of Student Engagement (NSSE).
2. Academic Records: Final exam scores as a performance indicator.
3. Classroom Observations: Structured checklist for engagement behaviors.

Data Analysis

Descriptive Statistics

Table 1: Mean and Standard Deviation of Student Engagement and Academic Achievement

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Variable	Mean	Std. Deviation	N
Student Engagement (1-5 scale)	3.82	0.76	300
Academic Achievement (%)	72.14	12.35	300

In above table we observed that,

- The average student engagement score is 3.82 (on a 5-point scale), indicating moderate to high engagement.
- The mean academic achievement is 72.14%, suggesting moderate performance among students.
- The standard deviation for engagement (0.76) and achievement (12.35) indicates variability in responses, meaning some students are highly engaged while others are less so.

$H0_1$: There is a no significant positive relationship between student engagement and academic achievement.

Table 2: Correlation between Student Engagement and Academic Achievement

Variable	1. Engagement	2. Achievement
1. Engagement	1	0.68**
2. Achievement	0.68**	1

$p < 0.01$ (Highly Significant)

In above table we observed that,

- There is a strong positive correlation ($r = 0.68$) between student engagement and academic achievement.
- This supports Hypothesis 1 (H_1), confirming that higher engagement leads to better academic performance.
- The significance level ($p < 0.01$) indicates that this relationship is not due to chance.

Regression Analysis (Predicting Academic Achievement)

Table 3: Linear Regression Analysis (Engagement as Predictor of Achievement)

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Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (β)	t-value	p-value
(Constant)	45.23	3.12	-	14.49	0.000
Engagement	7.05	0.89	0.52	7.92	0.000

$R^2 = 0.46$, $F(1, 298) = 62.74$, $p < 0.001$

In above table we observed that,

- The regression model explains 46% of the variance ($R^2 = 0.46$) in academic achievement, which is a moderate to strong effect.
- The beta coefficient ($\beta = 0.52$) indicates that for every 1-unit increase in engagement, academic achievement increases by 7.05 percentage points.
- The p-value (0.000) confirms that engagement is a significant predictor of achievement, supporting hypothesis.

$H0_2$ There is a no significant positive relationship between student engagement and academic achievement.

Table 4: Comparison of Engagement Levels between Urban and Rural Schools

Area	Mean Engagement	Std. Deviation	t-value	p-value
Urban (N=150)	4.12	0.65	4.87	0.000
Rural (N=150)	3.51	0.82		

- Urban students (M = 4.12) have significantly higher engagement than rural students (M = 3.51).
- The t-test ($t = 4.87$, $p < 0.001$) confirms that this difference is statistically significant.
- Possible reasons include better infrastructure, teacher training, and digital resources in urban schools.

$H0_3$ There is no significant difference between the Lecture based teaching methods and Interactive teaching methods to enhance student engagement.

Chi-Square Test: Teaching Methods and Engagement Levels

Table 5: Association Between Teaching Methods and High/Low Engagement

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Teaching Method	High Engagement (%)	Low Engagement (%)	χ^2	p-value
Lecture-Based	30%	70%	15.42	0.000
Interactive (Group Work, Tech)	65%	35%		

- Interactive teaching methods (65%) lead to higher engagement compared to lecture-based methods (30%).
- The Chi-Square test ($\chi^2 = 15.42$, $p < 0.001$) shows a significant association, supporting Hypothesis 3.
- This suggests that student-centered approaches improve participation.

Discussion

The findings of this study strongly support the hypothesis that student engagement significantly predicts academic achievement among secondary school students in Gujarat. The correlation coefficient ($r = 0.68$, $p < 0.01$) aligns with previous research by Fredricks et al. (2004) and Finn & Zimmer (2012), confirming engagement as a robust predictor of academic success. The regression analysis further quantified this relationship, demonstrating that each unit increase in engagement corresponds to a 7.05% improvement in academic performance ($\beta = 0.52$), explaining 46% of achievement variance. These results extend Patel's (2020) Gujarat-specific findings by providing empirical evidence of the engagement-achievement link in the regional context.

Notably, the urban-rural engagement disparity (Urban M=4.12 vs. Rural M=3.51, $p<0.001$) echoes NCERT's (2019) national survey results, suggesting systemic inequities in educational resources. The 23% engagement gap mirrors Patel's (2020) observations, with urban advantages likely stemming from better infrastructure and teacher training programs. This study's novel contribution lies in its identification of interactive teaching methods as a key differentiator - classrooms employing group work and technology showed 65% high engagement versus 30% in lecture-based settings ($\chi^2=15.42$), supporting Hattie's (2009) meta-analysis on effective pedagogies.

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