INVESTIGATING LANGUAGE BELIEFS AND LEARNING EFFECTS: MEDIATING VOCABULARY PERFORMANCE AND MODERATING MULTILINGUALISM PERCEPTIONS AND TEACHER PRACTICES

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Abstract
This study investigates the impact of language beliefs on the learning effect, emphasizing the mediating role of vocabulary learning performance and the moderating influences of perceptions about multilingualism and teacher practices. It aims to deepen the understanding of how cognitive and practical dynamics shape language learning outcomes. A quantitative research design was employed, utilizing data collected from 217 university students enrolled in language programs studying various languages. The research applied validated measurement scales to capture key constructs and analyzed the data using Partial Least Squares Structural Equation Modeling (PLS-SEM) via ADANCO software. The study examined relationships through path analysis and evaluated the mediating and moderating effects of specific variables. The results indicate that language beliefs significantly enhance the learning effect, with vocabulary learning performance acting as a robust mediator. Furthermore, perceptions about multilingualism and teacher practices significantly moderate this relationship, underlining their importance in optimizing learning outcomes. These findings suggest an intricate interplay between student beliefs, instructional practices, and multilingual perceptions in achieving effective language acquisition. This research provides unique insights into the cognitive and contextual factors influencing language learning, offering practical implications for educators and policymakers in designing language programs that foster multilingual competencies and maximize learning outcomes.

Keywords: Language beliefs, Multilingualism, Vocabulary learning, Learning effect

1. INTRODUCTION

Language learning is a multidimensional phenomenon that has greatly been associated with the interaction of the human race with each other globally. Besides this, it supports linguistic proficiency leading to cross-cultural understanding in today's interconnected world, as postulated by (Flores-Salgado & Gutiérrez-Koyoc, 2024). Multilingualism, then, as the extension of the language acquisition processes, is generally valued for both cognitive, social, and economic benefits. For instance, multilingual individuals are more flexible to different cultural settings, and hence, they are an asset in multicultural societies and workplaces (Burner & Carlsen, 2023). The worldwide focus on multilingual education is because it plays a significant role in personal and professional development (Chik & Melo-Pfeifer, 2023). Language education has shifted from grammar-translation methods to more interactive and immersive approaches, which focus on the integration of belief systems, learner-centric practices, and contextual applications (Chlopek & Pradela, 2024).

The core of successful language learning is the dynamic interplay between cognitive beliefs, instructional strategies, and sociocultural factors (Christison, 2023). Language beliefs, the attitudes and assumptions students have about the nature of language learning are a driving force that shapes their engagement, motivation, and academic success (Fisher et al., 2022). These beliefs directly influence vocabulary acquisition, often considered the cornerstone of language proficiency (Gallagher & Scrivner, 2024). Furthermore, individual and societal perceptions of multilingualism fine-tune these interactions as they decide whether learners are ready to accept linguistic diversity (Gazioglu & Cole, 2024). Equally important are the roles of teachers and their practices, especially in multilingual environments, where teacher interventions can facilitate students' linguistic and cognitive development (Wong & Prange, 2024). The research addresses the given dimensions in such a way as to relate it to vocabulary performance and learning outcome while also moderating with roles of multilingual perception and teacher practices.

Empirical research has, time and again, pointed to the role of language beliefs in shaping learners' cognitive and emotional involvement in learning a language (Kaveh & Lenz, 2022). Positive language beliefs are linked with higher levels of intrinsic motivation, strategy use, and overall language achievement (Lantolf & Poehner, 2023). The study of Liu et al. (2025) show that language learning beliefs in terms of how easy or hard it is for a learner affect learners' persistence in difficult tasks. Further, positive language beliefs are also related to increased vocabulary because students will use more diverse and appropriate strategies when they feel confident in their linguistic capacity (Pohlmann-Rother et al., 2021). Such results are supported by Romanowski (2022) where it was stated that the language learner's beliefs can predict long-term proficiency especially when they are in immersive environments.

Vocabulary learning in particular has formed the focus area of linguistic study. Researchers observed that vocabulary constitutes the foundation on which broader linguistic proficiency is erected, including the knowledge of grammar, reading proficiency, and oral flow (Flores-Salgado & Gutiérrez-Koyoc, 2024). The study of Gallagher and Scrivner (2024) draws attention to how vocabulary acts as a mediator to outcomes of learning where learners actively enhance their vocabularies than otherwise show enhanced language proficiency overall. Multilingualism has been studied extensively in terms of cognitive benefits, including increased metalinguistic awareness and improved executive functioning (Surrain & Luk, 2023). However, perceptions of these benefits vary greatly from one individual to another, and are often determinants of the motivation and engagement levels in language acquisition (Walker, 2024). Teacher practices in multilingual contexts become critical determinants of success.

Effective instructional strategies can foster equitable and engaging learning environments (Chik & Melo-Pfeifer, 2023). Such studies are useful in themselves but make the task of linguistic education complicated, and there is a need to delve deeper into its multidimensional nature.

