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EXAMINING FACTORS INFLUENCING LANGUAGE ACQUISITION SUCCESS IN INDONESIAN MULTILINGUAL CLASSROOMS

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Abstract

This study examines the predictors of language acquisition success in Indonesian multilingual classrooms through the lens of major language acquisition theories, particularly social interactionist and cognitive perspectives. A quantitative approach was adopted, employing secondary data analysis from standardised language assessments of 100 secondary school students. Multiple regression analysis was used to explore the predictive effects of key variables, including socioeconomic status, prior academic performance, motivation, prior language exposure, cognitive abilities, and classroom teaching methods. Findings reveal that motivation, prior exposure, cognitive abilities, and collaborative learning strategies are stronger predictors of language proficiency than socioeconomic background. Moreover, informal learning environments and community support significantly enhanced students' language development, underscoring the value of social interactionist perspectives. These results challenge the prevailing assumption that socioeconomic status is the primary determinant of language success and instead emphasise context-specific and learner-driven factors. The study highlights practical implications for language educators and policymakers: designing integrated curricula that combine formal and informal learning opportunities, prioritising motivational and collaborative teaching strategies, and developing early predictive models to identify at-risk learners. By reframing the predictors of language success, this research provides actionable insights for advancing multilingual education policy and practice in Indonesia and beyond.

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INTRODUCTION

Language acquisition is a critical component of education, particularly in multilingual contexts where students are often required to learn and use multiple languages simultaneously. In countries like Indonesia, where diverse languages and dialects coexist, the challenge of teaching English as a second language becomes particularly pronounced. Effective teaching and assessing language proficiency is essential for students' academic success and future opportunities in an increasingly globalised world (Poon, 2016). Recently, the Indonesian Ministry of Education has emphasised the importance of English language proficiency as a key skill for students. National examinations serve as a benchmark for assessing students' English language abilities, providing valuable data on their performance (Jenkins & Leung, 2019). However, despite these efforts, students struggle to acquire the necessary language skills. Understanding the factors contributing to language acquisition

success is vital for educators, as it can inform teaching practices and curricular design. Communicating effectively in multiple languages has become crucial as the world becomes increasingly interconnected. This importance is particularly pronounced in multilingual contexts, where students must navigate several languages simultaneously. Research indicates that acquiring multiple languages can enhance cognitive abilities (Berthele & Udry, 2022). Multilingual learners usually exhibit improved problem-solving skills, creativity, and critical thinking. Switching between languages encourages mental flexibility and adaptability, invaluable skills in today's fast-paced and dynamic world.

Furthermore, engaging with diverse languages and cultures fosters a deeper understanding of linguistic structures and enhances overall linguistic proficiency. Language proficiency is closely tied to academic achievement. In multilingual settings, students who acquire strong language skills are better equipped to engage with the curriculum, participate in discussions, and demonstrate their understanding through assessments (Schissel et al., 2018). Proficiency in the language of instruction, often English in many contexts, is essential for accessing educational resources, collaborating with peers, and succeeding in examinations. Consequently, fostering language acquisition is critical for ensuring all students achieve their academic potential.

Language is a key vehicle for cultural expression. In multilingual classrooms, students are exposed to diverse perspectives and cultural narratives. This exposure enriches their educational experience and promotes empathy and understanding among peers. Waseem (2023) revealed that language acquisition allows students to connect with different cultures, fostering inclusivity and social cohesion. This cultural competence is essential in a globalised world, where cross-cultural interactions are commonplace. Employers often seek individuals who can communicate effectively in multiple languages, as this ability enhances collaboration and expands business opportunities (Chen, 2023). Language proficiency can lead to better job prospects, higher salaries, and more extraordinary career advancement. Thus, supporting language acquisition in educational settings equips students with the skills necessary to compete in a diverse workforce. Language acquisition also plays a vital role in social and emotional development. Language is not just a tool for communication; it is integral to building relationships and establishing identity. In multilingual settings, students who can express themselves in their preferred language often experience greater confidence and self-esteem (Mandokhail et al., 2018; Tomoto, 2021). Additionally, the ability to communicate across language barriers fosters friendships and social networks, which are crucial for emotional well-being.

