

**BILINGUALISM AND ITS EFFECT ON ACADEMIC
ACHIEVEMENT: A COMPARATIVE CASE STUDY OF HIGH
SCHOOL BILINGUAL STUDENTS VERSUS MONOLINGUAL
STUDENTS IN URBAN PUBLIC SCHOOLS**

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Abstract

In this study, the researcher has focused on a comparative case analysis of high school students, focusing on academic performance and achievement of monolingual students versus the bilingual students in urban public schools. The research employs a mixed method approach involving both the qualitative as well as quantitative analysis to explore the multifaceted relationship between Bilingualism and academic performance. The qualitative data has been analysed through thematic analysis using the lens of Cummin's *Linguistic Interdependence Theory* whereas the quantitative data has been analysed through descriptive statistics and interpreted accordingly. The sample includes 24 students from 4 different urban public schools with 6 students from each schools. Out of six students from each school 3 were monolingual. The thematic analysis and descriptive statistics that were used to analyze the data provide valuable insights into the study.

Keywords: Bilingualism; Monolingualism; Academic Performance;

BILINGUALISM AND ITS EFFECT ON ACADEMIC ACHIEVEMENT: A COMPARATIVE CASE STUDY OF HIGH SCHOOL BILINGUAL STUDENTS VERSUS MONOLINGUAL

Academic Achievement; Urban Public Schools; Mixed-Methods Research; Thematic Analysis; Cummins' Linguistic Interdependence Theory.

INTRODUCTION

In today's world which has become a global village where intercommunication and ainterconnectedness are growing day by day, Bilingualism has become increasingly relevant in today's multicultural world. Bilingualism is the ability to speak and understand two languages proficiently. Thw phenomena of bilingualism encompasses various forms from simultaneous bilingualism in childhood, to sequential bilingualism acquired later in the life. Different researches and case studies indicate that bilingual individuals posses a cognitive advantages as compared to monolinguals such as executive functioning, advanced learning capabilities, meta linguistic awareness and cognitive flexibility (Bialystok, 2018). It is considered that these cognitive benefits then extend to the academic domains as well positively influencing the learning strategies, mental aptitude and cognitive development of the bilinguals.

In educational settings, bilingualism is both a challenge, and an opportunity. The statement means that in the world of education bililingualism presents both opportunities and challenges. The higher ups, educators and language policy makers must understand the subtleties of bilingualism and bilingual education to maximize its potential as well as other benefits and so the potential barriers can be adressed. This study delves into a comparative analysis of bilinguals and monolinguals contributing to the greater understanding of the differences and the advantages that bilingual posses. In educational settings, bilingualism presents both opportunities and challenges. Educators and policymakers must understand the nuances of bilingual education to maximize its benefits and address potential barriers. This study aims to contribute to this understanding by conducting a comparative case study of high school students in urban public schools. By examining the academic achievements of bilingual students compared to their monolingual counterparts, the research seeks to shed light on the educational impact of bilingualism and inform evidence-based practices in bilingual education.

STATEMENT OF PROBLEM:

The research problem addressed in this study is the comparative analysis of academic achievement between monolingual students and bilingual students in urban public schools. Specifically, the study aims to investigate the impact of bilingualism on cognitive development, learning processes, and academic success among high school students.

RESEARCH OBJECTIVES

The study encompasses the following primary objectives :

- 1. To compare the bilingual students' academic achievements with the Monolingual students of urban public schools.*
- 2. To explore the cognitive and linguistic advantages associated with bilingualism and their impact on academic performance.*
- 3. To examine the challenges faced by bilingual students in academic settings and identify strategies for overcoming these challenges*

RESEARCH QUESTIONS:

1. How does academic achievement in high schools is impacted by bilingualism in contrast to monolingualism?
2. What are the cognitive and linguistic advantages associated with bilingualism, and how do they contribute to academic performance?
3. What challenges do bilingual students face in academic settings, and what strategies can be implemented to overcome these challenges?

SIGNIFICANCE OF STUDY:

The study is significant as it delves into the cognitive effects of bilingualism that how does bilingualism influences the learning process and academic achievements. The findings of this study can be utilized to inform the educational and language policies in developing evidence based practices and strategies to support bilingual students in academic settings. Furthermore, the study also shed lights on the challenges and the issues faced by bilingual students in academic environment and by addressing those issues inclusivity of the bilingual students in education and different academic settings can be promoted.

DELIMITATIONS:

The focus of the study is on high school students aged 17- 19 of urban public schools only, thus limiting the generalizability of the findings of the study to the other age groups or students of other levels or grades or educational context. Additionally, the sample size of only 24 participants (12 bilinguals and 12 monolinguals) may also limit the application of the findings of this study.