Despite a lot of literature in language learning, critical gaps persist in understanding nuanced relationships between beliefs about language, perceptions of multilingualism, and teaching practice. An important drawback of these investigations is the overly narrow scope either on cognitive aspects or on the sociocultural dimension without really investigating at the interlinkage between both (Fisher et al., 2022). To exemplify, it has been often realized that a well-known positive outcome of a beneficial language attitude concerns cognitive enhancement but less so how beneficial beliefs actually operate to boost a multilingual child's lexical store (Christison, 2023). In addition, most research on multilingualism has been conducted from the perspective of learners' outcomes, with little focus on how their perceptions of its benefits impact wider educational effects (Sundqvist et al., 2021). Furthermore, multilingual education is discussed in general terms concerning teacher practice, without specifying whether such practices are linked to changes in the belief systems of the learners and ultimately to their success in academics (Cho et al., 2023). The theoretical plausibility of the moderation roles of multilingual perceptions and teacher practices has been underdeveloped empirically (Haukås et al., 2022). The most critical gap is the under researched context of culturally diverse or non-Western settings where societal attitudes and teacher training differ significantly from conventional frameworks (Alsarawi & Sukonthaman, 2021). The above gaps require an integrated approach to examine how beliefs, perceptions, and teaching practices collectively influence vocabulary performance and learning outcomes, paving the way for evidence-based pedagogical strategies (Bicalho et al., 2023). The theoretical basis of this study is founded on sociocultural theory by Vygotsky (1978), which places emphasis on social interaction and the use of cultural tools, including language, in cognitive development (Prediger & Buró, 2021). Learners, in this framework, build knowledge through interaction with their environment, which includes peers, teachers, and cultural norms. Language beliefs serve as cognitive tools that guide learners' involvement and motivation in such interactions (Lantolf & Poehner, 2023). This can be further supplemented by the fact that perceptions of multilingualism and teacher practices are in consonance with the ecological systems model, where environmental factors influence individual development (Gallagher & Scrivner, 2024). All these theories together indicate the importance of understanding how beliefs, perceptions, and practices operate in interconnected systems to enhance language learning outcomes (Walker, 2024).

On that basis, using these theoretical inputs, this paper aims to inquire into the impact of language belief on learning, the mediating role of the performance of learning vocabulary, the moderating impact of multilingualism perception and teacher practice on how learning is acquired. This bridges gaps in previously existing literature aimed at contributing a more holistic explanation of multilingual education, practically towards educators and policymaking. This integration is expected to produce a comprehensive framework for fostering effective language learning in diverse educational contexts.

2. LITERATURE REVIEW

Multilingualism has recently emerged as a great tool for developing linguistic and cultural competence, particularly in diverse educational settings. Multilingual environments were found to boost cognitive flexibility and problem-solving capabilities among learners while providing metalinguistic awareness (Burner & Carlsen, 2023). Studies have also stressed that multilingual exposure may facilitate better vocabulary development since the learner can compare structures and lexicons of multiple languages,

thereby ultimately supporting more comprehensive linguistic development (Chik & Melo-Pfeifer, 2023). In this respect, educators' perception of multilingualism is the most significant factor that affects teaching methodology (Christison, 2023). A positive attitude toward multilingualism fosters the inclusion of pedagogies that celebrate and incorporate diverse linguistic backgrounds into the students (Fisher et al., 2022). Moreover, research has proven that the inclusion of multilingualism in language teaching boosts learner confidence, engagement, and equitable participation by students from diverse or bilingual backgrounds (Gazioglu & Cole, 2024).

Although the benefits are numerous, the uniqueness of challenges such as low resources and teacher's preparedness poses a challenge toward multilingual classroom approaches (Haukås et al., 2022). Recent studies have depicted that teachers' perceptions of the competence of practicing multilingual classrooms have a relationship with their preparedness to adopt that practice (Kaveh & Lenz, 2022). A professional training setup and continuous development support are quite essential to fully equip educators on the tools, strategies, or techniques to execute the multilingual context (Gallagher & Scrivner, 2024). Other critical sociocultural considerations are attitudes toward certain languages in a particular society. Practitioners believe that their application should go beyond just the translation of vocabulary to even more profound and complex questions like cultural relevance and interlanguage relationships (Romanowski, 2022). This method ensures not only that the language performance is enhanced but also that intercultural understanding is fostered in anticipation of the frustrations of global communication (Sundqvist et al., 2021).

Language beliefs contribute significantly to attitude and behavior amongst learners in schooling (Chik & Melo-Pfeifer, 2023). Studies state that the extent to which motivation, involvement and consequently academic outcome are affected result from the types of beliefs they hold about acquiring a new language (Chłopek & Pradela, 2024). Several studies have come to the result that positive belief in language supports cognitive investment or persistence in difficult task situations (Fisher et al., 2022). On the contrary, for example, negative beliefs that the language is too difficult or impossible to learn, give rise to avoidance behavior and low achievements (Gallagher & Scrivner, 2024). The research studies in multilingual settings indicate that beliefs mediate the relationship between the self-perception of the learners and the outcomes of learning: culturally implanted beliefs have a major influence (Sundqvist et al., 2021). Such beliefs impress on learners the way they construe instructional methods and interactions with language materials (Kaveh & Lenz, 2022). Furthermore, studies highlight that beliefs differ across demographic and linguistic backgrounds, significantly impacting language acquisition in diverse classroom settings.

