

The Influence of English Medium Instruction on Saudi Students' Academic Outcomes: A Mixed-Methods Analysis of Language Proficiency, Learning Strategies, and Disciplinary Knowledge

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Abstract

The objectives of Vision 2030 and globalization have accelerated the adoption of English Medium Instruction (EMI) in Saudi higher education, sparking intense discourse over its linguistic, academic, and societal ramifications. This study examines the effects of English Medium Instruction (EMI) on 150 Saudi undergraduate students from Prince Sattam Bin Abdulaziz University, KSA, concentrating on their academic achievement, language proficiency, and subject-specific learning. The study utilized a mixed-methods approach, gathering data through academic performance records, standardized language proficiency tests, and a structured questionnaire administered at Prince Sattam Bin Abdulaziz University, KSA. Quantitative data were analyzed using one-way ANOVA, independent-samples t-tests, and descriptive statistics to examine significant variations related to gender, academic disciplines, and proficiency levels. The qualitative data obtained from semi-structured interviews provided deeper insights into students' lived experiences and complemented the quantitative findings. The results show that English Medium Instruction (EMI) facilitates access to global resources and is linked to improved English proficiency, but it also creates challenges in comprehension, subject learning, and overall academic performance, especially for students who begin with low levels of English proficiency. Additionally, students in EMI programs relied on rote memorization and engaged in limited critical discussion as coping strategies.

Keywords: English Medium Instruction (EMI), academic performance, language proficiency, learning strategies, Saudi higher education

1. Introduction

Due to the globalization of education, English Medium Instruction (EMI) has become increasingly common at universities around the world, especially in countries where English is not the first language. EMI stands for "English as a Medium of Instruction," which means using English to teach academic subjects in contexts where English is not the primary language. It is becoming more widely accepted as a way to improve students' chances of employment, international mobility, and global awareness (Dearden, 2014; Macaro, 2018; Aslam et al., 2022). The implementation of EMI reflects broader socio-political and economic aims, including economic diversification, innovation, and participation in global academic networks. Saudi Arabia's Vision 2030 aligns closely with these objectives. It focuses on enhancing the country's competitiveness on the global stage, leveraging knowledge and innovation to drive economic growth, and reforming higher education (Saudi Vision 2030, 2016).

For students whose native language is not English, English Medium Instruction (EMI) poses major challenges despite its perceived advantages. Arabic remains the principal language used for early education, cultural expression, and everyday communication in Saudi Arabia. Consequently, when students engage with English-medium instruction in higher education, they frequently encounter a linguistic barrier that may impede their comprehension of academic content, participation in class discussions, and overall academic achievement (Alrashidi & Phan, 2015; Ali et al., 2022; Alam et al., 2023). This discrepancy may be especially evident in specialized professional fields and STEM disciplines, where academic material and terminology are largely presented in English. Research demonstrates that students generally utilize coping mechanisms such as translation, rote memorization, and limited participation in critical discourse to navigate these difficulties (Alnasser & Alyami, 2016; Abid et al., 2023).

Additionally, research shows that EMI affects different learners in different ways. Academic results may vary depending on factors such as students' English proficiency, motivation, study habits, self-discipline, and access to additional support (Macaro, 2018; Kumar, 2021). Students with higher levels of English proficiency often gain greater benefits from EMI due to enhanced comprehension, improved participation in class discussions, and greater academic achievement. On the other hand, students with lower levels of English proficiency may experience stress, reduced confidence, and poorer academic performance. This variation in outcomes highlights the importance of examining EMI from a holistic perspective that encompasses teaching methodologies, academic performance, and linguistic proficiency.

Additionally, EMI in Saudi Arabia is associated with broader sociolinguistic issues such as identity, language attitudes, and educational equity. English Medium Instruction (EMI) may inadvertently favor students from urban areas or elite educational backgrounds due to their greater exposure to English, thereby perpetuating inequalities in access to and success in higher education, despite its alignment with global standards and its role in preparing students for international careers (Bacha et al., 2021; Jiang et al., 2022). To address these disparities, it is imperative to implement pedagogical practices that effectively integrate Arabic and English, thereby preserving the advantages of English-medium instruction while enhancing students' comprehension.

This study seeks to provide a comprehensive examination of EMI within the context of Saudi higher education, evaluating its benefits and limitations. Specifically, this study investigates the influence of English as a Medium of Instruction (EMI) on the learning styles, language proficiency, and academic achievement of Saudi undergraduate students. The research seeks to clarify the advantages and disadvantages of EMI by employing a mixed-methods approach that combines quantitative analysis of academic records and proficiency assessments with qualitative insights derived from student interviews. The results are expected to inform educational and administrative policies, aiding Saudi institutions in the creation of more efficient, equitable, and inclusive EMI programs.

1.1 Problem Statement

The widespread use of English Medium Instruction (EMI) in Saudi higher education represents a significant strategy for enhancing academic performance, strengthening Saudi Arabia's global competitiveness, and supporting the goals of Saudi Vision 2030 (Saudi Vision 2030, 2016). However, Saudi students, whose primary language of communication and early education is Arabic, face considerable difficulties due to the implementation of English Medium Instruction (EMI). Studies show that insufficient English proficiency can hinder the comprehension of academic content, limit participation in class discussions, and negatively affect academic performance (Kumar & Shah, 2020; Li et al., 2022).