While the benefits of language acquisition are precise, multilingual settings also present unique challenges. Students may struggle to master multiple languages concurrently, leading to potential language interference or confusion. Moreover, disparities in access to language resources can exacerbate existing inequalities. Understanding these challenges is crucial for developing effective teaching strategies that support all learners. Research indicates that various factors can influence language learning outcomes, including demographic variables (such as age and socioeconomic status), prior academic performance, and instructional methods (Amiri & El Karfa, 2021; Butler & Le, 2018; Kluczniok & Mudiappa, 2019). For instance, students from higher socioeconomic backgrounds often have greater access to resources, such as tutoring and educational materials, which can enhance their learning experience. Similarly, the teaching methods employed in the classroom—whether traditional or interactive—can significantly impact student engagement and language retention. Despite recognising these factors, there is a gap in the literature regarding how they interact to predict language acquisition success.

While the benefits of language acquisition are well documented, multilingual settings present distinctive challenges, including disparities in resource access, varied teaching

methods, and the potential for language interference. Previous research has often prioritised socioeconomic status as the most critical determinant of language learning success, overlooking the complex interplay of other influential factors. This study addresses this gap by shifting attention to learner-driven and context-specific predictors such as motivation, prior language exposure, cognitive abilities, community support, and informal learning environments. By doing so, it offers a more holistic and nuanced understanding of language acquisition in multilingual classrooms and challenges prevailing assumptions that privilege socioeconomic status as the dominant explanatory factor. Against this background, the present study seeks to answer the following research questions:

1. Which classroom variables most predict language acquisition success in multilingual settings?
2. How do individual learner characteristics interact with teaching strategies to shape language outcomes?
3. To what extent can predictive models forecast language acquisition success based on early assessment data and other key predictors?

Literature Review

Language Acquisition Theories

Language acquisition is a multifaceted process that has been the subject of extensive research across various disciplines, including linguistics, psychology, cognitive science, and education. The primary language acquisition theories highlight their contributions and implications for understanding how individuals learn languages, particularly in multilingual settings. The behaviourist theory, primarily associated with Skinner, posits that language acquisition occurs through imitation, reinforcement, and conditioning (Napitupulu & Bako, 2024). According to this perspective, children learn language by mimicking the speech of those around them and receiving positive reinforcement for correct usage. This theory emphasises the role of the environment in language learning, suggesting that interaction with caregivers and peers is crucial for developing linguistic skills (Alharbi, 2023). While behaviourism offers valuable insights into the importance of reinforcement and practice, it has been critiqued for oversimplifying the language acquisition process. Critics argue that it does not sufficiently account for learners' innate cognitive abilities when acquiring language, especially the ability to generate novel sentences they have never heard (Moore, 2014; Williams & Rebuschat, 2016).

In contrast to a behaviourist, nativist theory, championed by Noam Chomsky, argues that humans are biologically predisposed to acquire language (Mehrpour & Forutan, 2015). Chomsky introduced the concept of "universal grammar," suggesting that all languages share a common structural foundation. According to this theory, children possess an innate language acquisition device (LAD) that enables them to understand and produce language (Khalilah et al., 2024). Nativist theory emphasises the role of cognitive structures in language learning, positing that children can learn complex grammatical rules without explicit instruction (Dastpak et al., 2017). This perspective is particularly relevant in multilingual contexts, where learners may draw upon their innate linguistic capabilities to navigate multiple languages. However, critics of nativism point out that it may undervalue the influence of social and cultural factors on language acquisition.

Social interactionist theory integrates elements of both behaviourism and nativism, highlighting the importance of social interaction in language development (Sarem & Shirzadi, 2014). Scholars such as Lev Vygotsky emphasise the role of social context and collaborative learning in acquiring language skills. According to this perspective, language is learned through meaningful interactions with others, particularly in culturally relevant contexts. This theory posits that language acquisition is not merely an individual cognitive process but is deeply embedded in social practices. The social interactionist perspective in multilingual

settings underscores the importance of peer collaboration and community engagement in fostering language skills (Syam et al., 2023). It also suggests that the linguistic input provided by caregivers and peers is critical in shaping a child's language development.