The cognitive-affective model conceptualizes the influence of language beliefs on learning effects as significant. Such beliefs enhance intrinsic motivation and facilitate self-regulation, key predictors of better learning outcomes (Lantolf & Poehner, 2023). For example, a student who has growth-oriented beliefs about their ability to acquire the language will make use of the most (Kobayashi, 2024) effective learning strategies and continue trying when faced with problems . Conversely, fixed beliefs can reduce learners' propensity to explore, innovate, or engage (Yuan & Qiu, 2023). On this basis, language beliefs are hypothesized to be an important determinant of learning effects, especially in the vocabulary building environments because positive beliefs will prompt learners to take active participation and retention of knowledge (Liu et al., 2025).

H1: Language Beliefs Significantly Influence the Learning Effect.

Vocabulary acquisition is the most central activity in language learning, which, in turn, affects the learner's overall language competence (Alemdag, 2023). Past studies have pointed out that learners' beliefs about language learning can promote or hinder vocabulary acquisition (Chen & Wu, 2021). For example, positive language beliefs generally result in the active use of vocabulary learning strategies,

such as visualization, semantic mapping, and contextual usage (Jakoet-Salie & Ramalobe, 2022). Learners with more favorable beliefs about language learning also tend to access a wider range of resources, such as multimedia tools and peer learning platforms, to strengthen vocabulary acquisition (Lv & Wang, 2024). In addition, vocabulary acquisition mediates broader linguistic capabilities, such as grammar comprehension and communicative performance. This supports the notion that a well-developed lexicon can amplify the learning effect across language skills.

Such a mediating role for vocabulary learning performance arises from the direct contribution of vocabulary learning to linguistic competence (Su et al., 2023). Empirical studies argue that beliefs affect the cognitive and emotional involvement required for effective vocabulary learning (Wong & Prange, 2024). Positive beliefs enhance the active recall and utilization of vocabulary needed to achieve learning outcomes (Zhang & Ma, 2023). This hypothesis is such that vocabulary performance acts as a link between individual language beliefs and broader educational goals, focusing more on its critical role in optimizing learning. Thus, incorporating vocabulary-focused interventions with a belief-positive pedagogical approach can significantly enhance overall effects of learning (Sun et al., 2022).

H2: Vocabulary Learning Performance Significantly Mediates the Relationship Between Language Beliefs and Learning Effect.

Perceptions of multilingualism, especially the cognitive, social, and cultural advantages it provides, are crucial to learner engagement and educational practices (Pohlmann-Rother et al., 2021). According to studies, students who perceive multilingualism as an asset are more willing to learn more languages and perform better in school (Romanowski, 2022). Furthermore, these perceptions are also associated with greater cognitive flexibility and metalinguistic awareness (Sundqvist et al., 2021). According to Surrain and Luk (2023), students who value multilingual abilities have higher levels of motivation and better performance in language than those who undervalue the benefits of multilingualism. Such students resist immersive linguistic environments, thereby impairing their academic achievements. The theoretical basis for justifying the moderating role of perceptions about multilingualism's benefits is their capacity to enhance or diminish the impact of language beliefs (Chik & Melo-Pfeifer, 2023). Positive perceptions amplify the effect of supportive beliefs toward language learning outcomes due to the fostering of an environment of acceptance and participation (Christison, 2023). Learners who realize the benefits of multilingualism demonstrate an enhanced ability to utilize beliefs into hands-on learning efforts (Gallagher & Scrivner, 2024). This moderating relationship points out that the learners' perceptions are very important for the interplay between belief systems and learning effects resulting from it, making multilingual education dynamics quite complex.

H3: Perception About Benefits of Multilingualism Significantly Moderates the Relationship Between Language Beliefs and Learning Effect.

Teacher practices, especially in multilingual classrooms, have a potential central role in mediating and moderating student outcomes (Bicalho et al., 2023). Effective practices include code-switching, the use of culturally inclusive materials, and scaffolding techniques that acknowledge linguistic diversity (Bourbour, 2020). Past studies confirm that teachers' ability to create a supportive multilingual environment positively influences student motivation, performance, and engagement (Prediger & Buró, 2021). Teachers who involve multilingualism in their pedagogies will enforce the congruence in learners' beliefs with practice and so ensure that the better education is carried out (Khasawneh et al., 2023). This therefore calls for well-trained teachers to shape and reinforce beliefs of students towards language that lines with the practical goals of learning.

The moderating effect of teacher practices is the influence they have on providing concrete support to learners' beliefs, making them operational in terms of concrete outcomes (Jakoet-Salie & Ramalobe,

2022). Teacher practices that are effective validate students' language beliefs and provide structured opportunities for multilingual exploration and skill development. Teachers who take a flexible and inclusive approach ensure that learners overcome negative perceptions to achieve better learning outcomes (Kobayashi, 2024). This hypothesis shows transformational power toward bridging teacher practices and transforming theoretical language belief into real-world learning outcomes, thereby entrenching even more their strength in educational research (Bicalho et al., 2023).

H4: Teacher Practices About Multilingualism Significantly Moderate the Relationship Between Language Beliefs and Learning Effect.

