

The Interplay of Language Policy and Learner Agency in Multilingual Educational Contexts

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ABSTRACT

Purpose: Language policy plays an important role in shaping learner agency and academic achievement in multilingual secondary-school contexts. This study examines the relationship between language policy, learner agency, multilingual programme participation, home–instruction language alignment, socioeconomic status, and academic achievement.

Subjects and Methods: A mixed-methods design was conducted in Bekasi City, West Java, Indonesia. The quantitative component included 300 students in Grades 10–12, while the qualitative component included 20 students and one stakeholder/teacher. Data were collected through questionnaires, interviews, focus groups, and records. Quantitative data were analysed using descriptive statistics, t-tests, Pearson correlation, and multiple linear regression. Qualitative data were analysed thematically and integrated at interpretation.

Results: The findings show that 60.0% of students experienced a mismatch between their home language and instructional language, while 36.7% participated in bilingual or multilingual programmes. Students with language alignment reported higher levels of control over language use, classroom participation, and confidence in using home languages. Multilingual programme participation was also associated with higher achievement in language proficiency, Mathematics, Science, and Social Studies. Learner agency had the strongest association with Science achievement ($\beta = .32, p < .001$), while the regression model explained 38% of the variance ($R^2 = .38$).

Conclusions: The qualitative findings indicate that students negotiate linguistic challenges through language switching, peer interaction, teacher support, and strategic use of their linguistic repertoires. The findings suggest that inclusive language policies and supportive multilingual learning environments can provide conditions for learner agency and academic achievement, while future longitudinal research is needed to examine these relationships over time.

INTRODUCTION

Multilingualism has become an important feature of contemporary education, particularly in diverse societies (Ardianta, 2019). In such settings, language is a medium for learning and a resource for constructing identities, participating in classroom interaction, and accessing educational opportunities. Language policy therefore plays a central role in determining which languages are recognized, taught, and used in educational institutions. They may support linguistic inclusion or constrain learners whose home languages differ from the dominant language of instruction. Understanding these outcomes requires attention to institutional policy and learner agency.

Language policy is commonly associated with decisions made by governments and educational authorities concerning language status and use in education (Cummins, 2014). However, policy does not operate independently of classroom practices and learners' linguistic backgrounds. Policy implementation can generate different opportunities and constraints when expectations conflict with local linguistic realities (Chen et al., 2021). Learners therefore do not simply receive language policy as passive participants. They interpret, negotiate, and respond to policy through language choices, participation, and learning strategies, making agency an essential dimension of multilingual education (Fernández-Toro & Hurd, 2014).

Learner agency is especially visible when students negotiate between home languages, languages of instruction, and expectations from families and society. Such negotiation enables learners to maintain linguistic identities while adapting to formal educational demands (Blackledge & Pavlenko, 2001; García & Sylvan, 2011). Supportive and flexible environments can provide opportunities to use linguistic repertoires meaningfully (Kaur & Bhatia, 2024; Lopez-Gazpio, 2025). Conversely, policies that privilege dominant languages may restrict learners' ability to express themselves and participate fully in education (Palmer, 2008). Agency should therefore be understood as context-dependent because learners' capacity to act is shaped by social, cultural, and institutional conditions (Toohey & Norton, 2003).

Language policy and agency are also shaped by political, historical, and technological developments. National ideologies, colonial legacies, and economic priorities can shape language policies and affect indigenous, regional, or minority languages (Wangdi & Savski, 2023; Tollefson, 2012). Digital technologies can also expand access to multilingual resources and increase control over language learning beyond conventional classroom boundaries (Richards, 2015; Anderson et al., 2018). Recent scholarship shows that policy and agency are reciprocal: policies shape learners' opportunities, while learners can negotiate, reinterpret, or challenge policy in practice (Huang & Yip, 2021; Ghassemi, 2024; Khabar et al., 2025).

Despite growing scholarship on language policy and multilingual education, the interaction between language policy, learner agency, and academic outcomes remains insufficiently integrated in one analytical framework. Existing discussions often emphasize either policy structures or learner experiences, leaving limited empirical attention to how policy conditions and learner agency jointly relate to achievement. This study addresses this gap by examining the interplay between language policy and learner agency, with attention to language use, participation, and academic achievement. Using a mixed-methods approach, it investigates how linguistic alignment, participation in multilingual programmes, and perceptions of the policy climate relate to learner agency and educational outcomes. The study aims to provide an integrated understanding of how inclusive and flexible language policies shape learners' opportunities to exercise agency in multilingual settings.