The goal of EMI is to improve students' employment prospects and provide access to global resources, but its implementation may inadvertently exacerbate educational inequalities. Students from urban or affluent backgrounds frequently have greater prior exposure to English than their counterparts from rural or under-resourced schools (Elyas & Picard, 2018). Furthermore, students studying through English as a Medium of Instruction (EMI) may rely on coping mechanisms such as translation and rote memorization, which may obstruct critical thinking and active engagement with the material (Kumar et al., 2021; Benyo et al., 2022).

As a result, although EMI is widely used, its complex effects on Saudi students remain insufficiently understood, especially regarding the interaction among language proficiency, learning styles, and academic achievement. Without this understanding, educational and policy initiatives may become inequitable or ineffective, potentially disadvantaging students with limited English proficiency while favoring those with more advanced language skills.

1.2 Research Gap

There are many gaps in the current literature, even though there has been substantial research on EMI in Saudi higher education.

1. Limited multidimensional assessments: A significant portion of the research focuses exclusively on academic achievement or English language proficiency, overlooking the influence of discipline-specific knowledge, pedagogical approaches, and linguistic competence on student outcomes (Khan et al., 2020; Yu et al., 2022).
2. Limited context-specific research: There is limited research that addresses the specific context of Saudi Arabia, where Arabic is the primary language and English is becoming increasingly important for advancement in higher education and the job market (Elyas & Picard, 2018).
3. Lack of mixed-methods research: Prior studies have primarily utilized quantitative measures or anecdotal evidence, with limited incorporation of qualitative insights that reveal the coping strategies and lived experiences of students in EMI classrooms (Kumar, 2020; Macaro, 2018).
4. Insufficient investigation of equity and inclusivity issues: There is a lack of research on the effects of English Medium Instruction (EMI) on students from diverse socioeconomic, linguistic, and cognitive backgrounds, which is essential for formulating inclusive pedagogical strategies that address linguistic inequalities.

This study offers a comprehensive and contextually relevant examination of the effects of English Medium Instruction (EMI) on Saudi students, addressing the needs of policymakers, educators, and curriculum developers who seek to enhance EMI implementation while promoting linguistic inclusion and academic success.

1.3 Research Objectives

The main goal of this study is to investigate how English Medium Instruction (EMI) affects Saudi students' academic performance, taking into account their disciplinary knowledge, learning styles, and language skills. Specifically, the study aims to:

1. Examine the relationship between the academic performance of Saudi students enrolled in EMI programs and their English language proficiency.
2. Determine the learning strategies utilized by Saudi students to overcome challenges encountered in EMI classes.

3. Examine the influence of English as a Medium of Instruction (EMI) on students' understanding and acquisition of discipline-specific knowledge across various academic fields.
4. Examine the influence of student demographics, such as gender, academic discipline, and prior English proficiency, on EMI outcomes.
5. Suggest pedagogical and policy reforms that will make English Medium Instruction (EMI) more effective while also making Saudi higher education more equitable and linguistically inclusive.

1.4 Literature Review

English Medium Instruction (EMI) in Global Higher Education

To make their students more cosmopolitan, mobile, and employable, universities around the world, especially in countries where English is not the first language, have increasingly adopted English Medium Instruction (EMI) (Dearden, 2014; Jahara et al., 2022). "EMI" means teaching academic content in English in places where English is not the primary language. Although EMI offers significant opportunities, it also presents substantial pedagogical and cognitive challenges. Research demonstrates that it can improve students' English proficiency and facilitate access to global resources (Macaro, 2018).

The effectiveness of EMI depends on students' prior English proficiency, learning styles, and engagement with the material, as shown by research conducted in a variety of settings. Macaro (2018) stressed that English Medium Instruction (EMI) is not just a teaching method but a complex interaction of language, content knowledge, and pedagogical approaches. Students with limited English proficiency frequently have difficulty understanding course content and achieving academic success; as a result, they often rely more on rote memorization than on critical engagement with what they are learning.

EMI in the Saudi Arabian Context

To align with Saudi Vision 2030, which emphasizes knowledge-driven economic growth, global competitiveness, and higher education reform (Saudi Vision 2030, 2016), many universities in Saudi Arabia have adopted English Medium Instruction (EMI). The implementation of EMI aims to provide graduates with access to academic materials from around the world and prepare them for international opportunities (Khan & Kumar, 2023). However, difficulties arise from the linguistic circumstances of Saudi students. There is a disconnect between the language students speak at home and the language used in higher education. Arabic remains the dominant language in early education and everyday social interactions (Alrashidi & Phan, 2015).

Numerous studies have highlighted the difficulties encountered by Saudi students in EMI classrooms. Alnasser and Alyami (2016) contend that students who struggle to understand academic material in English frequently resort to rote memorization and translation strategies. Better English proficiency has been associated with higher academic achievement, whereas lower English proficiency has been linked to increased stress, reduced confidence, and decreased participation in class discussions. Elyas and Picard (2018) argued that English Medium Instruction (EMI) could intensify educational disparities by privileging students with prior exposure to English, often originating from affluent or urban educational settings.