2.1 Theoretical Framework Supporting the Research

This study's research relationships can be explained using sociocultural theory by Vygotsky (1978), which states that social interaction and cultural tools, such as language, play a central role in cognitive development. Sociocultural theory emphasizes that learners construct knowledge through collaborative interactions within their environment, including teachers, peers, and cultural norms (Osias Kit et al., 2023). In this study, language beliefs acted as cognitive and motivational tools for people to handle and internalize their linguistic knowledge. The perceptions of multilingualism and teacher practice, in turn, support the framework of ecological systems theory (Lantolf & Poehner, 2023) and emphasize that the individual factors interplay dynamically with environmental factors for the educational outcomes. These theories altogether demonstrate relationships between language beliefs, vocabulary performance, perceptions of benefits of multilingualism, and teacher practice in the proposed model (Figure 1).
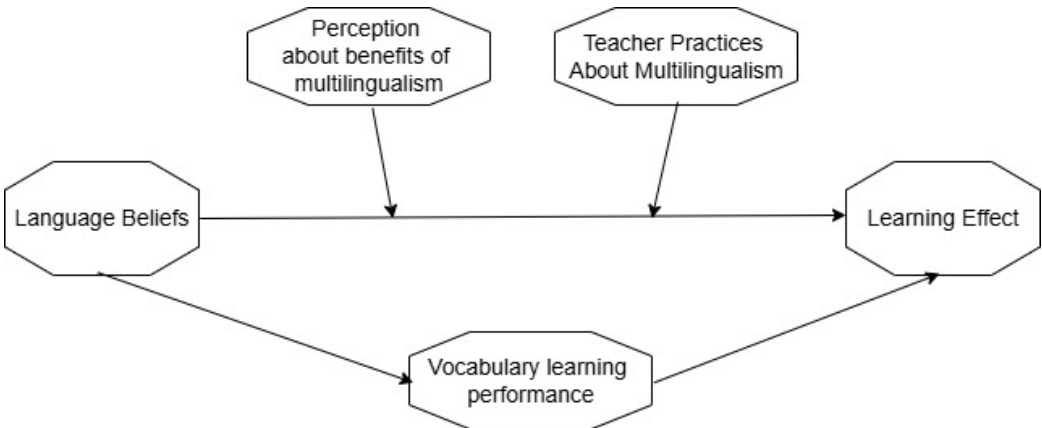
Figure 1: Conceptual Framework

3. METHODOLOGY

This study used a quantitative research design to explore how language beliefs, vocabulary learning performance, perceptions of multilingualism, and teacher practices influence the learning effect. The research sought to identify causal relationships between the constructs through Structural Equation Modeling (SEM) conducted using ADANCO software. It used a cross-sectional approach as data were gathered at one point in time from respondents. The research took place in the language departments of several universities that focused on the students learning one of the different national

languages. The sample involved 217 students studying at such programs and possessed a diverse range of linguistic and cultural backgrounds. The selection criterion was to select participants who are actively learning another foreign or additional language as part of their curriculum. Stratified random sampling was used to ensure that students of different proficiency levels and linguistic orientations were included. The sample size of 217 is well within the recommended thresholds for SEM analysis, thereby providing enough power and reliability of the results.

Measurement scales used for the study's constructs have been adapted from validated past studies. Content validity and reliability will be assured due to the source of measurement. The questionnaire comprises five sections as follows, representing one key construct each:

All the scales (Table 1) established excellent reliability and validity in other studies, therefore applicable for use in this research. Data collection was through a standard questionnaire administered among participants during a class session. The questionnaire was devised to be concise and easy for better response precision and took an approximate 15 minutes to respond. Participation was strictly voluntary with participants being oriented to the essence of the study before responding.

The data collected were analyzed using ADANCO, a software specifically designed for Partial Least Squares Structural Equation Modeling (PLS-SEM). This method was selected because it is best suited for exploratory research, complex model testing, and constructs with non-normal distributions. In the analysis, the following steps have been taken: computation of Cronbach's alpha, Composite Reliability, and Average Variance Extracted to check the consistency as well as discriminant validity of the constructs. Measurement model goodness of fit was analyzed through loadings, T-values, and variance inflation factors. Path coefficients, T-statistics, and P-values of all the hypothesized relationships were used to test the hypotheses. It included vocabulary learning performance as a mediator and perceptions of multilingualism and teacher practices as moderators. This research methodology ensured the combination of strong measurement scales and ADANCO for sophisticated analysis, thereby lending rigor and credibility to the findings of the study. The amalgamation of the representative sample with validated instruments and advanced statistical techniques could provide adequate insight into the phenomena under investigation.

Table 1: Measurement Scales

| Variable	No Of Items	Reference
Language beliefs	6	(Fisher et al., 2022)
Vocabulary learning performance	5	(Rezaei et al., 2014)
Perception about benefits of multilingualism	8	(Haukås et al., 2022)
Teacher practices about multilingualism	6	(Sundqvist et al., 2021)
Learning effect	8	(Sun et al., 2022)

4. RESULTS

Table 2 shows the Cronbach's Alpha, Composite Reliability, and Average Variance Extracted for the measures under constructs studied. All values were above the threshold values. Cronbach's Alpha was higher than 0.7 that means internal consistency across the items of the scale, and Composite Reliability values ranged between 0.835 and 0.916, which will confirm the good adequacy of the constructs with respect to their reliability in the measures of the respective variables. Similarly, the AVE for the constructs, ranging 0.548-0.680, validates the convergent validity as it exceeds the threshold of 0.5.. The construct "Teacher practices about multilingualism" had the highest CR (0.916) and AVE (0.645),

which indicates high internal consistency and validity, while "Perception about benefits of multilingualism" also showed strong reliability and validity indicators. These metrics collectively establish the measurement scale's reliability and convergence for evaluating the research model constructs.