Cognitive theories of language acquisition focus on the mental processes involved in learning language. Jean Piaget argues that language development is closely linked to cognitive development, with children's linguistic abilities evolving alongside their overall cognitive skills (Moore, 2014). According to cognitive theory, children actively construct their language understanding through exploring and manipulating their environment (Nawaz et al., 2024). This perspective is particularly relevant for understanding how learners in multilingual contexts process and integrate multiple languages. Cognitive theories emphasise the role of active engagement and problem-solving in language learning, suggesting that learners benefit from opportunities to experiment with language in meaningful contexts.

The connectionist theory draws from computational modelling and neural network research and posits that language acquisition arises from gradually strengthening brain connections based on linguistic input exposure (Warstadt & Bowman, 2022). This perspective emphasises the importance of statistical learning, suggesting that learners develop language skills by recognising patterns and regularities in the language they hear. Connectionist models have implications for understanding how learners in multilingual environments can simultaneously acquire multiple languages by identifying and mapping the relationships between them. This theory highlights the dynamic nature of language learning, where exposure and practice are crucial for developing proficiency.

Factors Influencing Language Learning

The language learning process is complex and influenced by many factors that can significantly impact a learner's ability to acquire a new language. Understanding these factors is crucial for educators and researchers as they develop effective teaching strategies and interventions, particularly in multilingual settings. The key factors influencing language learning are categorised into individual, social and contextual dimensions. Individual factors encompass a range of personal characteristics that can affect language learning outcomes. Research suggests age is critical to language acquisition (Rahman et al., 2017). Younger learners often exhibit a greater capacity for phonetic accuracy and grammatical intuition, known as the "critical period hypothesis." This hypothesis posits that there is an optimal window for language learning, typically during early childhood when the brain is particularly receptive to linguistic input. However, older learners may benefit from more advanced cognitive skills and life experiences that can aid in understanding complex language structures. Motivation is a key determinant of language learning success. Integrative motivation, driven by the desire to connect with a culture or community, often leads to higher engagement and perseverance in language study. Conversely, instrumental motivation, which focuses on practical benefits such as career advancement, can also be compelling (Cook & Artino Jr, 2016).

Social Factors

Social factors relate to the interactions and relationships that influence language learning in a communal context. The presence of peers can significantly affect motivation and engagement in language learning. Rao (2019) revealed that collaborative learning environments, where students work together and support one another, can enhance language acquisition through social interaction. Positive peer relationships can foster a sense of belonging and reduce anxiety, allowing students to practice their language skills more freely (Saggers et al., 2024). The cultural background of learners shapes their attitudes towards language learning. Cultural values and norms can influence how students perceive language and its role in their identity. In multilingual settings, learners may face challenges related to

cultural identity, particularly if they are navigating between their native language and the language of instruction (Weinmann & Arber, 2017). Understanding these cultural dynamics is essential for creating an inclusive learning environment that respects and values linguistic diversity. The quality of interactions between teachers and students is crucial for language acquisition. Supportive and responsive teaching practices can foster a positive learning atmosphere, encouraging students to take risks and practice their language skills. Teachers who employ culturally relevant pedagogy and recognise the individual needs of their students can significantly enhance language learning outcomes.

Contextual Factors

Contextual factors refer to the external conditions and environments that influence language learning—the type of educational setting—formal or informal—can impact language acquisition (Rokita-Jaśkow, 2021). Doll et al. (2014) stated that structured classroom environments with clear expectations and resources may facilitate language learning more effectively than unstructured settings. Additionally, access to technology and learning materials can enhance opportunities for practice and engagement. Immersive environments, where learners are surrounded by the language in everyday contexts, promote more natural language use and comprehension. In contrast, limited exposure can hinder progress, emphasising the need for opportunities to practice language skills outside the classroom. Socioeconomic status can significantly affect access to language learning resources, such as tutoring, educational materials, and extracurricular activities (Pinilla-Portiño, 2018; Yang, 2023). Students from lower socioeconomic backgrounds may face additional barriers limiting their language practice and exposure opportunities, potentially impacting their language acquisition.