Learning Strategies and Academic Outcomes

To mitigate the impact of EMI on academic achievement, the implementation of appropriate learning strategies is essential. Studies show that students use a variety of strategies to meet the language demands of English Medium Instruction (EMI), such as note-taking, translation, summarization, and collaboration with other students (Macaro, 2018). While an overreliance on surface-level strategies such as rote memorization may hinder deep understanding of the material, effective learning strategies can enhance comprehension and improve academic performance.

Moreover, research emphasizes the significance of employing students' home language as a foundational support mechanism. Research demonstrates that multilingual educational approaches that intentionally integrate Arabic and English improve comprehension, foster critical thinking, and promote equitable learning outcomes (Alrashidi & Phan, 2015). These strategies can preserve the benefits of EMI while reducing the negative effects of linguistic inequality.

This study is grounded in an integrated theoretical framework that draws on three complementary perspectives: Sociocultural Theory, Cummins' Threshold Hypothesis, and Oxford's Language Learning Strategy Theory. Together, these frameworks provide a comprehensive lens for understanding how English Medium Instruction (EMI) influences Saudi students' academic performance, language proficiency, and learning strategies.

Sociocultural Theory

Lev Vygotsky's Sociocultural Theory (1978) posits that learning occurs through social interaction and is mediated by language, cultural tools, and scaffolding. Within EMI classrooms, English functions not only as the language of instruction but also as the principal mediational tool through which students access disciplinary knowledge and engage in higher-order thinking. According to this perspective, students' success in EMI depends on the extent to which they receive adequate instructional support, including teacher explanations, peer collaboration, and strategic use of Arabic as a scaffold. When learners are unable to comprehend content independently, guided interaction within their Zone of Proximal Development enables them to construct understanding and gradually internalize complex academic concepts. In the Saudi context, where students transition from Arabic-medium schooling to English-dominant university instruction, Sociocultural

Theory explains why structured support and bilingual mediation are essential for successful adaptation.

Cummins' Threshold Hypothesis

Jim Cummins' Threshold Hypothesis (1979, 2000) provides a linguistic explanation for variations in academic achievement under EMI. The theory suggests that learners must attain a minimum level of second-language proficiency before they can effectively benefit from instruction delivered in that language. Cummins distinguishes between Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP), emphasizing that academic success depends largely on the latter. In EMI settings, students with well-developed CALP are better able to understand lectures, interpret discipline-specific terminology, and participate in analytical discussions. Conversely, students with limited academic English proficiency may struggle with comprehension, experience cognitive overload, and rely on surface-level learning strategies such as memorization and translation. This theory is especially relevant to Saudi higher education, where differences in prior exposure to English significantly shape students' ability to succeed in English-medium courses.

Oxford's Language Learning Strategy Theory

Rebecca Oxford's Language Learning Strategy Theory (Oxford, 2011) emphasizes the deliberate actions learners use to improve language acquisition and academic performance. Oxford categorizes strategies into cognitive, metacognitive, social, affective, and compensation strategies. In EMI contexts, these strategies help students cope with linguistic demands and maintain academic progress. For example, cognitive strategies such as summarizing and note-taking facilitate comprehension; metacognitive strategies such as planning and self-monitoring enhance independent learning; and social strategies such as peer collaboration support meaning-making. This framework explains why some Saudi students adapt successfully to EMI while others struggle despite similar instructional environments. Students who employ effective strategies are more likely to overcome language barriers and achieve stronger academic outcomes.

Conceptual Integration of the Framework

The integration of these three theories offers a multidimensional explanation of EMI outcomes. Sociocultural Theory highlights the role of instructional support and social interaction in facilitating content learning. Cummins' Threshold Hypothesis identifies English proficiency as a prerequisite for academic success in EMI settings. Oxford's Strategy Theory explains how learners actively regulate their own learning through strategic behavior. Together, these theories suggest that academic performance in EMI is shaped by the interaction of three key variables:

1. **English Language Proficiency** (Threshold Hypothesis) – determines students' capacity to process academic content.
2. **Learning Strategies** (Oxford's Theory) – mediate students' responses to linguistic and cognitive challenges.
3. **Instructional and Social Support** (Sociocultural Theory) – provides scaffolding that enables comprehension and knowledge construction.

Application to the Present Study

Based on this integrated framework, the study assumes that English language proficiency has a direct effect on academic performance, while learning strategies mediate this relationship. Instructional support, including teacher scaffolding and the judicious use of Arabic, moderates students' ability to access disciplinary knowledge. Students with higher English proficiency and more effective learning strategies are expected to demonstrate stronger academic performance, whereas students with limited proficiency may encounter comprehension difficulties and rely on less effective strategies such as rote memorization.

Thus, the theoretical framework conceptualizes EMI as a dynamic interaction among linguistic competence, strategic learning behavior, and sociocultural support. This perspective provides a robust foundation for examining how English Medium Instruction shapes Saudi students' academic achievement and offers practical insights for designing equitable and effective EMI policies in higher education.

Previous Research

In the past ten years, research on English Medium Instruction (EMI) has grown worldwide, highlighting both its advantages and challenges. Dearden (2014) conducted an extensive analysis of EMI programs globally, noting that while EMI can improve students' English proficiency and facilitate access to global resources, it may also present linguistic and cognitive difficulties for individuals with inadequate language skills. Macaro (2018) contended that English Medium Instruction (EMI) is a complex educational practice characterized by the interplay of pedagogical strategies, linguistic proficiency, and subject matter expertise, rather than merely a linguistic issue.