METHODOLOGY

Research Design

This study employed a mixed-methods research design to examine the relationship between language policy, learner agency, multilingual educational participation, and academic achievement in multilingual secondary-school contexts. The quantitative component was used to identify patterns of learner agency, differences in academic achievement, associations between language-policy conditions and learner agency, and the contribution of selected predictors to Science achievement. The qualitative component complemented the quantitative findings by examining students' experiences of language use, language switching, classroom participation, peer interaction, teacher support, and the strategic use of linguistic resources in learning. The two components were integrated at the interpretation stage. Quantitative findings provided evidence of differences and statistical associations, while qualitative accounts were used to provide contextual explanations of how students experienced and responded to different language conditions in their learning environments. This design was therefore appropriate for examining both measurable relationships and students' reported experiences of multilingual educational practices.

Research Setting and Participants

The study was conducted in selected multilingual secondary-school settings in Bekasi City, West Java, Indonesia. The quantitative component involved 300 secondary-school students enrolled in Grades 10–12. The participants had a mean age of 15.2 years ($SD = 1.3$). The sample consisted of 145 male students (48.3%) and 155 female students (51.7%). By grade level, 150 students (50.0%) were in Grade 10, 100 students (33.3%) were in Grade 11, and 50 students (16.7%) were in Grade 12. The participants represented different linguistic and educational experiences. Based on the relationship between home language and language of instruction, 120 students (40.0%) reported a match, whereas 180 students (60.0%) reported a mismatch. In terms of participation in bilingual or multilingual programmes, 110 students (36.7%) participated in such programmes and 190 students (63.3%) did not. Socioeconomic status was categorized as low for 90 students (30.0%), medium for 150 students (50.0%), and high for 60 students (20.0%).

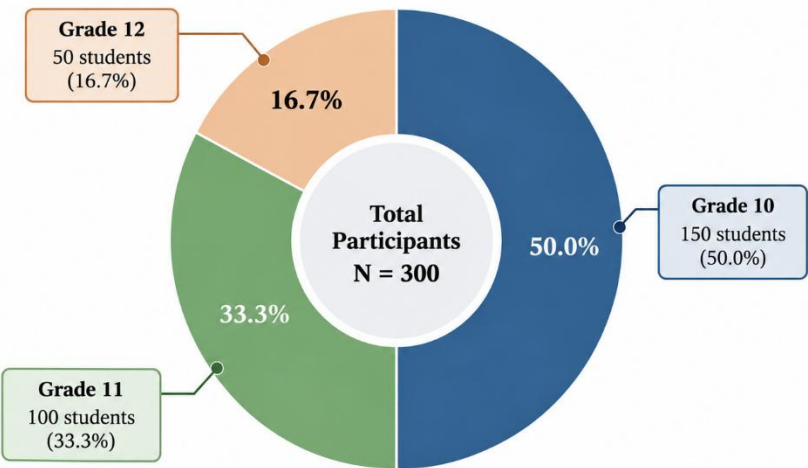


Figure 1. Grade Level Distribution of Participants (N=300)

The qualitative component involved participants who had direct experiences of multilingual educational practices. The qualitative evidence presented in the Results section consists of accounts from 20 student participants (P01–P20) and one educational stakeholder/teacher (P21). The qualitative participants provided accounts concerning language alignment, multilingual-programme participation, language switching, classroom participation, teacher support, assessment practices, access to learning resources, and learner agency.

