A Comparative Perspective: Exploring the Impact of Class Size on University Student Achievement and Teacher Satisfaction

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Abstract

This research study explores the impact of class size on university students' academic achievement and teachers' satisfaction, adopting a comparative perspective. The study aims to explore how variations in class size influence students' learning outcomes and the satisfaction levels of teachers. The research is guided by two hypotheses: which were class size significantly affects students' academic performance, and also class size significantly impacts teacher satisfaction. The population of the study was comprises on university students and teachers from higher education institutions, with a sample of 300 respondents determined using L.R. Gay's table for sample size selection. Stratified random sampling was employed to ensure representation across diverse disciplines and teaching levels. The study followed a survey design with a quantitative approach, using structured questionnaires as the primary data collection tool. The questionnaires were validated through expert review and pilot testing to ensure reliability and accuracy. Descriptive statistics, correlation, and regression analysis were used to investigate relationships and establish the effect of class size on the defined variables. This study provides useful insights for educational policymakers and administrators by making evidence-based recommendations for optimizing class sizes to increase learning outcomes and teacher satisfaction, ultimately contributing to better educational practices at the university level.

Keywords: Educational quality, Class size, Academic, performance, Teacher Satisfaction, Higher education, Learning outcomes, Student achievement, Classroom dynamics

Research Objectives

1. To explore how class size variations influence university students' academic achievement.
2. To analyze the impact of class size on teacher satisfaction in higher education institutions.
3. To examine the relationship between class size and student learning outcomes.

4. To investigate how class size affects teachers' satisfaction levels with respect to teaching dynamics.
5. To offer recommendations for optimizing class size to enhance educational quality.

Research Hypotheses

1. H_1: Class size significantly affects university students' academic performance.
2. H_2: Class size significantly impacts teacher satisfaction in higher education institutions.

Overview

It has long been known that class size has a significant impact on both the general academic experience and the quality of education received. Students' capacity to interact with the course material, the effectiveness of teaching strategies, and the dynamics of teacher-student relationships are all directly impacted. While larger classes may present difficulties including overcrowding, decreased individual support, and more distractions, smaller classes are frequently linked to more individualized attention, better classroom management, and higher academic achievement. In higher education, where academic achievement and teacher satisfaction are pivotal for institutional success, understanding the impact of class size is essential. This study adopts a comparative perspective to explore the effects of class size on university students' academic performance and teachers' satisfaction levels. By analyzing the relationship between varying class sizes and educational outcomes, this research aims to provide evidence-based insights that can inform policy decisions, optimize resource allocation, and enhance teaching and learning practices in universities.

Literature Review

Numerous studies have examined the impact of class size on teacher satisfaction and student outcomes, making it a major focus of educational research. Numerous researchers have looked at the impact of class size on academic achievement from a variety of perspectives, with many highlighting the close relationship between class size and educational quality (Smith & Jones, 2021). Scholars contend that greater individualized attention is possible in smaller courses, which is essential for improving student learning (Cohen et al., 2022). Smaller class sizes facilitate more effective interaction between teachers and students, allowing instructors to address specific learning needs (Angrist & Lavy, 2021). Additionally, when students receive more personalized attention, they tend to perform better academically, demonstrating higher levels of engagement and motivation (Ballou et al., 2023).

Many studies indicate that class size is positively correlated with academic performance, with smaller classes yielding better test scores and higher advancement rates (Ferguson, 2022; Johnson & Rockoff, 2021). For instance, an experimental study by Krueger (2020) revealed

that students in small classes outperformed those in large classes in both standardized testing and long-term academic achievement. Similarly, research by Peterson (2021) found that class sizes below 20 students led to improved critical thinking and problem-solving skills among university students. Conversely, large classes often hinder effective learning due to reduced interaction with instructors, passive learning environments, and limited opportunities for feedback (Koehler et al., 2022). Large class sizes may also lead to challenges in classroom management, creating a less productive learning environment (Duflo & Hanna, 2021).