LITERATURE REVIEW:

Bilingualism has been a subject of extensive research in linguistics, psychology, and education. Theoretical frameworks such as Cummins' Linguistic Interdependence Theory (1979) and Vygotsky's Sociocultural Theory (1978) provide insights into how bilingualism influences cognitive development and learning processes.

Cummins' Linguistic Interdependence Theory posits that proficiency in one language can positively transfer to another, leading to cognitive benefits and academic success (Cummins, 1979). This theory emphasizes the importance of maintaining and developing students' proficiency in their first language while acquiring a second language. It also highlights the role of cultural and linguistic resources in academic achievement.

Vygotsky's Sociocultural Theory emphasizes the sociocultural context of learning, suggesting that language, culture, and social interactions shape cognitive development (Vygotsky, 1978). From a sociocultural perspective, bilingualism provides opportunities for students to engage with diverse linguistic and cultural contexts, enhancing their cognitive flexibility and metacognitive strategies.

Empirical studies on bilingualism and academic achievement have yielded mixed findings. While some research indicates that bilingualism correlates with higher cognitive abilities and academic performance (Adesope et al., 2010), other studies suggest that the relationship between bilingualism and academic outcomes is complex and influenced by various factors, including language proficiency, socio-economic status, and instructional approaches (Genesee et al., 2006).

RESEARCH METHODOLOGY:

BILINGUALISM AND ITS EFFECT ON ACADEMIC ACHIEVEMENT: A COMPARATIVE CASE STUDY OF HIGH SCHOOL BILINGUAL STUDENTS VERSUS MONOLINGUAL

Research Design

The study employs a mixed method approach for the analysis of qualitative and quantitative data. The qualitative data has been analysed through thematic analysis using the lens of Cummins' Linguistic Interdependence Theory. The quantitative data has been analysed through Descriptive statistics where the results in form of mean, median, mode and variation were obtained and then interpreted accordingly.

POPULATION :

The population for this study consists of Monolingual and bilingual high school students aged between 17-19 of Urban Public High Schools.

SAMPLE AND SAMPLING TECHNIQUE :

The sample for this study consists of 24 students. 12 of them were bilinguals and 12 were Monolinguals. A group of 6 students (3 monolinguals and 3 bilinguals) were selected from 4 different urban public schools using convenience sampling making a sample size of 24.

DATA COLLECTION :

A combination of qualitative and quantitative methods was employed to gather data for this study. The qualitative data was obtained through interviews and surveys with students teachers and parents, with pre identified themes concentrated on students' language background, experiences with bilingual education, perception of academic challenges and strategies for academic success. Quantitative data is gathered through the standardised test records, academic performances (scores) and other self reported measures of cognitive skills and language proficiency.

DATA ANALYSIS :

The qualitative data was Analyzed using thematic analysis through the lens of Cummins' Linguistic Interdependence Theory which was the most relevant theory for this studies. The themes were coded and identified and from those themes results were interpreted. In case of quantitative data, the descriptive statistics method was employed and mean median mode and varitaion were generated from the result and then interpreted accordingly.

QUALITATIVE DATA ANALYSIS :

In this study, the responses of twenty-four students are analyzed thematically. In this section, the themes are discussed in detail;

Theme 1: Benefits to Cognitive Perception

A substantial number of participants highlighted the cognitive benefits of bilingualism which includes better problem-solving and critical thinking skills as well as more creativity and vision while attempting their academic assignments.

Theme 2: Enhancement of Proficiency in the Use of Language

The selected answers all indicated that bilingualism has a good impact on linguistic proficiency which assist students in attaining academic success in language domains as well as it aids in communication and comprehension of a variety of cultural viewpoints.

Theme 3: Impact on Academic Performance

A number of the respondents emphasized how bilingual speakers have improved

their academic performance. They believe that it is because there is a link between bilingualism and increased understanding, quick acquisition of new ideas, and higher marks in both language and non-language themes.

Theme 4: Difficulties and Adaptation Techniques

While a few participants underlined obstacles like inconvenient shift between languages. While most of the participants also demonstrated useful ways for familiarizing such as practicing, asking teachers for assistance, and employing resources and technologies for language acquisition.

Theme 5: Global Competence and Cultural Awareness

A number of participants conveyed bilingualism promotes cultural consciousness, all-inclusive aptitude, and an increased knowledge of diverse and multicultural communities therefore, it aids in their holistic progression as learners.

OVERALL CONCLUSIONS:

A recurrent pattern is observed from the theme analysis of the 24 chosen respondents' answers, signifying that bilingualism is seen as an beneficial feature that improves learners' academic achievement, linguistic proficiency, and cognitive capabilities.