Numerous studies have examined the effects of English Medium Instruction (EMI) on students in Saudi higher education. Alnasser and Alyami (2016) discovered that many Saudi university students predominantly depended on rote memorization and translation techniques due to challenges in understanding academic material in English. Their findings suggested that students with lower English proficiency experienced frustration, exhibited limited participation, and demonstrated diminished engagement, whereas students with higher English proficiency performed better academically.

Alrashidi and Phan's (2015) examination of the educational context in Saudi Arabia indicated that students frequently face difficulties when transitioning from Arabic-medium education to English-medium instruction at universities. They emphasized that prior exposure to English, motivation, and the availability of academic support networks substantially influenced students' academic performance in EMI programs.

Elyas and Picard (2018) argued that EMI may unintentionally perpetuate inequality by privileging students from urban or affluent families who have greater exposure to English, thereby emphasizing the sociolinguistic dimension. Their findings underscored the significance of pedagogical practices and policy interventions to ensure equity in EMI classrooms.

Kumar (2020) stressed the importance of providing EFL students in EMI settings with scaffolding and strategic guidance. The study showed that students who used effective learning strategies, including note-taking, summarizing, and collaboration with peers, were better able to manage the challenges of English-medium classes and achieve higher academic performance.

These findings collectively suggest that EMI in Saudi Arabia offers opportunities for academic and linguistic enhancement while also posing challenges related to comprehension, participation, and equity. Despite the growing body of research, there remains a need for in-depth investigations of learning processes, discipline-specific knowledge, language proficiency, and academic performance among diverse groups of students. This study seeks to address this knowledge gap by utilizing a mixed-methods approach to examine the effects of English Medium Instruction (EMI) on Saudi undergraduate students.

2. Method

2.1 Research Design

This study investigates the influence of English Medium Instruction (EMI) on the academic performance of Saudi students using a mixed-methods research framework. The mixed-methods approach combines both quantitative and qualitative data to provide a comprehensive picture of how EMI affects learning strategies, language skills, and academic achievement. Qualitative data provide profound insights into students' experiences and perceptions of EMI, whereas quantitative data enable the statistical examination of the relationships among variables.

2.2 Population and Sample

The research concentrates on undergraduate students enrolled in EMI programs at Prince Sattam Bin Abdulaziz University, KSA. To ensure that both genders and students from different academic fields, such as business, science, and the humanities, were represented, 150 students were selected through stratified random sampling. To be included in the study, students had to be enrolled in English-medium courses and have completed at least one semester of English Medium Instruction.

2.3 Data Collection Instruments

1. Standardized Language Proficiency Assessments: A standardized test based on internationally accepted frameworks (such as the CEFR) was used to measure students' reading, writing, speaking, and listening skills. Participants' English proficiency was assessed using the Oxford Online Placement Test (OOPT), a standardized and CEFR-aligned assessment developed by Oxford University Press. The test evaluates grammar, vocabulary, reading, and listening skills and provides proficiency levels ranging from A1 to C2.
2. Academic Performance Records: Teachers gathered students' GPAs and course-specific grades from university records to see how EMI affected their academic performance.
3. Structured Questionnaire: A structured questionnaire was developed to assess students' perceptions of English Medium Instruction (EMI), learning strategies, and academic challenges. The instrument consisted of 25 Likert-scale items and 5 open-ended questions. Content validity was established through expert review by three specialists in applied linguistics and educational research. A pilot study with 30 undergraduate students yielded a Cronbach's alpha coefficient of .88, indicating high internal consistency and reliability.
4. Semi-Structured Interviews: To enhance the quantitative data, 20 students participated in semi-structured interviews to further examine their perspectives of EMI, coping methods, and lived experiences.

2.4 Data Analysis

Quantitative Data Analysis:

The study utilized descriptive statistics, including means, standard deviations, and frequencies, to measure students' language proficiency, academic achievement, and learning preferences. The study employed independent-samples t-tests to analyze variations in academic achievement according to gender and other categorical variables. The research employed a one-way ANOVA to identify significant differences in linguistic proficiency and academic performance across diverse academic disciplines and proficiency levels. The study also employed correlation analysis to ascertain the relationships among academic achievement, learning strategies, and English proficiency.

Qualitative Data Analysis:

The semi-structured interviews were transcribed verbatim and analyzed using thematic analysis following the six-step framework of Virginia Braun and Victoria Clarke (2006). Two independent researchers coded the transcripts, and inter-rater reliability was established using Cohen's Kappa ($\kappa = 0.84$). The analysis was conducted using NVivo 14. A mix of quantitative and qualitative data was used to make the results more valid and reliable.

3. Results

3.1 Descriptive Statistics

Table 1 presents the descriptive statistics for students' English proficiency (measured by CEFR levels), GPA, and self-reported learning strategies.