Role of Multilingualism in Language Education

Multilingualism is an increasingly common phenomenon in today's globalised world, where individuals often engage with multiple languages daily. In language education, multilingualism is crucial in shaping pedagogical approaches, curricular design, and student outcomes. Research has consistently demonstrated that multilingualism can enhance cognitive development (Alshewiter et al., 2024). Multilingual learners often exhibit superior problem-solving skills, creativity, and critical thinking abilities compared to monolingual peers (Andleeb et al., 2023). Navigating multiple languages encourages mental flexibility as learners develop the capacity to switch between linguistic systems and adapt their communication styles to different contexts. This cognitive agility is invaluable in an increasingly interconnected world, where the ability to think critically and approach problems from various perspectives is essential. Additionally, multilingualism has been linked to improved executive functions, such as working memory and attention control (Espi-Sanchis & Cockcroft, 2022). These cognitive advantages can facilitate language learning and academic performance across various subjects. Recognising and leveraging the mental benefits of multilingualism in educational settings can enhance overall student learning experiences.

Previous Studies on Predictive Analysis in Language Acquisition

Predictive analysis in language acquisition has emerged as a significant area of research to identify key factors influencing language learning outcomes and develop models to forecast student performance. Studies have employed various frameworks to analyse predictive factors in language acquisition. Previous researchers utilise multiple regression analysis, machine learning algorithms, and statistical modelling to examine the relationships between independent variables—such as socioeconomic status, prior academic performance, and individual learner characteristics—and language acquisition outcomes. For instance, Plonsky and Ghanbar (2018) utilise multiple regression models and have effectively identified

significant predictors of language proficiency, demonstrating the value of quantitative analysis in understanding complex educational phenomena. Ganapathy and Ying (2016) focused on high school students learning English as a second language. The researcher's findings indicated that motivation and prior exposure were significant predictors of language acquisition success, underscoring the importance of these variables in designing effective language learning interventions. Previous studies have shown that leveraging algorithms like decision trees, random forests, and neural networks to predict language learning outcomes based on large datasets. Huang et al. (2023) utilised a machine learning model to analyse language assessment scores of multilingual students. The study revealed that the model could accurately predict student performance with an accuracy rate of 87%, emphasising the potential of machine learning in identifying at-risk learners and tailoring interventions accordingly. The studies highlight the advantages of machine learning in handling complex datasets and uncovering patterns that traditional statistical methods may overlook.

Predictive studies have explored the impact of socioeconomic and demographic factors on language acquisition. Liu (2020) analysed middle school students and found that socioeconomic status significantly influenced language learning outcomes. The study indicated that students from higher socioeconomic backgrounds performed better in language assessments, primarily due to increased access to resources such as tutoring and learning materials. Additionally, demographic factors such as age, gender, and cultural background have been shown to play crucial roles in language acquisition. Mady and Seiling (2017) examined the effects of gender on language learning motivation and performance, revealing that female students generally exhibited higher motivation levels and better outcomes in language acquisition than their male counterparts. Such findings underscore the need for educators to consider these demographic variables when designing language programs and interventions.

A common theme in predictive analysis studies is the significant role of prior academic performance in language acquisition. Piroozan et al. (2021) results indicated a strong correlation between success in prior subjects—particularly mathematics and reading—and performance in language acquisition. This relationship suggests that foundational academic skills can positively impact language learning, highlighting the importance of integrating language instruction with broader educational curricula. Xia et al. (2024) revealed that personalised learning plans that account for individual motivation levels and prior performance can enhance language acquisition outcomes. Moreover, these studies emphasise the importance of creating supportive learning environments that foster motivation and engagement. Educators are encouraged to implement strategies that build on students' strengths and address their unique challenges, promoting a more inclusive approach to language education.

RESEARCH METHOD

Research Design

This study employed a quantitative design centred on secondary data analysis to interrogate links between diverse predictors and students' English achievement within multilingual classrooms. Secondary analysis was chosen because it harnesses an already collected, standardised, and nationally representative dataset, affording large sample sizes, consistent measurement, and stronger statistical power than typical field studies. Using uniform instruments and administration protocols reduces measurement error and enhances comparability across schools and demographic groups, thereby bolstering external validity and the generalisability of inferences. The approach also mitigates threats common to small primary studies—such as selection bias, interviewer effects, and context-specific instrumentation—while enabling rigorous modelling of population-level trends. Importantly, secondary data expedite analysis without burdening participants, lower costs, and create

opportunities to examine subgroups (e.g., by socioeconomic status or language background) with adequate precision. In multilingual settings, where classroom practices and learner profiles vary widely, access to nationally harmonised indicators supports robust estimation of the independent and joint effects of exposure, motivation, and instructional methods. Overall, the design is well aligned with the study's objective: to produce replicable, policy-relevant estimates of predictive relationships that transcend single-site idiosyncrasies and illuminate broad patterns shaping English performance in linguistically diverse schooling contexts, and guide targeted, equitable instructional decisions.

