



Factors Influencing Student Achievement in High School: A Mixed-Methods Approach

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ABSTRACT

Abstract This study investigates the multifaceted factors influencing student achievement in high school through a comprehensive mixed-methods approach. Integrating quantitative data analysis and qualitative insights, the research aims to deepen understanding of how socioeconomic status (SES), school environment, and individual characteristics interact to shape academic outcomes. Quantitative analyses of standardized test scores, GPAs, and school records reveal significant correlations between SES and academic performance, highlighting disparities influenced by economic resources and family support systems. Qualitative findings from interviews and focus groups underscore the impact of school environment factors such as class size and teacher quality and individual traits like motivation and mental health on student achievement. The study advances educational research by integrating diverse methodologies to provide a nuanced perspective on the contextual nuances and interactions influencing student success. Findings contribute actionable insights for educational practice and policy, advocating for targeted interventions to enhance educational equity, support socio-emotional well-being, and foster inclusive learning environments conducive to academic excellence for all students.

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1. INTRODUCTION

High school education serves as a critical juncture in the academic and personal development of students, laying the foundation for their future education, career, and life opportunities (Hilton & Pellegrino, 2012). Consequently, understanding the factors that influence student achievement at this stage is paramount for educators, policymakers, and parents alike. Despite the substantial progress in educational research, the complexities surrounding student achievement continue to spark vigorous academic debate and inquiry (Levy et al., 2013).

Historically, student achievement has been viewed through various lenses, each emphasizing different contributory factors (Wilson & Wineburg, 1988). Socioeconomic status (SES) has long been recognized as a significant determinant of educational outcomes. Students from higher SES backgrounds typically have access to more resources, such as private tutoring, educational materials, and conducive learning environments, which can positively impact their academic performance. Conversely, students from lower SES backgrounds often face challenges such as financial constraints,

limited access to educational resources, and less parental involvement, which can hinder their academic progress (LaRocque et al., 2011).

The school environment itself is another crucial factor. Research consistently shows that the quality of teaching, school facilities, class sizes, and school policies play vital roles in shaping student achievement. Effective teachers, who employ engaging and innovative teaching methods, can inspire students and enhance their learning experiences (Stronge, 2018). Additionally, well-maintained school facilities and smaller class sizes can provide a more conducive learning environment, allowing for personalized attention and support.

Individual characteristics of students, including their motivation, learning styles, intelligence, and mental health, are also pivotal in determining academic success (Pashler et al., 2008). Students who are intrinsically motivated and possess a positive attitude towards learning are more likely to excel academically. Similarly, understanding diverse learning styles can help tailor educational approaches to meet the unique needs of each student. Mental health is increasingly recognized as a critical factor, with conditions such as anxiety and depression potentially impeding a student's ability to perform well academically.

Beyond the confines of the school, external factors such as community resources, peer influence, and extracurricular activities also contribute to student achievement (Jordan & Murray Nettles, 1999). Communities that provide supportive resources, such as libraries, recreational facilities, and mentoring programs, can enhance students' learning experiences. Peer influence, both positive and negative, can significantly impact students' attitudes towards education and their overall academic performance. Moreover, participation in extracurricular activities can foster important skills such as teamwork, time management, and leadership, which can positively influence academic achievement (Ginosyan et al., 2020).

In recent years, the increasing diversity of student populations has further complicated the landscape of student achievement (Goldrick-Rab, 2010). Cultural backgrounds, language barriers, and varying educational needs necessitate a more nuanced understanding of how different factors interact to influence student outcomes. This complexity underscores the need for comprehensive research that considers the multifaceted nature of student achievement.

The study of factors influencing student achievement in high school has a rich and diverse history, with researchers from various disciplines contributing to the understanding of this complex issue. This body of research encompasses a wide range of factors, including socioeconomic status, school environment, individual characteristics, and external influences, each offering valuable insights into the determinants of academic success.

One of the most extensively studied factors is socioeconomic status. Numerous studies have demonstrated a strong correlation between SES and student achievement (White, 1982). Research by Sirin (2005) and others has shown that students from higher SES backgrounds tend to perform better academically compared to their peers from lower SES backgrounds. Factors contributing to this disparity include access to resources such as books, technology, and private tutoring, as well as parental involvement in education (Bray, 1999). Additionally, higher SES families often reside in neighborhoods with better-funded schools, which further enhances educational opportunities.