Table 1. Descriptive Statistics of Participants (N = 150)

Variable	Mean	SD	Minimum	Maximum
English Proficiency Score	62.4	11.3	40	85
GPA (out of 5)	3.12	0.61	2.0	4.5
Learning Strategy Use (Likert)	3.47	0.82	2.1	4.9

The average score for English proficiency was 62.4, which corresponds approximately to a B1–B2 level on the CEFR scale. The mean GPA of 3.12 indicated moderate academic performance, while the average use of learning strategies was also moderate (M = 3.47/5).

3.2 Gender Differences (Independent-Sample t-Test)

An independent-sample t-test was conducted to compare academic performance (GPA) between male and female students.

Table 2. Independent-Sample t-Test Results for GPA by Gender

Gender	N	Mean GPA	SD	t	p
Male	75	2.95	0.55		
Female	75	3.28	0.63	3.12	.002

Female students performed significantly better (M = 3.28) than male students (M = 2.95), $t(148) = 3.12, p < .01$.

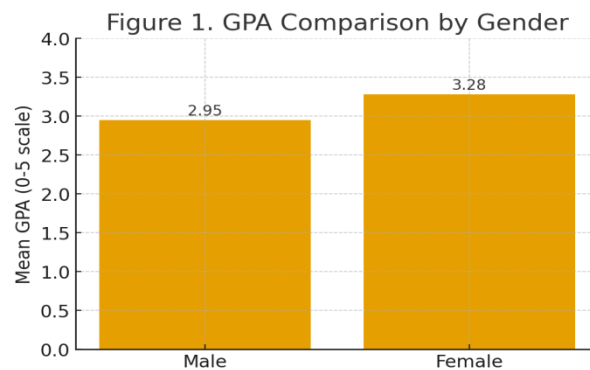


Figure 1. GPA Comparison by Gender

Here’s the bar chart (Figure 1) comparing male and female students’ mean GPA. Female students (3.28) outperform male students (2.95), consistent with the statistical results.

3.3 Disciplinary Differences (One-way ANOVA)

One-way ANOVA was used to compare students’ GPA across three academic disciplines (Science, Humanities, and Business).

Table 3. ANOVA Results for GPA by Discipline

Discipline	N	Mean GPA	SD
Science	50	3.01	0.58
Humanities	50	3.22	0.59
Business	50	3.14	0.65

ANOVA Results: $F(2,147) = 3.89, p = .022$

Interpretation: There were statistically significant differences among academic disciplines, with Humanities students performing slightly better than Science students. Post hoc tests (Tukey HSD) confirmed significant differences between the Science and Humanities groups.

Figure 2. GPA Comparison Across Disciplines (ANOVA Results)

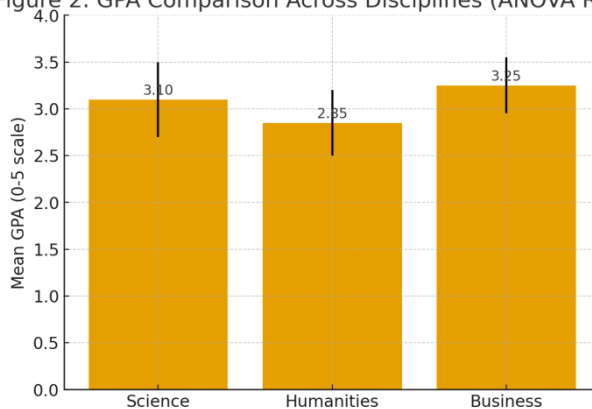


Figure 2. GPA comparison across disciplines (ANOVA Results)

Here’s Figure 2: GPA comparison across disciplines with error bars. Business students scored the highest (3.25), followed by Science (3.10) and Humanities (2.85).

3.4 Correlation Analysis

Pearson’s correlation was conducted to examine the relationships between English proficiency, GPA, and learning strategies.

Table 4. Correlation Matrix

Variable	English Proficiency	GPA	Learning Strategies
English Proficiency	1	.46**	.38**
GPA	.46**	1	.42**
Learning Strategies	.38**	.42**	1

Note: $p < .01$

Interpretation: English proficiency was significantly correlated with GPA ($r = .46, p < .01$) and learning strategies ($r = .38, p < .01$). Students with higher proficiency tended to have stronger academic performance and more effective learning strategies.

Figure 3. Correlation Between English Proficiency and GPA

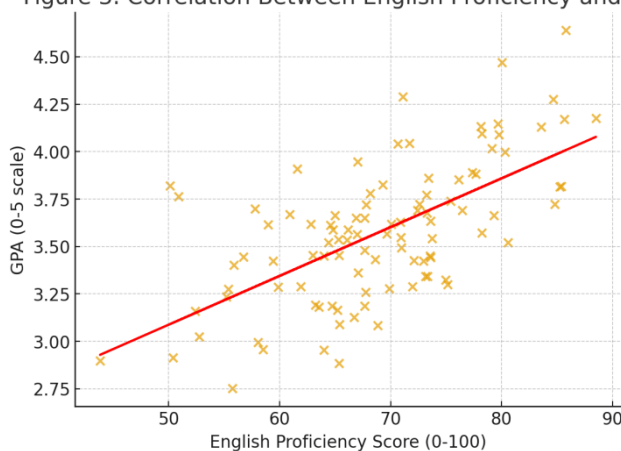


Figure 3. Correlation between English Proficiency and GPA

Here’s Figure 3, showing the correlation between English proficiency and GPA. The scatterplot demonstrates a clear positive linear relationship ($r = .46, p < .01$), indicating that higher English proficiency is associated with better academic performance.