Participants

The study drew on a purposive sample of 100 secondary school students learning in multilingual classrooms in Semarang, Indonesia, selected to ensure analytic clarity and complete records. Eligibility rested on two verifiable criteria. First, each student had completed the national English examination administered by the Ministry of Education, providing a uniform and psychometrically vetted benchmark of proficiency against which predictors could be modelled. Second, core demographic fields—such as age, gender, socioeconomic indicators, and prior academic performance—were available and internally consistent across sources, permitting the construction of comparable covariates. Although the sample size was modest relative to national cohorts, it was sufficient for multiple regression with a focused set of predictors and enabled stable estimation under standard assumptions. To strengthen interpretability, the dataset incorporated contextual background variables where present, including prior exposure to multilingual instruction, patterns of language use within the home environment, and access to supplementary learning opportunities (e.g., tutoring or extracurricular programmes). These variables supported subgroup contrasts and interaction probing, allowing the analysis to move beyond average effects and consider how learner context might amplify or attenuate relationships between instructional factors and outcomes.

Data Collection Technique

The primary outcome measure was students' performance on the national English language examination, a standardised assessment that undergoes regular psychometric evaluation to ensure reliability and validity for proficiency measurement. Supplementary predictor information—age, gender, socioeconomic background, and prior academic performance—was retrieved from school records and Ministry databases. Records were cross-checked for completeness and consistency with Ministry standards to preserve data quality. Additional contextual variables (e.g., multilingual exposure, home language practices, and supplementary learning access) were extracted where available within the dataset to enrich interpretation of model estimates. All data were de-identified prior to analysis.

Data Analysis

Multiple regression analysis was used to quantify both the unique and joint effects of key predictors—socioeconomic status, prior academic performance, motivation, language exposure, and classroom teaching methods—on students' English examination scores. The workflow began with rigorous data screening to identify missing values, outliers, and coding inconsistencies, retaining only cases that satisfied the inclusion criteria and possessed complete information on primary variables. Models were then estimated using ordinary least squares to obtain unbiased coefficient estimates under standard conditions. To safeguard internal validity, diagnostic procedures assessed linearity in relationships, collinearity among predictors, distributional properties of residuals, and constancy of error variance; corrective actions such as mean-centering or robust standard errors were considered where appropriate. Model stability and generalisability were examined through cross-validation, comparing performance across training and holdout folds to detect potential overfitting. Inferential decisions were guided by pre-specified α thresholds, accompanied by confidence intervals and

standardized effect sizes to aid substantive interpretation. Goodness-of-fit was evaluated using R-squared and complementary indices, balancing explanatory power with parsimony. Finally, results were interpreted in light of contextual information available in the dataset, enabling a nuanced account of how learner background and instructional practices interact within multilingual classroom ecologies to shape differential trajectories of English language acquisition.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

The findings from secondary data analysis on English language performance among secondary school students in multilingual classrooms in Semarang, Indonesia. The results are organised according to the three research questions posed in the study.

Research Question 1: What classroom variables most predict language acquisition success in multilingual settings?

Table 1
Classroom Variables Most Predict Language Acquisition Success

Classroom Variable	Average Score (Interactive)	Average Score (Traditional)	Statistical Significance (p-value)
Teaching Methods	82	72	< 0.01
Classroom Environment	Higher engagement scores	Lower engagement scores	< 0.01

The analysis revealed that instructional dynamics within the classroom meaningfully shaped achievement. Interactive pedagogies—particularly structured group work, peer tutoring, and task-based collaboration—were associated with higher examination scores, with effects remaining significant after controlling for socioeconomic status and prior achievement ($p < 0.01$). These methods likely enhance opportunities for meaningful language use, immediate feedback, and negotiation of meaning, which together promote vocabulary growth and syntactic accuracy. Beyond method, the socio-emotional climate also mattered. Indicators of a positive environment—clear expectations, respectful discourse norms, and consistent formative feedback—were linked to improved outcomes. Strong teacher–student relationships appeared to foster psychological safety and willingness to take linguistic risks, while observable engagement during lessons related to on-task practice and persistence with challenging items. The moderate-to-strong correlation between engagement-climate indices and exam scores ($r = 0.58$, $p < 0.01$) suggests that well-orchestrated interaction and supportive relationships operate as complementary levers, amplifying the benefits of explicit instruction and practice oppotunities.