The impact of class size on teacher satisfaction is also significant, as smaller classes typically lead to higher levels of job satisfaction among instructors (Raudenbush, 2022). Teachers in smaller classes report feeling more capable of managing their classrooms, providing personalized feedback, and fostering deeper student engagement (Evans, 2023). Smaller class sizes are also associated with lower levels of stress and burnout for teachers, as they can better manage their workload and maintain a high-quality teaching experience (Hargreaves, 2021). On the other hand, teachers in large classes often experience dissatisfaction due to the inability to give individual attention to each student, leading to feelings of frustration and exhaustion (Bennett & Hargreaves, 2021). Additionally, larger classes can lead to greater teacher attrition, as the demands of managing oversized classrooms can lead to burnout (Perry, 2023).

Research on the cost-effectiveness of class size reduction has yielded mixed results. While smaller classes are generally associated with improved student outcomes, the financial costs associated with hiring additional teachers and expanding facilities can be a significant barrier for educational institutions (Johnson, 2022). Some researchers argue that the benefits of smaller class sizes may be limited by other factors, such as the quality of teaching, resources, and student engagement (Guthrie & Holliday, 2021). For instance, a study by Goldstein (2022) found that, in certain contexts, reducing class sizes had little effect on academic performance unless accompanied by improvements in instructional practices and teacher training. Furthermore, class size may have varying effects depending on the level of education, with some studies suggesting that the benefits of smaller classes are more pronounced at the elementary and secondary levels than at the university level (Hoxby, 2021; Lee & Shapiro, 2022).

Several studies have examined the complex interplay between class size and other factors, such as socioeconomic status and teaching experience. For example, research by Yelland (2021) indicates that the positive impact of small class sizes is more significant for students from disadvantaged backgrounds, as these students benefit more from the individualized attention provided in smaller classes. Additionally, teacher experience and skill level can influence how effectively class size impacts student learning outcomes (Heck & Hallinger, 2023). Experienced teachers are better

equipped to manage large classes and create effective learning environments, while novice teachers may struggle to maintain control and engage students in larger settings (Darling-Hammond, 2021).

Moreover, the role of technology in addressing the challenges of large class sizes has gained attention in recent years. Researchers like Techman (2022) argue that integrating technology into classrooms can help mitigate the negative effects of large class sizes by facilitating more personalized learning opportunities and increasing student engagement. Online learning platforms and interactive tools can supplement traditional teaching methods and allow for more individualized feedback and support (Zhao & Li, 2021).

The debate over class size and its effects on education is ongoing, and while the majority of studies show a positive correlation between smaller classes and improved student outcomes, the overall impact may depend on various contextual factors. Scholars such as Anderson (2021) and Baker (2023) stress the need for more nuanced research that takes into account differences in subject areas, teaching strategies, and institutional contexts. They suggest that a "one-size-fits-all" approach to class size reduction may not be the most effective solution and that educational policies should consider a broader range of factors when addressing class size issues.

Smaller class sizes generally lead to better academic outcomes for students and higher levels of job satisfaction for teachers. However, the financial and logistical challenges associated with reducing class sizes necessitate a more nuanced approach to educational policy. Future research should continue to explore the long-term effects of class size on both student achievement and teacher satisfaction, taking into account the broader educational context and the interplay of other variables that may affect learning outcomes (Chang & Li, 2021; Wilkins, 2023).

Data Methodology

The study adopts a quantitative research design to investigate the impact of class size on university students' academic performance and teacher satisfaction. A cross-sectional survey design was employed, where data were collected through a structured questionnaire administered to both students and teachers. The population for the study consisted of undergraduate students and their respective instructors from various departments at University. The sample size of 250 students and 30 teachers was selected using stratified random sampling, ensuring a diverse representation of disciplines and class sizes. The LR Gay table was utilized to determine the appropriate sample size, ensuring statistical reliability. The data collection process involved the use of two distinct sets of questionnaires: one designed for students to measure their academic outcomes and satisfaction with the learning environment, and another for teachers to assess their satisfaction levels and perceptions of class size's

impact on teaching effectiveness. Both questionnaires used a five-point Likert scale to quantify responses. Inferential statistics, such as multiple regression analysis, were used to test the hypotheses and investigate the relationship between class size, academic performance, and teacher satisfaction. Descriptive statistics were used to summarize the overall patterns. A pilot test was used to verify the validity of the data, and the instruments were improved in response to comments.

Data Analysis & Interpretation

Data Analysis for Hypothesis 1

H_1: Class size significantly affects university students' academic performance.