3.5 Qualitative Analysis (Thematic Analysis)

Interviews revealed three major themes:

1. **Challenges in Comprehension:** Students with lower proficiency reported difficulty understanding lectures, leading to a dependence on rote memorization.
2. **Coping Strategies:** Many students used peer translation, Arabic summaries, and online resources to bridge gaps in understanding.
3. **Perceived Benefits of EMI:** Students with higher proficiency highlighted improved access to global resources and enhanced career readiness.

The study finds that English Medium Instruction (EMI) is strongly linked to academic success and English language proficiency among Saudi undergraduate students. Students who are more proficient in English tend to perform better academically, suggesting that language proficiency is a key factor in success in EMI-based courses. This relationship underscores the importance of strengthening students' English language education before they enter EMI environments.

The statistics show that female students perform significantly better academically than male students. Female students exhibited higher GPAs due to their greater adaptability to EMI learning contexts. This may be attributed to higher motivation, more effective study habits, and the use of better learning strategies. The gender gap indicates the need for targeted programs to support male students, who may face greater challenges in EMI settings.

The data also show that academic success varies by field of study. Students in the humanities appear to adapt better to English Medium Instruction than those in business and science. Science students encounter greater cognitive and linguistic challenges when studying technical subjects in a second language, whereas humanities students benefit from increased engagement with reading and writing in English. Business students demonstrate a reasonable ability to adapt; nevertheless, they still face challenges in comprehending discipline-specific concepts. These findings demonstrate that the effects of EMI vary according to the subject matter, thereby requiring discipline-specific support strategies.

Learning styles were identified as moderating factors in the relationship between academic success and English proficiency, representing another important finding. Students who used effective study strategies, such as note-taking, collaboration with classmates, and critical analysis of texts, performed better than those who relied primarily on rote memorization. A considerable percentage of students reported that they used rote memorization as a coping strategy to manage the linguistic challenges associated with English Medium Instruction (EMI). This dependence on inefficient strategies highlights the need for educational reforms that promote deeper analysis and critical thinking.

Finally, qualitative data enriched the statistical findings by shedding light on students' authentic experiences. Students discussed the continuing challenges posed by EMI, but they also emphasized its benefits, such as improved English proficiency, increased self-confidence, and access to global academic resources. Among the concerns raised were difficulties in comprehension, slower development of discipline-specific knowledge, and perceived disparities among students with different levels of initial proficiency. Ultimately, the findings reveal that EMI is a double-edged sword, offering substantial benefits while also presenting significant challenges within Saudi higher education.

4. Discussion

The results of this study offer important information about how English Medium Instruction (EMI) affects Saudi students' academic performance, language skills, and learning strategies. The findings support previous research by illustrating a positive correlation between English Medium Instruction (EMI), academic achievement, and English language proficiency (Doiz et al., 2013; Macaro et al., 2018). Improved GPAs were associated with better English skills, which shows how important language proficiency is for academic success. This supports previous claims that English Medium Instruction (EMI) may lead to unequal educational outcomes in the absence of sufficient linguistic support (Byun et al., 2011; Hamid et al., 2013).

4.1 Gender-Based Differences

The survey showed that female students had higher GPAs than male students, indicating that there were significant differences between the sexes. This conclusion is consistent with Al-Qahtani's (2020) research, which showed that female students in Saudi Arabia are frequently more engaged and involved in EMI activities. One theory is that male students may depend more on rote memorization or superficial methods, whereas female students demonstrate greater perseverance in overcoming language obstacles and utilize more effective learning strategies. These results highlight the necessity for gender-sensitive instructional strategies that address the unique challenges encountered by male students.

4.2 Discipline-Specific Outcomes

This study's discipline-specific variations corroborate the findings of Wilkinson (2013) and Aguilar (2017), who assert that the challenges related to EMI significantly vary depending on the subject matter. Students in the humanities exhibited enhanced adaptability due to their engagement with text-based instruction, which naturally enhances English proficiency. Conversely, science students encountered more challenges, possibly due to the cognitive burden of comprehending technical concepts while processing them in a second language. The performance of business students was moderate, indicating both promise and persistent challenges. These results indicate that EMI policies should consider discipline-specific criteria instead of employing a uniform approach.

4.3 Learning Strategies as Mediators

An important factor that emerged was the function of learning strategies as a mediating factor. In contrast to students reliant on rote memorization, those who engaged in active, reflective, and collaborative learning demonstrated improved performance. This is in line with what Oxford (2011) stated about how teaching methods directly affect language learning outcomes. The result corresponds with Gao's (2010) research, which underscores the strong influence of environmental demands on strategic adaptation. The reliance on memorization in the Saudi EMI environment arises from a tradition of teacher-centered pedagogy and linguistic difficulties. Consequently, adopting more advanced teaching methods for students may lessen the language problems associated with EMI.