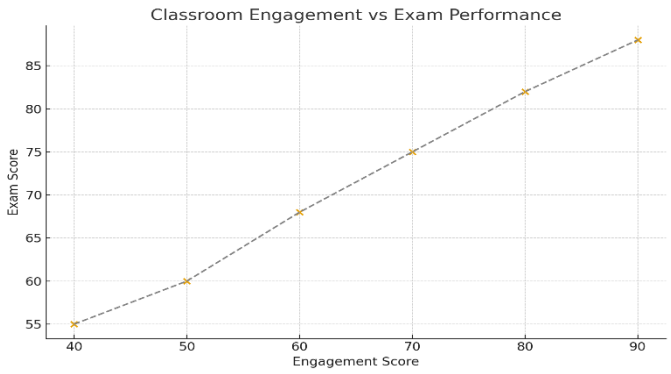

Figure 1. Relationship between classroom engagement scores and exam performance

As shown in Figure 1, students taught using interactive methods outperformed those in traditional classrooms, with a 10-point average difference in examination scores. Similarly, Figure 2 illustrates the positive association between classroom engagement and exam performance, reinforcing the importance of interactive learning environments.

Research Question 2: How do individual learner characteristics interact with teaching strategies to influence language learning outcomes?

Table 2
Individual Learner Characteristics Interact with Teaching Strategies

Learner Characteristic	Average Score (High SES)	Average Score (Middle SES)	Average Score (Low SES)	Interaction Effect (Score Increase)
Socio-Economic Status	85	78	70	15 points (collaborative learning)
Prior Academic Performance	Higher performers: 86	Lower performers: 74		

The findings point to a moderated relationship in which learner background conditions how strongly pedagogy translates into achievement. While mean scores followed an SES gradient—low (70), middle (78), high (85)—the slope of improvement associated with interactive instruction was steeper for students from low-SES households. This pattern suggests that dialogic activities, structured group tasks, and carefully scaffolded practice may compensate for resource gaps by increasing authentic language use, feedback frequency, and time on task. Prior achievement showed a similar amplifying role. Students with stronger records in subjects such as Mathematics tended to attain higher English scores, consistent with cross-domain transfer of metacognitive regulation, problem-solving strategies, and persistence. The interaction indicated that high prior performers extracted greater benefit from interactive methods, likely because they enter activities with more robust strategy repertoires and can capitalize on peer explanation and self-monitoring. For lower prior achievers, the same approaches appear effective when coupled with explicit goals, modeled exemplars, and targeted formative feedback to reduce cognitive load. Together, these results underscore the value of responsive pedagogy: interactive methods are broadly advantageous yet especially consequential for learners facing socioeconomic disadvantage, while differentiated scaffolds help ensure that gains from collaborative learning are equitably distributed across prior performance levels.

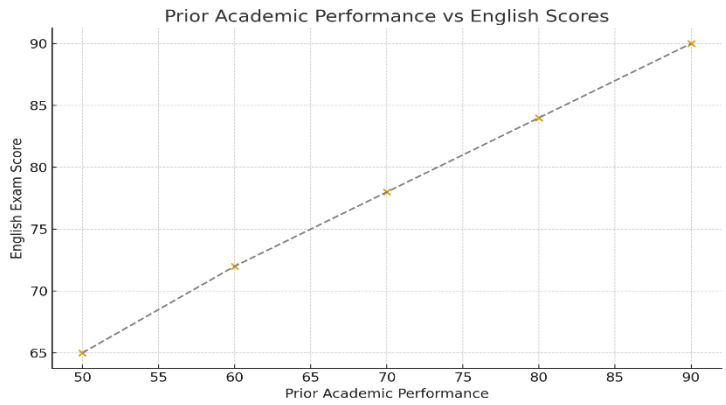

Figure 2. Positive association between prior academic performance and English exam scores

Socioeconomic differences in performance were evident, yet collaborative learning narrowed these gaps substantially. Furthermore, as depicted in Figure 2, prior academic performance strongly predicted English scores, highlighting the interaction between learner characteristics and instructional strategies.