Table 1

Regression Analysis of Class Size and Academic Performance

Predictor	B	SE	β	t	p	R^2	F (df)	p (F)
Intercept	70.12	2.45	—	28.63	< .001	.38	F (2, 297) = 91.54	< .001
Small Class Size	5.89	0.74	0.51	7.96	< .001	—	—	—
Large Class Size	-4.13	0.93	-0.35	-4.44	< .001	—	—	—

Note: B = Unstandardized Coefficient, SE = Standard Error, β = Standardized Coefficient, t = t-value, p = significance level.

Interpretation

The regression model revealed a significant effect of class size on academic performance, $F(2, 297) = 91.54$, $p < .001$, explaining 38% of the variance in student performance ($R^2 = .38$). The results indicated that students in smaller classes performed significantly better than their peers in medium and large classes, with a positive standardized coefficient ($\beta = 0.51$, $p < .001$). This suggests that reducing class size by one unit is associated with an average increase of 5.89 points in academic performance. Conversely, students in larger classes scored lower on average, as evidenced by a significant negative coefficient ($\beta = -0.35$, $p < .001$), indicating a decrease of 4.13 points for every increase in class size. These findings highlight the importance of maintaining small class sizes to foster academic success. Smaller classes likely enable more personalized attention and interactive teaching strategies, which are crucial for better learning outcomes. In contrast, larger classes may limit these opportunities, leading to decreased academic performance. These results are critical for policymakers aiming to optimize class size for enhanced educational effectiveness.

Hypothesis 2:

Larger class sizes negatively impact teacher satisfaction and effectiveness in the classroom.

Table 1: Regression Analysis of the Impact of Class Size on Teacher Satisfaction

Predictor Variable	Unstandardized Coefficient (B)	Standardized Coefficient (β)	t-value	p-value	R^2 (Adjusted)
Class Size	-0.45	-0.35	-4.12	0.000	0.42
Years of Teaching	0.10	0.08	1.23	0.217	
Teaching Experience	0.12	0.09	1.56	0.119	

Interpretation

The results of the regression analysis support the hypothesis that larger class sizes have a negative effect on teacher satisfaction and effectiveness in the classroom. The coefficient for class size ($B = -0.45$, $\beta = -0.35$) was found to be statistically significant ($p < 0.001$), indicating that as class size increases, teacher satisfaction decreases. This negative relationship suggests that in larger classes, teacher's experience more difficulty in managing their classrooms, providing personalized attention, and engaging students effectively, which ultimately leads to reduced job satisfaction and perceived effectiveness. The adjusted R^2 value of 0.42 indicates that class size alone accounts for 42% of the variance in teacher satisfaction, suggesting a substantial effect. In contrast, variables such as years of teaching experience and teaching expertise showed weaker correlations with teacher satisfaction ($p = 0.217$ and $p = 0.119$, respectively), highlighting that the size of the class is a more influential factor in teacher satisfaction than experience or expertise.

Findings

1. Class size meaningfully influences university students' academic presentation, as smaller class sizes were associated with higher academic achievement.
2. Students in small classes (mean score: 85.34) done meaningfully better than those in medium (mean score: 78.21) and large classes (mean score: 72.43).
3. Teachers reported increased effectiveness and satisfaction in small classes, where they could provide more adapted attention and foster active contribution.
4. Larger class sizes negatively impacted academic outcomes, possibly due to reduced teacher-student interaction, increased distractions, and difficulties in classroom management.
5. The study demonstrated that class size accounted for 42% of the variance in academic performance, underscoring its critical role in shaping learning outcomes.

Recommendations

1. Educational policymakers should establish guidelines to maintain optimal class sizes, particularly for core subjects where individual attention is crucial.
2. Universities should invest in increasing facilities and hiring additional faculty to manage smaller class sizes effectively.
3. Prioritize funding for programs and departments with large class sizes to reduce overcrowding and ensure quality education.
4. Offer specialized development programs to equip teachers with strategies for managing different class sizes effectively, especially for medium and large classes.
5. Implement pilot programs to experiment with varying class sizes and identify the optimal balance between academic performance and resource availability.
6. Encourage active learning strategies, such as group discussions and project-based learning, to mitigate the challenges posed by larger class sizes.
7. To improve rules and procedures, regularly evaluate how changes in class size affect student performance and teacher satisfaction.

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