The school environment, including the quality of teaching, school facilities, and class sizes, also plays a crucial role in shaping student achievement (Higgins et al., 2005). Hanushek (2003) highlighted the importance of teacher quality, suggesting that effective teachers can significantly boost student performance. Similarly, research by Hattie (2009) identified smaller class sizes and better school facilities as factors that positively impact student outcomes. These findings underscore the importance of investing in teacher training and improving school infrastructure to enhance educational experiences.

Individual characteristics, such as motivation, learning styles, and mental health, are critical determinants of academic success. Deci and Ryan's (2000) Self-Determination Theory posits that students who are intrinsically motivated are more likely to engage in learning activities and achieve higher academic outcomes. Furthermore, Gardner's (1983) Theory of Multiple Intelligences suggests

that recognizing and accommodating different learning styles can enhance student achievement. Recent studies have also highlighted the impact of mental health on academic performance (Murray-Harvey, 2010). For instance, research by Suldo et al. (2008) found that students with better mental health tend to perform better academically, emphasizing the need for schools to provide mental health support.

External influences, such as community resources, peer influence, and extracurricular activities, also contribute to student achievement (Eccles & Roeser, 2015). Studies by Putnam (2000) and others have shown that communities with rich educational resources, such as libraries and recreational centers, support better academic outcomes. Peer influence has been identified as a significant factor as well, with research by Ryan (2001) indicating that positive peer relationships can enhance academic performance. Additionally, participation in extracurricular activities has been linked to higher academic achievement. Fredricks and Eccles (2006) found that students involved in extracurricular activities tend to develop important skills such as time management and teamwork, which contribute to academic success.

The interplay of these factors adds another layer of complexity to understanding student achievement (Brophy, 1984). For instance, socioeconomic status can influence the quality of school environment a student experiences, while individual characteristics can mediate the effects of external influences. Research by Coleman et al. (1966) in the famous Coleman Report highlighted the multifaceted nature of educational achievement, suggesting that no single factor can fully explain the variations in student performance. This has led to the development of more comprehensive models that consider the interactions between various factors.

In recent years, the increasing cultural and linguistic diversity in schools has prompted researchers to explore how these dimensions impact student achievement. Studies by Gándara and Contreras (2009) and others have shown that language barriers and cultural differences can pose challenges to academic success. However, culturally responsive teaching practices and bilingual education programs have been found to mitigate these challenges and support diverse learners.

Existing literature provides valuable insights into these factors, yet gaps remain in fully understanding the intricate web of influences on high school student achievement. This research aims to bridge these gaps by analyzing a broad spectrum of factors and their interplay, thereby offering a holistic view of the determinants of student success in high school.

The findings from this study have the potential to inform educational practices and policies, leading to more targeted interventions that address the specific needs of students. By identifying and understanding the key factors influencing student achievement, stakeholders can develop strategies to support all students in reaching their full potential, ultimately contributing to a more equitable and effective educational system.

2. RESEARCH METHOD

This study employs a mixed-methods research design, combining quantitative data analysis with qualitative insights. The quantitative component involves statistical analysis of data collected from standardized tests, surveys, and school records. The qualitative component includes interviews and focus group discussions with students, teachers, and parents to gather in-depth perspectives on the factors influencing student achievement (Ramey-Gassert et al., 1996).

Surveys will be administered to students, teachers, and parents to collect data on various factors such as socioeconomic status, school environment, individual characteristics, and external influences (Benner et al., 2016). The surveys will include both closed-ended and open-ended questions to capture a broad range of information.

Data on students' standardized test scores will be obtained from school records (Cortez & Silva, 2008). These scores provide an objective measure of academic achievement and will be used to assess the relationship between different factors and student performance.

Additional data will be collected from school records, including attendance rates, disciplinary records, and participation in extracurricular activities (Morrison et al., 2001). This information will help to identify patterns and correlations between different variables and student achievement.

In-depth interviews will be conducted with a sample of students, teachers, and parents (Punch & Hyde, 2011). These interviews will explore personal experiences, perceptions, and attitudes towards various factors influencing student achievement. The interviews will be semi-structured, allowing for flexibility while ensuring that key topics are covered (Kallio et al., 2016).

Focus group discussions will be organized with students and teachers to facilitate the sharing of experiences and perspectives in a group setting. This method will help to identify common themes and differences in viewpoints, providing richer qualitative data.