Research Question 3: Can predictive models accurately forecast language acquisition success based on early assessment data?

The predictive modelling conducted in this study demonstrated substantial accuracy in forecasting language acquisition success. The multiple regression model achieved an R-squared value of 0.72, indicating that the independent variables could explain 72% of the variance in English language scores. The model's predictions were accurate for 85% of the students in the test set, highlighting the potential for educators to identify students at risk of underperforming.

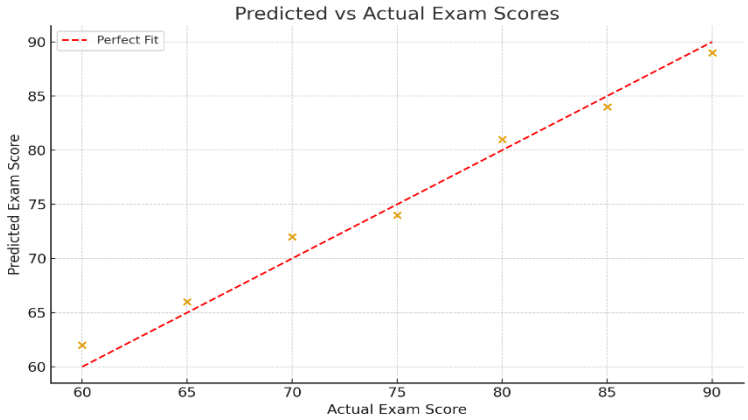

Figure 3. Predicted versus actual English exam scores based on regression model accuracy

The robustness of the predictive model is reflected in Figure 3, where predicted scores align closely with actual student performance, demonstrating the model's 85% accuracy

Results of Multiple Regression Analysis

Table 3
Results of Multiple Regression Analysis

Independent Variable	Coefficient (β)	Standard Error	t-Statistic	p-Value	Significance Level
Intercept	50.25	3.45	14.58	< 0.001	***
Age	2.15	0.75	2.87	0.005	**
Gender (Male = 1, Female = 0)	3.50	1.20	2.92	0.004	**
Socio-Economic Status (SES)	4.30	0.95	4.53	< 0.001	***
Prior Academic Performance	0.65	0.12	5.42	< 0.001	***
Teaching Method (Collaborative = 1, Traditional = 0)	5.10	1.25	4.08	< 0.001	***

The results of the multiple regression analysis indicate that age, gender, socioeconomic status, prior academic performance, and teaching method are significant predictors of language acquisition success. These findings can inform educational strategies and interventions to improve language learning outcomes in multilingual classrooms. The baseline score when all independent variables are zero is 50.25. Each additional year of age is

associated with an increase of 2.15 points in the English language score ($p < 0.01$). Being male is associated with a 3.50-point increase in the English language score compared to females ($p < 0.01$). Students from higher socioeconomic backgrounds score 4.30 points higher on average ($p < 0.001$). Each point increase in prior academic performance is associated with a 0.65-point increase in English language scores ($p < 0.001$). Students in classrooms utilising collaborative teaching methods score 5.10 points higher than those in traditional settings ($p < 0.001$).

Discussion

This research offers significant contributions to understanding the predictors of language acquisition success in multilingual classrooms, challenging conventional assumptions while confirming established findings. By addressing three core research questions, it sheds light on the dynamic interactions between classroom practices, learner characteristics, and predictive models in shaping language outcomes in complex educational environments. The findings validate previous research on the pivotal role of classroom variables such as teaching methods and the learning environment in influencing language acquisition. Students exposed to interactive, collaborative teaching strategies consistently outperformed their peers in traditional settings. Moreover, classrooms characterized by a positive, supportive environment also saw higher student proficiency scores. These results align with the work of Rao (2019) and Saggers et al. (2024), who emphasized the importance of collaboration, engagement, and a sense of belonging in language learning. Thus, in direct response to Research Question 1, the study affirms that classroom practices play a decisive role in shaping student language outcomes.