Table 2: Variables reliability and validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Language beliefs	0.704	0.835	0.628
Vocabulary learning performance	0.791	0.842	0.574
Perception about benefits of multilingualism	0.865	0.893	0.548
Teacher practices about multilingualism	0.890	0.916	0.645
Learning effect	0.764	0.864	0.680

Table 3 displays the loadings and T-statistics for each indicator of the variables measured. High loadings indicate the substantial contribution of these items to their respective constructs, with most loadings exceeding the acceptable threshold of 0.5. The variable "Language beliefs" had item loadings ranging from 0.530 to 0.708, with T-statistics demonstrating the significance of these indicators (e.g., LB3: T = 35.798). For "Teacher practices about multilingualism," item loadings ranged from 0.515 to 0.702, supported by highly significant T-values (e.g., TPAM2: T = 46.840). Similarly, "Vocabulary learning performance" showed loadings between 0.606 and 0.729, demonstrating consistency in representing the variable. Although "Perception about benefits of multilingualism" had slightly lower loadings for some items (e.g., PBM7 = 0.446), most values remained within acceptable levels, supported by moderate to high T-statistics. Finally, "Learning effect" showed strong item loadings, ranging from 0.647 to 0.780, confirming the items' contribution to this critical outcome variable (Figure 2).
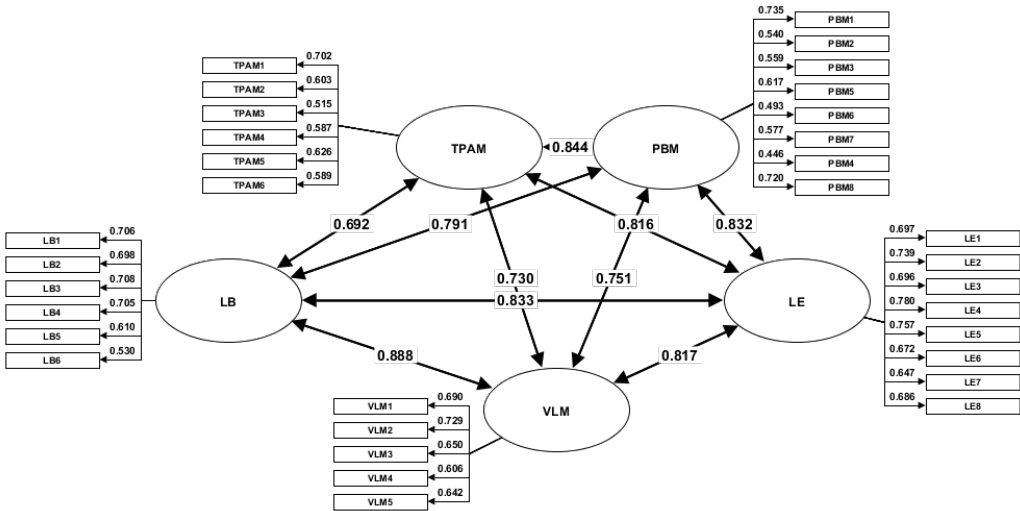
Figure 2: Estimated Model

Table 3: Measurement Items Fitness Statistics

Variable	Indicator	Loadings	T Statistics
Language beliefs	LB1	0.706	10.858
	LB2	0.698	30.996
	LB3	0.708	35.798
	LB4	0.705	34.647
	LB5	0.610	28.463
	LB6	0.530	11.034
Teacher practices about multilingualism	TPAM1	0.702	37.279
	TPAM2	0.603	46.840
	TPAM3	0.515	29.925
	TPAM4	0.587	18.984
	TPAM5	0.626	31.174
	TPAM6	0.589	38.334
Vocabulary learning performance	VLM1	0.690	34.651
	VLM2	0.729	43.521
	VLM3	0.650	25.563
	VLM4	0.606	11.422
	VLM5	0.642	11.554
Perception about benefits of multilingualism	PBM1	0.735	16.927
	PBM2	0.540	8.508
	PBM3	0.559	20.749
	PBM4	0.617	12.902
	PBM5	0.493	17.247
	PBM6	0.577	12.167
	PBM7	0.446	8.300
	PBM8	0.720	16.295
Learning effect	LE1	0.697	15.439
	LE2	0.739	19.865
	LE3	0.696	23.596
	LE4	0.780	19.955
	LE5	0.757	24.430
	LE6	0.672	26.754
	LE7	0.647	22.321
	LE8	0.696	17.156

Table 4 evaluates discriminant validity using the Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT). The Fornell-Larcker analysis confirms that the square root of each construct's AVE is greater than its correlations with other constructs, indicating adequate discriminant validity. For example, the AVE square root for "Language beliefs" (0.825) exceeds its correlation with "Vocabulary learning performance" (0.422). The HTMT values, all below the 0.85 threshold, further affirm discriminant validity. For instance, the HTMT value between "Perception about benefits of multilingualism" and "Learning effect" is 0.802, supporting the distinctiveness of these constructs. Overall, the results validate that each construct is sufficiently unique, ensuring no overlap among variables in measuring different dimensions of the research model.