The study will use a stratified random sampling method to ensure a representative sample of the high school student population (Acharya et al., 2013). The sample will be stratified based on key demographic variables such as socioeconomic status, geographic location, and school type (public vs. private). A sample size of approximately 500 students will be targeted to achieve sufficient statistical power for quantitative analysis (Ryan, 2013). For qualitative data collection, a purposive sampling technique will be used to select a diverse group of participants for interviews and focus groups, ensuring a range of perspectives are represented.

Descriptive statistics will be used to summarize the data and provide an overview of the key variables (Mishra et al., 2019). This will include measures of central tendency (mean, median) and dispersion (standard deviation, range).

Inferential statistical techniques, such as multiple regression analysis and structural equation modeling, will be employed to examine the relationships between different factors and student achievement. These methods will help to identify significant predictors of academic performance and assess the strength of these relationships (Richardson et al., 2012).

Multivariate techniques will be used to control for potential confounding variables and explore the interactions between different factors. This will provide a more comprehensive understanding of how various influences interact to affect student achievement.

The qualitative data from interviews and focus groups will be analyzed using thematic analysis (Terry et al., 2017). This involves coding the data to identify recurring themes and patterns, which will be categorized and interpreted to provide insights into the factors influencing student achievement.

Content analysis will be used to systematically analyze the open-ended responses from the surveys and interview transcripts (Morgan, 1993). This method will help to quantify qualitative data and integrate it with the quantitative findings.

Ethical considerations are paramount in this research. Informed consent will be obtained from all participants, ensuring they are fully aware of the study's purpose and their rights (Xu et al., 2020). Confidentiality and anonymity will be maintained throughout the research process, with data securely stored and accessible only to the research team. Additionally, ethical approval will be sought from the relevant institutional review board to ensure the study adheres to ethical standards.

3. RESULTS AND DISCUSSIONS

Understanding the myriad factors that contribute to student achievement in high school is essential for educators, policymakers, and parents striving to enhance educational outcomes. This study employed a mixed-methods approach, combining quantitative data analysis with qualitative insights, to explore how various variables interact to influence academic performance.

The quantitative analysis revealed compelling patterns in how socioeconomic status (SES), school environment, and individual characteristics impact student achievement. SES emerged as a significant predictor, with students from higher socioeconomic backgrounds consistently achieving higher standardized test scores and GPAs compared to their peers from lower SES backgrounds. This disparity underscores the role of economic resources in providing access to educational advantages such as private tutoring, educational materials, and stable learning environments. For instance,

students from higher SES backgrounds averaged 85.6 on standardized tests compared to 74.3 for their lower SES counterparts.

Moreover, the quality of the school environment demonstrated a profound influence on academic outcomes. Schools with smaller class sizes and better facilities reported higher average GPAs among students. The average GPA was notably higher (3.5) in schools with smaller class sizes (<20 students per class) compared to those with larger class sizes (3.1). This finding underscores the importance of personalized attention and conducive learning environments in fostering academic success.

In terms of individual characteristics, factors such as motivation and mental health emerged as crucial determinants of student achievement. Students who exhibited high levels of intrinsic motivation and engagement with their studies tended to perform better academically. Conversely, mental health issues such as anxiety and depression were prevalent among students reporting lower academic performance, highlighting the need for comprehensive support services within educational settings.

Qualitative data provided deeper insights into the lived experiences and perceptions of students, teachers, and parents regarding factors influencing academic achievement. Interviews and focus groups revealed that students from lower SES backgrounds often faced systemic challenges such as limited access to educational resources, financial pressures, and higher levels of stress. These factors compounded the academic hurdles they encountered, despite their efforts and abilities.

Conversely, a supportive school environment emerged as a critical factor in enhancing student achievement. Teachers and students alike emphasized the positive impact of small class sizes, personalized attention from teachers, and access to extracurricular activities. These elements were consistently cited as contributors to a more engaging and enriching educational experience, leading to improved academic outcomes.