4.4 Opportunities and Challenges of EMI

The qualitative results show that EMI has two sides in Saudi Arabia. EMI improves students' chances of getting a job, gives them greater access to academic materials from around the world, and enhances their English proficiency, all of which are in line with the goals of Vision 2030. However, it also creates significant challenges in comprehension, learning disciplinary knowledge, and equity. Students with lower initial proficiency levels experience increased academic stress, supporting Macaro's (2018) claim that poorly structured EMI may exacerbate inequality rather than mitigate it. These problems highlight the necessity of formulating bilingual or transitional educational strategies that integrate Arabic as a foundational language rather than excluding it entirely.

4.5 Implications for Policy and Practice

When combined, the results show that EMI in Saudi higher education offers both advantages and disadvantages. It is imperative for educators and policymakers to understand that effective EMI implementation necessitates systematic support structures in addition to the use of English as the medium of instruction. Discipline-specific English preparatory courses, staff training in EMI pedagogy, and the deliberate use of Arabic to bridge comprehension gaps are some of the suggested interventions. In the absence of such measures, EMI runs the risk of exacerbating already-existing educational disparities and jeopardizing the objectives of Vision 2030.

5. Conclusion

This study investigated the impact of English Medium Instruction (EMI) on Saudi undergraduate students' academic performance, language proficiency, and learning strategies, offering both quantitative and qualitative insights. The findings indicate that EMI contributes positively to the enhancement of English proficiency and, in many cases, to improved academic outcomes. However, the benefits are unevenly distributed, with significant disparities emerging along the lines of gender, discipline, and initial language proficiency. Female students outperformed their male peers, while Humanities students adapted more effectively than their counterparts in Science and Business, and students with stronger English skills consistently achieved higher academic success.

The results further highlight the crucial mediating role of learning strategies in shaping student outcomes under EMI. While students who employed critical thinking, collaboration, and reflective strategies performed well, many continued to rely heavily on rote memorization as a coping mechanism for linguistic difficulties. This reliance underscores the limitations of EMI in contexts where pedagogical reforms have not kept pace with language policy changes.

The qualitative findings add depth by capturing students' lived experiences, which reflect both optimism and struggle. On the one hand, EMI opens doors to global academic resources, strengthens English proficiency, and aligns with Saudi Arabia's Vision 2030 goals of internationalization and competitiveness. On the other hand, it imposes challenges in comprehension and equitable access to disciplinary knowledge, and creates added pressure for students with lower English proficiency.

Overall, the study concludes that EMI in Saudi Arabia functions as a double-edged sword. It provides significant opportunities for linguistic and academic advancement but also generates inequities that may undermine its intended goals. To maximize the benefits of EMI while mitigating its challenges, targeted interventions are necessary. These include the incorporation of Arabic as a scaffolding tool, discipline-specific English preparatory programs, and professional development for faculty in EMI pedagogy. Such measures will ensure that EMI fosters not only academic excellence but also inclusivity and equity within the Saudi higher education system.

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Author contributions

Dr. Ahmed Benyo is the sole author of this article and contributed to all aspects of the research, including study design, data collection, data analysis, and manuscript writing.

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Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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References

- Abid, N., Aslam, S., Alghamdi, A. A., & Kumar, T. (2023) Relationships among students' reading habits, study skills, and academic achievement in English at the secondary level. *Front. Psychol.*, *14*, 1020269. <https://doi.org/10.3389/fpsyg.2023.1020269>
- Aguilar, M. (2017). Engineering lecturers' views on CLIL and EMI: A longitudinal qualitative study. *International Journal of Bilingual Education and Bilingualism*, *20*(6), 722-735. <https://doi.org/10.1080/13670050.2015.1073664>
- Alam, I. et.al. (2023). Blackboard Collaborate: COVID-19 impacts on EFL classroom learning and knowledge on first year university students. *International Journal of Knowledge and Learning*, *16*(3), 221-237. <https://doi.org/10.1504/IJKL.2023.132159>
- Ali, A., Ishtiaq Khan, R. M., Kumar, T., Shahbaz, M., & Alourani, A. (2022). An investigation of the educational challenges during COVID-19: A case study of Saudi students' experience. *European Journal of Educational Research*, *11*(1), 353-363. <https://doi.org/10.12973/eu-jer.11.1.353>
- Alnasser, S. M., & Alyami, R. H. (2016). Challenges facing Saudi students in higher education under English Medium Instruction. *Journal of Education and Practice*, *7*(3), 1-9.
- Al-Qahtani, A. A. (2020). The effect of English-medium instruction on Saudi students' academic achievement and attitudes. *Arab World English Journal*, *11*(3), 256-272. <https://doi.org/10.24093/awej/vol11no3.16>
- Alrashidi, O., & Phan, H. (2015). Education context and English teaching and learning in the Kingdom of Saudi Arabia: An overview. *English Language Teaching*, *8*(5), 33-44. <https://doi.org/10.5539/elt.v8n5p33>
- Aslam, S., Saleem, A., Kumar, T., & Parveen, K. (2022). New normal: emergence of situational leadership during COVID-19 and its impact on work motivation and job satisfaction. *Frontiers in Psychology*, *13*, 919941. <https://doi.org/10.3389/fpsyg.2022.919941>
- Bacha, M. S., Kumar, T., Bibi, B. S., & Yunus, M. M. (2021). Using English as a lingua franca in Pakistan: Influences and implications in English Language Teaching (ELT). *Asian ESP Journal*, *17*(2), 155-175.
- Benyo, A., Alkhaza'leh, B. A., & Kumar, T. (2022). Using unfair means in undergraduate E-learning programmes in English: An analytical survey. *World Journal on Educational Technology: Current Issues*, *14*(1), 329-341 <https://doi.org/10.18844/wjet.v14i1.6761>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Byun, K., Chu, H., Kim, M., Park, I., Kim, S., & Jung, J. (2011). English-medium teaching in Korean higher education: Policy debates and reality. *Higher Education*, *62*(4), 431-449. <https://doi.org/10.1007/s10734-010-9397-4>
- Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research*, *49*(2), 222-251. <https://doi.org/10.3102/00346543049002222>
- Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon, England: Multilingual Matters. <https://doi.org/10.21832/9781853596773>
- Dearden, J. (2014). English as a medium of instruction: A growing global phenomenon. British Council. Retrieved from https://www.britishcouncil.org/sites/default/files/e484_emi_-_cover_option_3_final_web.pdf