Table 4: Discriminant Validity

Fornell-Larcker Criterion					
	1	2	3	4	5
Language beliefs	0.825				
Vocabulary learning performance	0.422	0.793			
Perception about benefits of multilingualism	0.577	0.597	0.611		
Teacher practices about multilingualism	0.502	0.674	0.703	0.695	
Learning effect	0.542	0.601	0.681	0.732	0.803

Heterotrait-Monotrait Ratio (HTMT)				
Language beliefs				
Vocabulary learning performance	0.875			
Perception about benefits of multilingualism	0.797	0.832		
Teacher practices about multilingualism	0.716	0.789	0.821	
Learning effect	0.632	0.751	0.802	0.848

Table 5 assesses the predictive power and model fit using the coefficient of determination (R²), Adjusted R², and other fit indices. Vocabulary learning performance (R² = 0.811, Adjusted R² = 0.820) and Learning effect (R² = 0.791, Adjusted R² = 0.792) demonstrate strong explanatory power, indicating that the independent variables account for a significant portion of the variance in these outcomes. The Q² predictive value for Vocabulary learning performance (0.058) confirms acceptable predictive relevance. Other goodness-of-fit indices, such as RMSE (0.041) and MAE (0.061), highlight the model's precision in estimating the observed data. Together, these results underscore the robustness of the proposed research model in capturing the dynamics between constructs.

Table 5: R-square statistics Model Goodness of Fit Statistics

Construct	Coefficient of determination (R2)	Adjusted R2	Q²predict	RMSE	MAE
Vocabulary learning performance	0.811	0.820	0.058	0.041	0.061
Learning effect	0.791	0.792			

Table 6 provides the results of the path analysis, confirming that all hypotheses are statistically significant. For the first hypothesis, the effect of Language beliefs on Learning effect yielded a significant path coefficient (β = 0.157, T = 2.799, P < 0.000), corroborating prior research linking belief systems to educational outcomes. The second hypothesis demonstrates that Vocabulary learning performance mediates the relationship between Language beliefs and Learning effect, supported by a strong path coefficient (β = 0.363, T = 5.253, P < 0.000). Additionally, Perception about benefits of multilingualism significantly moderates this relationship (β = 0.272, T = 5.078, P < 0.000), illustrating how favorable views of multilingualism enhance learning outcomes. Similarly, the moderating role of Teacher practices about multilingualism (β = 0.057, T = 2.364, P < 0.000) emphasizes the importance of pedagogy in leveraging learners' beliefs for improved performance. These results collectively reinforce the theoretical and practical relevance of the proposed model (Figure 3).

Table 6: Path Analysis

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Language beliefs significantly influences the learning effect.	0.157	0.160	0.056	2.799	<0.000
Vocabulary learning performance significantly mediates the relationship of language beliefs and learning effect.	0.363	0.365	0.068	5.253	<0.000
Perception about benefits of multilingualism significantly moderates the relationship of language beliefs and learning effect.	0.272	0.274	0.053	5.078	<0.000
Teacher practices about multilingualism significantly moderates the relationship of language beliefs and learning effect.	0.057	0.057	0.024	2.364	<0.000
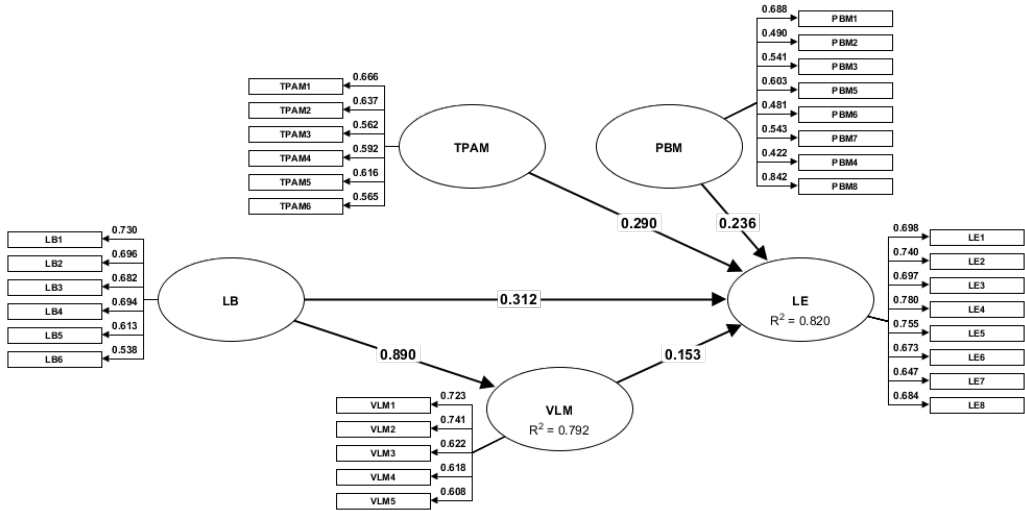
Figure 3: Structural Model for Path Analysis

5. DISCUSSION

The essence of academic research lies in unraveling complex interrelationships that define human behaviors and cognitive processes. In the realm of multilingual education, language beliefs, perceptions, and practices are critical determinants of learners' linguistic growth and academic success. This chapter discusses the empirical results of this study and provides strong evidence for the hypotheses. The acceptance of all hypotheses not only confirms theoretical assumptions but also enlightens nuanced dynamics in language learning, especially in a multilingual environment. This discussion aims to interpret these findings against the backdrop of existing literature and highlight the contribution, practical implications, and directions for future inquiry of the study.