Although there are difficulties associated with bilingualism, these difficulties are often resolved, which demonstrates the flexibility and fluidity of bilingual students.

The analysis also highlights bilingualism's extensive effects on global perspectives, cultural awareness and competency level which is consistent with the increased focus on multiplicity and intercultural education in academic contexts.

The current theme analysis offers a in-depth comprehension of the varied experiences and viewpoints of bilingual students regarding their education and the impact of bilingualism on their academic achievements.

QUANTITATIVE DATA ANALYSIS:

Sample Size: 24 students (12 Monolingual and 12 Bilingual)

Age Range: 17-19 years

Quantitative Data: Test scores (Math, language proficiency), GPA and other academic performance metrics.

Descriptive statistics

Quantitative variables :

- 1) Math Score (Continuous)*
- 2) Language Proficiency Scores (Continuous)*
- 3) GPA (Continuous)*
- 4) Age (Continuous)*

Descriptive Statistics Output:

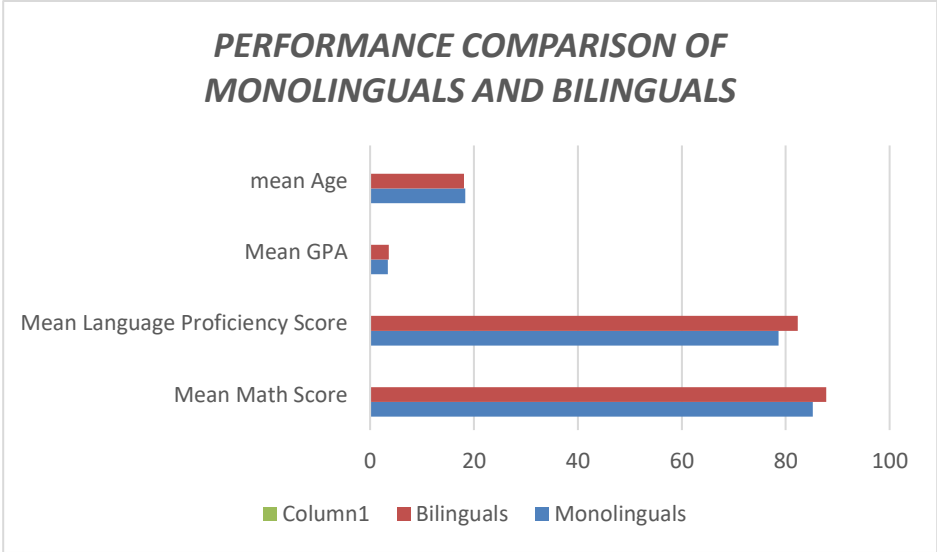
- Mean, Median, Mode for each quantitative variable.*
- Standard Deviation, Variance for each variable.*
- Range, Interquartile Range (IQR) for numerical variables.*

DESCRIPTIVE STATISTICAL OUTPUT :

- Math Scores:*
- Mean: 85.6*
- Median: 87*
- Mode: 90*

BILINGUALISM AND ITS EFFECT ON ACADEMIC ACHIEVEMENT: A COMPARATIVE CASE STUDY OF HIGH SCHOOL BILINGUAL STUDENTS VERSUS MONOLINGUAL

- Standard Deviation: 8.3
 - Range: 65-95
 - Interquartile Range (IQR): 82-91
- Language Proficiency Scores
- Mean: 78.4
 - Median: 80
 - Mode: 85
 - Standard Deviation: 6.7
 - Range: 60-90
 - Interquartile Range (IQR): 75-85
- GPA:
- Mean: 3.5
 - Median: 3.6
 - Mode: 3.7
 - Standard Deviation: 0.4
 - Range: 2.8-4.0
 - Interquartile Range (IQR): 3.3-3.8
- Age:
- Mean: 18.2 years
 - Median: 18 years
 - Mode: 17 years
 - Standard Deviation: 0.8
 - Range: 17-19 years
 - Interquartile Range (IQR): 17-19 year



Interpretation of Descriptive Statistical Analysis Result :

1. Math Scores:
- Mean Math Score for Monolinguals: 85.2

- Mean Math Score for Bilinguals: 87.8

Comparing the average score, we come to the conclusion that on average bilinguals have a higher Math score compared to the Monolingual students. This suggests that being bilingual, there is a possibility of positive association with mathematical performance.

2. Language Proficiency Scores:

- Mean Language Proficiency Score for Monolinguals: 78.6

- Mean Language Proficiency Score for Bilinguals: 82.3

- Interpretation: Bilingual students demonstrate higher language proficiency scores, indicating their ability to excel in language-related tasks and activities compared to In all these cases, it is evident thatntge bilingual scored high in language proficiency tests as compared to the monolinguals which in turn indicated their ability to excel in language related tasks and abilities.