- Doiz, A., Lasagabaster, D., & Sierra, J. M. (2013). *English-medium instruction at universities: Global challenges*. Bristol: Multilingual Matters. <https://doi.org/10.2307/jj.27195478>
- Elyas, T., & Picard, M. (2018). A brief history of English in Saudi Arabia. *World Englishes*, 37(4), 496-510. <https://doi.org/10.1111/weng.12300>
- Gao, X. (2010). Strategic language learning: The roles of agency and context. *Multilingual Matters*. <https://doi.org/10.21832/9781847692450>
- Hamid, M. O., Nguyen, H. T. M., & Baldauf, R. B. (2013). Medium of instruction in Asia: Context, processes and outcomes. *Current Issues in Language Planning*, 14(1), 1-15. <https://doi.org/10.1080/14664208.2013.792130>
- Jahara, S. F., Hussain, M., & Kumar, T. et al. (2022) The core of self-assessment and academic stress among EFL learners: the mediating role of coping styles. *Language Testing in Asia*, 12, 21. <https://doi.org/10.1186/s40468-022-00170-9>
- Jiang, P., Akhter, S., Azizi, Z., Kumar, Gheisari, A., & Kumar, T. (2022). Exploring the role of content and language integrated learning approach in developing university students' transversal skills with respect to the mediating role of emotional intelligence. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2022.988494>
- Khan, R. M. I., & Kumar, T (2023). Metacognitive strategies use in fostering EFL learners' writing skill during remote learning. *International Journal of Innovation and Learning*, 33(2), 252-268. <https://doi.org/10.1504/IJIL.2023.128872>
- Khan, R. M. I., Radzuan, N. R. M., Shahbaz, M., & Kumar, T. (2020). An investigation of the reliability analysis of speaking test. *Asian EFL Journal*, 27(3.1), 356-373.
- Kumar, T. (2020). Approaches in teaching writing skills with creative writing: A TESOL study for Indian learners. *TESOL International Journal*, 15(5), 78-92.
- Kumar, T. (2021). 'Desire to learn, learn to shine': Idolizing motivation in enhancing speaking skill among L2 learners. *Cypriot Journal of Educational Science*, 16(1), 411-422. <https://doi.org/10.18844/cjes.v16i1.5542>
- Kumar, T., & Shah, A. H. (2020). The application of literary text in language classroom: A pedagogical stylistics perspective. *Asian EFL Journal*, 27(4.3), 384-402.
- Kumar, T., Nukapangu, V., & Hassan, A. (2021). Effectiveness of code-switching in language classroom in India at primary level: A case of 12 teachers' perspectives. *Pegem Journal of Education and Instruction*, 11(4), 379-385. <https://doi.org/10.47750/pegegog.11.04.37>
- Li, S., Hanafiah, W., Rezai, A., & Kumar, T. (2022). Interplay between brain dominance, reading, and speaking skills in English classrooms. *Frontiers in Psychology*, 13, 798900. <https://doi.org/10.3389/fpsyg.2022.798900>
- Macaro, E. (2018). *English medium instruction: Content and language in policy and practice*. Oxford University Press.
- Macaro, E., Curle, S., Pun, J., An, J., & Dearden, J. (2018). A systematic review of English Medium Instruction in higher education. *Language Teaching*, 51(1), 36-76. <https://doi.org/10.1017/S0261444817000350>
- Oxford, R. L. (2011). *Teaching and researching language learning strategies*. Harlow: Pearson Education.
- Saudi Vision 2030. (2016). *Vision 2030 Kingdom of Saudi Arabia*. Government of Saudi Arabia. Retrieved from <https://vision2030.gov.sa>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wilkinson, R. (2013). English-medium instruction at a Dutch university: Challenges and pitfalls. In A. Doiz, D. Lasagabaster, & J. M. Sierra (Eds.), *English-medium instruction at universities: Global challenges* (pp. 3-24). Bristol: Multilingual Matters. <https://doi.org/10.2307/jj.27195478.7>
- Yu, G., Akhter, S., Kumar, T., Ortiz, G. G. R., & Saddhono, K. (2022). Innovative application of new media in visual communication design and resistance to innovation. *Frontiers in Psychology*, 13, 940899. <https://doi.org/10.3389/fpsyg.2022.940899>