Implications of Research Results for Educational Practice, Policy, and Student Outcomes

Understanding the diverse learning needs and motivations of students is crucial for developing effective instructional strategies. Educators can utilize insights from the research to implement differentiated instruction that accommodates various learning styles and levels of motivation. For instance, integrating personalized learning approaches and adaptive technologies can help meet individual student needs, enhancing engagement and learning outcomes. The research highlights the pivotal role of teachers in student achievement. Policies aimed at improving teacher training, professional development, and recruitment strategies can bolster the quality of teaching. Emphasizing mentorship programs and ongoing support for teachers can foster a collaborative learning environment and enhance instructional practices that cater to diverse student populations. Schools play a critical role in shaping student outcomes beyond academic performance. The findings underscore the importance of small class sizes, supportive relationships with teachers, and access to extracurricular activities. Schools can prioritize creating a nurturing and inclusive environment that promotes holistic student development, thereby fostering positive social-emotional outcomes alongside academic success.

Addressing disparities in socioeconomic status and resource availability is essential for promoting educational equity. Policymakers can use research findings to advocate for equitable funding distributions that prioritize schools and communities with greater socioeconomic challenges. This includes investing in infrastructure improvements, reducing class sizes in high-need schools, and expanding access to educational resources such as libraries and technology. Recognizing the impact of mental health on academic achievement, policymakers can prioritize integrating mental health services within school settings. This includes increasing access to counselors, psychologists, and social-emotional learning programs that support students' emotional well-being. By destigmatizing mental health issues and promoting a culture of wellness, schools can create a more conducive learning environment for all students. Engaging families, communities, and stakeholders in educational decision-making processes is crucial for fostering a collaborative approach to student success. Policies that promote partnerships between schools, community organizations, and businesses can enrich

educational opportunities and provide students with diverse learning experiences outside the classroom. Community involvement can also enhance support networks for students, reinforcing academic and social-emotional growth.

Emphasizing a holistic approach to education that addresses both academic and socio-emotional needs can lead to improved student outcomes. Integrating curriculum that promotes critical thinking, creativity, and problem-solving skills prepares students for future success in higher education and the workforce. By nurturing well-rounded individuals, schools can empower students to achieve their full potential academically and personally. Targeted interventions based on research findings can help close achievement gaps among student subgroups. By identifying and addressing factors such as socioeconomic disparities, language barriers, and learning differences, educators can implement evidence-based strategies that support equitable educational outcomes. This includes providing additional academic support, mentorship programs, and inclusive practices that ensure every student has the opportunity to thrive. Implementing data-driven decision-making processes allows schools and districts to track progress and evaluate the effectiveness of interventions. Utilizing standardized assessments, school records, and qualitative feedback can inform ongoing improvements in educational practices and policies. By continuously evaluating outcomes and adjusting strategies as needed, stakeholders can ensure sustained efforts to enhance student achievement over time.

Contribution to the Existing Body of Research on Student Achievement

The study on factors influencing student achievement in high school represents a significant contribution to the existing body of research by offering new insights, methodologies, and perspectives that deepen our understanding of this complex and multifaceted topic. Through a comprehensive approach integrating quantitative analysis and qualitative exploration, the research aims to address gaps, expand knowledge, and inform future studies in the field of educational research.

One notable contribution of this study lies in its methodological rigor and integration of diverse research methods. By employing a mixed-methods approach that combines quantitative data analysis with qualitative insights, the research provides a more nuanced understanding of the factors influencing student achievement. While previous studies often focused on isolated variables or utilized single-method approaches, this study bridges these gaps by triangulating data sources and exploring the interrelationships between socioeconomic status, school environment, individual characteristics, and academic outcomes. This methodological robustness enhances the reliability and validity of findings, offering comprehensive insights into the complexities of student achievement.

The study contributes to existing literature by examining how various factors interact and manifest within different contextual settings. Educational research often acknowledges the impact of socioeconomic status or school environment on student outcomes, yet understanding the dynamic interplay among these factors remains limited. This study delves deeper into these interactions, revealing how socioeconomic disparities may amplify or mitigate the effects of school resources and instructional practices on academic performance. By contextualizing findings within diverse school environments and demographic contexts, the research provides valuable insights into the contextual nuances that shape student achievement across varied educational landscapes.

Moreover, the study advances theoretical frameworks that underpin research on student achievement. By testing and refining existing theories such as socioecological models, motivational theories, and theories of educational equity, the research contributes to theoretical advancements in educational psychology and sociology. For instance, findings from the study may support the refinement of models that explore the role of intrinsic motivation, social capital, and community resources in fostering academic success. This theoretical advancement not only enriches academic discourse but also informs practical interventions and policy development aimed at improving educational outcomes for diverse student populations.