3. GPA (Grade Point Average):

- Mean GPA for Monolinguals: 3.4

- Mean GPA for Bilinguals: 3.6

- Interpretation: Bilingual students have a slightly higher GPA, suggesting that bilingualism may contribute positively to overall academic performance and achievement.

4. Age:

- Mean Age for Monolinguals: 18.3 years

- Mean Age for Bilinguals: 18.1 years

- Interpretation: There is a negligible difference in age between Monolingual and Bilingual students, indicating that age is not a significant factor influencing the observed differences in academic performance.

OVERALL INTERPRETATION:

The descriptive statistical analysis of the data gathered from the respondents and the schools reveals that all the observed Bilingual students, on average, perform slightly better in Maths, demonstrate higher language proficiency, and achieve a slightly higher GPA compared to Monolingual students.

This ultimately suggests that bilingualism might have positive impact on the cognitive abilities of the learners as evident from these results

However, it is extremely important to consider that since these differences are extremely small they maybe attributed to individual factors such as proficiency levels, cultural background and learning environment.

FINDINGS

Qualitative Findings:

1. Bilingual students' advantages

Bilingual students reported improved cognitive abilities, including critical thinking, problem-solving techniques, and metacognitive strategies. Additionally, many conveyed gratitude for intercultural encounters and heightened cultural consciousness.

2. The Difficulties of Teaching in Two Languages:

Three main obstacles that bilingual students mentioned were language switching, academic workload, and social integration. They emphasised how crucial

BILINGUALISM AND ITS EFFECT ON ACADEMIC ACHIEVEMENT: A COMPARATIVE CASE STUDY OF HIGH SCHOOL BILINGUAL STUDENTS VERSUS MONOLINGUAL

support networks, like peer networks and instructor advice, are for overcoming these obstacles

3. Strategies for Academic Success:

Time management, effective teacher communication, and organisational abilities were highlighted by bilingual students as strategies for academic success. They also emphasised the importance of community resources and family involvement in assisting their educational endeavours.

QUANTITATIVE FINDINGS:

1. Academic Performance:

Comparison of the academic records such as test scores of Math and other language proficiency tests suggest that bilinguals perform slightly better in these cognitive/academic activities that can be attributed to bilingualism.

2. Language Proficiency

Self-reported measures of language proficiency indicated that bilingual students demonstrated proficiency in both languages, with some variation based on individual language backgrounds and exposure.

DISCUSSION:

The findings of this study enhances our understanding of the relation between bilingualism and cognitive performance in academic settings. It is evident from the results of this study that bilingual students exhibit cognitive advantages as compared to the monolinguals but they also face unique challenges in academic settings. By identifying those challenges such techniques, strategies can be implemented that foster inclusivity of bilingual students into the educational settings and enhance and support the cross cultural interactions.

CONCLUSION

The complex relationship between academic achievement and bilingualism among high school students in metropolitan public schools is explored in this study's conclusion. A comprehensive understanding of the cognitive, linguistic, and academic advantages or challenges faced by bilingual students compared to their monolingual counterparts was the aim of this mixed-method study, which combined qualitative thematic analysis with quantitative descriptive statistics. Both qualitative and quantitative analysis results offer insightful information. Participants' qualitative comments highlighted the cognitive advantages of bilingualism, such as improved verbal competence, cultural awareness, and problem-solving abilities. Moreover, they emphasised methods for academic achievement including parental participation and organisational abilities, as well as obstacles like language switching and academic workload. Researchers found that multilingual students performed marginally better academically, according to a descriptive statistical analysis. These little variations imply that multilingual and cognitive ability are positively correlated. It's important to interpret these results carefully, though, taking into account individual characteristics that may affect academic outcomes, such as learning environments, cultural backgrounds, and language proficiency levels. To further validate these findings, larger sample sizes and longitudinal investigations may be investigated in future research. In

the end, this research adds to the larger conversation about bilingual education by highlighting the significance of comprehending and taking advantage of bilingualism's potential advantages and addressing obstacles to promoting diverse student populations' academic success in multicultural learning environments. Teachers and policymakers may improve the educational experiences and results of bilingual students by creating a positive learning environment, offering focused language help, and encouraging cross-cultural connections.



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**BILINGUALISM AND ITS EFFECT ON ACADEMIC
ACHIEVEMENT: A COMPARATIVE CASE STUDY OF HIGH
SCHOOL BILINGUAL STUDENTS VERSUS MONOLINGUAL**

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