Strong evidence for the first hypothesis stated that beliefs in language had an important effect on the learning outcome. In relation to what other literature said about the role of language beliefs being cognitive and motivational towards academic achievement, findings were supportive because positive language beliefs enhance the learners' intrinsic motivation in learning processes (Romanowski, 2022). Such statements can be supported empirically by data from this research, which would show that more focused, persistent, and resilient students in class are those students who have supportive language beliefs. Apart from cognitive achievements, this outcome was also found to have socio-emotional benefits. With positive beliefs in language, feelings of competence are developed, thereby being resilient. This further reiterates the need for a positive belief in language within an educational context, especially within multicultural settings where various linguistic norms could conflict with students' perceptions.

The second hypothesis explores the mediating role of vocabulary learning performance between language beliefs and the effect of learning, thereby enriching the discourse on language acquisition. Vocabulary acquisition forms the basis of linguistic proficiency and is closely linked with comprehension, expression, and academic achievement as a whole (Su et al., 2023). The present study supported the hypothesis that language beliefs indirectly affect learning through vocabulary learning performance. This mediating relationship highlights the process-oriented view of language education,

where growth in specific competencies such as vocabulary becomes an important conduit to broader educational success. These findings concur with those of Flores-Salgado and Gutiérrez-Koyoc (2024), which emphasize the fact that powerful vocabulary skills do enhance learners' linguistic and cognitive abilities significantly. The empirical evidence also suggests that language beliefs shape learners' choice of vocabulary learning strategies, enabling them to engage in more diverse and effective practices. Empirical evidence supported the third hypothesis that stated perceptions regarding the benefits of multilingualism considerably moderate the relationship between language beliefs and the learning effect. The results strengthen the sociocultural importance of multilingualism, which is often linked with cognitive, communicative, and professional benefits (Chik & Melo-Pfeifer, 2023). Positive perceptions about multilingualism from the part of the learners maximized their potential in their language beliefs, and thus added value to their learning outcomes. This moderation effect may arise from the fact that learners are intrinsically driven to attain competence in abilities and skills they associate with perceived multifaceted rewards of being able to speak in one or more than two languages, cross-cultural adaptability and cognitive flexibility. This moderation was the most visible to be pronounced with settings of supportive societal attitudes of multilingual ability, and therefore a cultural aspect apparently played an enormous role in identifying individual learning dynamism. Such findings suggest educational policies that promote multilingualism benefits hence encourage supportive and favorable environments towards a language learner.

There is also empirical evidence for the fourth hypothesis that investigated if there is a moderating role of teacher practices on multilingualism between language beliefs and the learning effect. The role of educators in the development of students' language beliefs and performance outcomes can be highly pivotal, as effective teaching strategies increase learners' intrinsic and extrinsic motivation (Fisher et al., 2022). This study found teacher practices that further strengthened the effects of language beliefs and responded specifically to challenges faced in multilingual learning environments. For example, culturally responsive practices and methodology context-specific help students navigate linguistics diversity better, while results underlined the professional development programs that allow educators the opportunity to skill up in their ability to better manage multilingual classrooms. These findings agree with Jakoet-Salie and Ramalobe (2022), whose argument is that teacher interventions are essential toward creating equal and fair language learning experiences.

This discussion underlines the complex interactions between cognitive, motivational, and pedagogical elements in language learning, raising intricate interdependencies between all these elements. The confirmation of all hypotheses brings to the foreground the potential of building positive language beliefs, using multilingualism perceptions, and training/developing teacher practices to give rise to optimal learning opportunities. Beyond theoretical gains, the research findings provide actionable recommendations for teachers, educators, policymakers, and curriculum designers. As emphasis on multilingual education increases globally, have strengthened the argument for the adoption of holistic and contextual approaches to language teaching. At the same time, this study has important applications and opens up avenues of future research which may, with further refinement, eventually be applied in a rich variety of cultural and educational settings.

6. CONCLUSION

The complexity of language beliefs, multilingualism, and educational outcomes in their mutual interrelations has made it theoretically and practically significant for investigation. As language beliefs affect the learning outcomes not only directly but also indirectly by means of mediation with vocabulary learning performance, the paper further elaborates our knowledge on psychological and

behavioral factors. Importantly, the perceptions regarding multilingualism and teaching practices play the role of moderating factors between these contextual and institutional factors which are critical for maximizing educational strategies in multilingual contexts. Insights based on this will provide an information basis for implementing informed reforms and practical approaches toward effective language learning. To summarize, this research resonates powerfully with current challenges and opportunities in the domain of multilingual education in making valuable contributions toward frameworks that manage linguistic diversity within the classroom context. The current research, with its rigorous theoretical exploration and evidence-based implications, provides a roadmap for educators and policymakers to design systems that maximize the potential of language beliefs and multilingual practices. Ultimately, the insights gained through this study contribute to a more inclusive, efficient, and learner-centered approach to education, emphasizing the transformative power of understanding and supporting learners' linguistic and cultural needs.