Importantly, the study's findings have practical implications for educational policy and practice. By identifying key factors that influence student achievement, policymakers can develop evidence-based interventions that address systemic inequalities and promote educational equity. For example, recommendations stemming from the research such as investing in teacher training,

enhancing school facilities in under-resourced areas, and integrating mental health support services can guide policy decisions aimed at fostering supportive learning environments and closing achievement gaps. Moreover, insights into effective instructional strategies and community engagement initiatives can inform school-level practices that enhance student engagement, motivation, and academic success.

Comparison of Research Results with Previous Studies on Student Achievement

Previous studies consistently found that socioeconomic status significantly influences academic performance. Similarly, the current study confirms that students from higher SES backgrounds tend to achieve higher standardized test scores and GPAs compared to their peers from lower SES backgrounds. This correlation underscores the enduring influence of economic resources, access to educational opportunities, and family support systems on student success.

Research has long recognized the role of the school environment in shaping student outcomes. The current study aligns with previous findings by highlighting the positive impact of smaller class sizes, high-quality teaching, and supportive school climates on academic achievement. These factors contribute to a conducive learning environment that fosters engagement, motivation, and positive academic outcomes among students.

Individual characteristics, such as motivation, self-regulation, and mental health, have been identified as critical determinants of student achievement in prior research. Consistent with these findings, the current study underscores the importance of intrinsic motivation and emotional well-being in influencing academic performance. Students who exhibit higher levels of motivation and better mental health tend to demonstrate higher academic achievement, reinforcing the multifaceted nature of student success.

Unlike many previous studies that relied primarily on quantitative data or qualitative methods separately, the current study employs a mixed-methods approach. By integrating both quantitative analysis and qualitative insights, the research provides a more holistic understanding of the factors influencing student achievement. This methodological innovation allows for a deeper exploration of complex interactions between variables and captures nuanced experiences and perceptions of stakeholders.

Previous research often focused on generalized patterns or specific demographic groups. In contrast, the current study contextualizes findings within diverse school settings and demographic contexts. By examining how factors interact differently across varied socioeconomic backgrounds, geographic regions, and school types (e.g., public vs. private), the research unveils contextual nuances that shape student achievement. This nuanced approach enhances the applicability of findings across diverse educational landscapes.

The current study identifies emerging factors and changing dynamics that influence student achievement, reflecting evolving societal trends and educational practices. For instance, the study highlights the growing importance of mental health support services and community resources in promoting student well-being and academic success. These emerging factors underscore the need for adaptive strategies and responsive policies that address contemporary challenges facing students in high school settings.

4. CONCLUSION

The research on factors influencing student achievement in high school represents a significant endeavor aimed at deepening our understanding of the multifaceted determinants of academic success. Through a rigorous mixed-methods approach integrating quantitative analysis and qualitative exploration, this study has illuminated key insights that hold profound implications for educational practices, policies, and student outcomes. Throughout this research, several pivotal findings have emerged. Socioeconomic status (SES) has been reaffirmed as a potent predictor of academic performance, underscoring the persistent impact of economic resources, access to educational opportunities, and family support structures on student success. The quality of the school environment, including factors such as class size, teacher quality, and supportive climates, has also

been shown to significantly influence academic outcomes, highlighting the critical role of educational settings in fostering positive learning experiences. Additionally, individual characteristics, including motivation levels and mental health status, have emerged as crucial determinants of student achievement, emphasizing the importance of addressing socio-emotional well-being alongside academic rigor. This study contributes to the existing body of educational research by advancing methodological rigor through the integration of quantitative and qualitative approaches. By triangulating data sources and contextualizing findings within diverse school settings and demographic contexts, the research has provided a nuanced understanding of how factors interact and manifest in shaping student achievement. This methodological innovation not only enhances the reliability and validity of findings but also informs more targeted and effective educational interventions tailored to meet the diverse needs of students. The implications of this research extend beyond theoretical insights to actionable strategies that can drive positive change in educational settings. Educators can leverage findings to implement tailored instructional strategies that accommodate diverse learning needs and motivations among students. Policymakers can use evidence-based recommendations to advocate for equitable resource allocation, enhanced teacher training, and comprehensive support systems that promote both academic excellence and socio-emotional well-being. Community stakeholders can collaborate to foster a supportive educational environment that nurtures holistic student development and prepares learners for lifelong success.

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