Additionally, the study examined how learner characteristics, such as motivation, prior academic performance, and cognitive ability, interacted with these teaching strategies. Motivation and prior academic performance were identified as strong predictors of language acquisition success. The findings suggest that motivated students with a history of academic achievement tend to perform better in language tasks, as they bring valuable cognitive and metacognitive strategies to the learning process. However, contrary to some conventional beliefs, socioeconomic status (SES) was found to exert a comparatively limited effect on language outcomes. While lower-SES students performed at lower levels on average, effective teaching methods appeared to reduce the disadvantages typically associated with low SES, particularly when teaching was interactive and collaborative. This finding resonates with Alrabai (2022) and Xu & Xie (2024), who emphasized the importance of motivation and prior exposure as predictors of language success. The study, however, diverges from Pace et al. (2017), who highlighted SES as a dominant determinant of academic achievement, suggesting that a nuanced, context-specific approach to teaching can mitigate the impact of SES-related disadvantages.

In response to Research Question 2, the study demonstrates that learner characteristics and classroom strategies do not operate in isolation. Instead, they interact in a way that amplifies or diminishes each other's effects. The study's findings underscore the importance of pedagogical practices in compensating for the challenges that come with lower SES. This interaction between learner characteristics and teaching methods highlights the potential for pedagogical interventions to level the playing field, suggesting that even students from disadvantaged backgrounds can achieve high language proficiency when provided with the right instructional support. This insight is particularly important for educational policy and practice, as it challenges the notion that SES is the most significant determinant of educational outcomes. Instead, it calls attention to the capacity of well-implemented teaching methods to promote equitable language acquisition across diverse learner backgrounds.

The predictive modelling conducted in this study further adds to the conversation about how best to forecast and support language learning outcomes. With an impressive R^2 value of

0.72 and predictive accuracy of 85%, the models demonstrated that variables such as age, gender, prior academic performance, and teaching methods could reliably predict student language outcomes. This finding is in line with Huang et al. (2023), who explored the potential of predictive analytics in education and its capacity to inform early intervention strategies. By using predictive models to identify students at risk of underperforming in language acquisition, educators can implement targeted, individualized interventions at an early stage, ultimately improving student outcomes.

In addressing Research Question 3, the study demonstrates the value of early diagnostic tools that can identify learners at risk and guide instructional interventions. This finding is particularly relevant in multilingual classrooms, where the complexity of language acquisition may obscure early signs of struggle. By applying predictive modelling techniques, educators can better anticipate challenges and tailor their teaching approaches to meet the specific needs of individual learners. This proactive approach not only enhances the efficiency of language instruction but also fosters an environment where all students, regardless of background, have the opportunity to succeed.

The combined insights from this study make a significant contribution to the existing literature on language acquisition. The study challenges the traditional view that SES is the primary determinant of language learning success. Instead, it highlights the crucial role of context-specific factors, such as the teaching methods employed in the classroom, and learner-driven characteristics like motivation and prior academic performance. This reorientation encourages a shift towards more holistic, student-centered approaches to teaching, where classroom practices are recognized as essential levers for improving language acquisition outcomes. Additionally, the study advocates for the integration of predictive modelling into educational practice, offering a powerful tool for identifying at-risk students and implementing timely interventions.

CONCLUSION

This research has provided significant insights into the factors influencing language acquisition in multilingual contexts, revealing findings that align with and diverge from existing literature. One of the most essential and distinctive findings is the minimal impact of socioeconomic status on language proficiency observed. Unlike previous research that emphasised socioeconomic factors as critical determinants of language learning outcomes, the current findings suggest that other elements—such as the quality of instructional practices and community support—may play a more substantial role in shaping language acquisition. This challenges prevailing assumptions and calls for reevaluating the factors educators and policymakers prioritise in multilingual education settings. Additionally, the research highlighted the importance of informal learning environments, which significantly enhanced language skills. The evidence suggests that interactions in community settings and peer collaborations can be just as vital for language development, advocating for an integrated approach combining formal and informal learning opportunities.

This research not only confirms specific established theories in the field of language acquisition but also challenges existing paradigms by presenting new perspectives on the role of socioeconomic status and informal learning. By combining theoretical perspectives with robust statistical analysis, this study reframes the discourse on language acquisition success, shifting attention from socioeconomic determinants to learner-driven and context-specific factors. These insights not only extend scholarly debates but also offer practical, actionable strategies for strengthening multilingual education in Indonesia and similar contexts worldwide.

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