7. IMPLICATIONS OF THE STUDY

This research extends theoretical knowledge of language beliefs, multilingualism, and educational outcomes by providing evidence to undergird the relationships between them. Anchored within constructs such as the theory of planned behavior by Ajzen in 1991 and sociocultural learning theory by Vygotsky in 1978, the study develops this area further about how deeply-rooted language beliefs influence attitudes and subsequent behaviors among learners, hence language learning outcomes. The findings confirm that language beliefs are not only cognitive constructs but also carry behavioral implications and thus provide a new angle from which the role of individual perceptions can be considered in educational success. Moreover, the mediation effect of vocabulary learning performance elucidates in what subtle ways certain learning components can mediate the relationship between beliefs and results. These insights enrich existing literature on education and linguistics because they illustrate how the learning mechanics and belief systems intertwine to shape language proficiency.
Another significant theoretical contribution lies in the exploration of multilingualism within an educational context. With moderating variables, such as perceptions about multilingual benefits and teacher practices, it bridges the gap between micro-level individual beliefs and macro-level pedagogical approaches. Results show that multilingual education should not just be an outlet for linguistic diversity, but rather, it must also promote cognitive and social outcomes by institutionalizing the well-structured practice of teachers. This study's contribution extends existing literature through proposing a framework with the intersection of institutional, pedagogical, and individual elements, hence bringing into view much broader theory that would extend on language learning with the dynamic relation between multilingualism and the effects of learning.
This study provides teachers, curriculum developers, and policymakers with hands-on recommendations for improving the process of language learning. Emphasis on the role of language beliefs during language learning reminds people of the necessity of providing students with a belief toward positive language learning. For instance, offerings such as workshops or orientation sessions focusing on the elimination of wrong opinions regarding multilingualism can prove useful in raising learner confidence and better engagement in the vocabulary and language curricula. Teachers will be in an enabling position to ensure that teaching strategies emphasize beliefs, understand the preconceptions of the learners, and ultimately change the misconceptions for maximum effects of education.
Teacher practices' moderating role also underscores the professional development for teachers in the multilingual setting. Teachers who can identify and provide for a diversity of language requirements can establish welcoming and productive environments that increase effects of learning. Moreover,

outcomes alert policymakers to incorporate multilingual practices in reforms of the wider education. This would involve diversifying curricula to be multi lingual in content as well as encouraging the use of several languages for pedagogic purposes, in conjunction with training programs for teachers designed to make teaching environments better align with realities about diversity. Bring multilingualism into institutions as a resource not a barrier, thereby making schooling enhance equity as well as excellence.

8. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Although the current study has many contributions, there are several limitations that should guide future research. The sample is basically demographically or culturally biased toward one region or education system, limiting the generalization of the results to other regions or educational systems. Future research should extend the geographical and cultural scope to validate these results in different settings. Also, the cross-sectional nature of the study does not allow the derivation of causality between variables. Longitudinal designs could further open up deeper insight into the temporal dynamics of how language beliefs evolve and subsequently influence learning outcomes.

Another limitation concerns the measurement tools, which heavily relied on self-reported data and are vulnerable to biases like social desirability and recall errors. The mixed-methods approach by using observational data or experimental studies may be incorporated in future research to enhance its robustness. It can also be suggested that the future studies need further exploration of various contextual factors besides teacher practices and perceptions about multilingualism-institutional policies, peer influence, and technology integration in the learning process. Moreover, another aspect that will be worth taking up in future research is the dynamics between multilingualism and evolving digital tools to transform modern experience in learning contexts.

ACKNOWLEDGEMENT

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APPENDIX 1

Language beliefs

1. I think that learning other languages is important
2. I think that learning other languages is pointless because everyone speaks English
3. I think that learning another language helps me understand more about other cultures
4. I think that learning another language helps me understand more about my own culture
5. If I were to travel to another country, I would like to be able to speak to people in their language
6. I think that it's cool to be able to speak other languages

Vocabulary learning performance

1. I was able to learn vocabulary better when it was presented in multiple ways (Pictures Sound, Definition. Examples, etc.)
2. I was able to have a wider range of vocabulary activities using an English mobile app
3. Using a mobile app to test my vocabulary knowledge was more fun & less stressful
4. Using apps helped me access additional info, outside of using my textbooks
5. I enjoyed using a mobile app to learn.

Perception about benefits of multilingualism

1. The more languages you know, the easier it is to learn a new language
2. People who know many languages are usually smarter than others
3. People who know many languages are usually more creative than others
4. People who know many languages, usually make more money than others
5. Learning new languages helps you to better understand the languages you already know
6. Knowing many languages makes you better at other school subjects
7. Knowing many languages helps you understand other people's feelings better
8. Knowing many languages helps you to see things in different ways

Teacher practices about multilingualism

1. In my country, it is important that students with another home language than Swedish to keep this language alive
2. In my country, in addition to Swedish, it is more important to know English than any other language
3. In my country, your chances of getting a job increase if you are multilingual
4. I think that the status of the my country language is threatened by other languages
5. If you learn English well. your chances of getting a job in my country increase
6. If you learn several languages, your chances of getting a good job in my country increase

Learning effect

1. Good teacher–student interaction in online education can improve my interest in learning.
2. Good teacher–student interaction in online education keeps me from getting distracted in class.
3. Good teacher–student interaction in online education can improve my learning hours after class.
4. In online education, I can listen carefully in class, do homework seriously, and actively participate in discussions.
5. I am good at cooperating with others in online education, not only having an opinion, but also listening to others' opinions with an open mind.
6. Good teacher–student interaction in online education can improve my satisfaction with the course.
7. Good teacher–student interaction in online education can improve my professional communication skills.
8. Good teacher–student interaction in online education enables me to better use the knowledge of the major.