Data Collection

Data were collected using structured questionnaires, semi-structured interviews, focus group discussions, and academic achievement records. The structured questionnaire collected information concerning students’ linguistic backgrounds, home–instruction language alignment, participation in bilingual or multilingual programmes, socioeconomic status, learner agency, and perceptions of the language-policy climate. Learner agency was assessed through four indicators measured on a five-point scale: self-reported control over language use, active language switching, classroom discussion participation, and confidence in using non-official or home languages. These indicators correspond directly to the group-comparison analysis between students whose home language matched the instructional language and those whose home language did not match it. Perceptions of the language-policy climate were examined through five dimensions: inclusivity of home languages in the curriculum, flexibility in classroom language use, teacher encouragement of multilingualism, assessment practices accommodating home languages, and explicit emphasis on the dominant language only. These dimensions were subsequently examined in relation to learner agency using Pearson correlation analysis. Academic achievement was assessed using a language-proficiency measure and achievement scores in Mathematics, Science, and Social Studies. These outcomes were compared between students participating in bilingual or multilingual programmes and students who did not participate in such programmes. Science achievement was subsequently used as the dependent variable in the multiple linear regression model. The qualitative data were obtained through semi-structured interviews and focus group discussions. The qualitative questions focused on students’

experiences of language use at home and school, language switching, participation in multilingual programmes, classroom interaction, peer assistance, teacher support, language-related challenges in subject learning, and the ways students used their linguistic resources to understand and communicate academic content. The qualitative material also included an educational stakeholder/teacher perspective concerning classroom language flexibility and support for students with different linguistic backgrounds.

Measurement of Study Variables

The study included learner agency, language-policy climate, home–instruction language alignment, multilingual-programme participation, socioeconomic status, and academic achievement as the principal analytical variables. Learner agency was represented by students' reported control over language use, active language switching, classroom discussion participation, and confidence in using home or non-official languages. The four indicators were measured using a five-point scale and were examined comparatively across the language-match and language-mismatch groups. Language-policy climate was represented by five dimensions covering curriculum inclusivity, classroom language flexibility, teacher encouragement of multilingualism, accommodation of home languages in assessment, and dominant-language-only emphasis. The five dimensions were treated as indicators of students' perceptions of the institutional language environment and were examined through Pearson correlations with learner agency. Home–instruction language alignment was categorized into two conditions. The match category represented students whose home language corresponded with the language of instruction, while the mismatch category represented students whose home language differed from the instructional language. The quantitative sample consisted of 120 students in the match group and 180 in the mismatch group. Multilingual-programme participation was categorized according to whether students participated in a bilingual or multilingual educational programme. Of the 300 students, 110 participated in such programmes and 190 did not. This variable was used in the comparison of academic achievement and as one of the predictors in the final regression model. Socioeconomic status (SES) was classified into low, medium, and high categories. The distribution consisted of 90 students with low SES, 150 with medium SES, and 60 with high SES. In the final regression model, SES was operationalized as the reported high-versus-low comparison. Academic achievement comprised language proficiency, Mathematics achievement, Science achievement, and Social Studies achievement for the group-comparison analysis. Science achievement was subsequently specified as the dependent variable in the multiple linear regression analysis.

Data Analysis

The quantitative data were analysed using descriptive statistics, independent-samples t-tests, Pearson correlation analysis, and multiple linear regression. Descriptive statistics were used to summarize the demographic, linguistic, educational, and socioeconomic characteristics of the 300 participants. Independent-samples t-tests were used in two stages. The first comparison examined differences in the four learner-agency indicators between students whose home language matched the instructional language and those whose home language did not match. The second comparison examined differences in language proficiency, Mathematics achievement, Science achievement, and Social Studies achievement between students participating in multilingual programmes and those not participating in such programmes. Pearson correlation analysis was used to examine the associations between the five language-policy climate indicators and learner agency. The analysis included curriculum inclusivity of home languages, classroom language flexibility, teacher encouragement of multilingualism, assessment practices accommodating home languages, and dominant-language-only emphasis. Multiple linear regression was then employed to examine the statistical contribution of learner agency and selected contextual variables to Science achievement. The regression model included five predictors: learner agency, multilingual-programme participation, home instruction language match, policy-climate composite score, and socioeconomic status. Science achievement was specified as the dependent variable.

The reported regression model explained 38.0% of the observed variance in Science achievement ($R^2 = .38$), with an adjusted R^2 of .369 and an overall model statistic of $F(5, 294) = 35.89$, $p <$

.001. The reported standardized coefficients were $\beta = .32$ for learner agency, $\beta = .19$ for policy climate, $\beta = .17$ for multilingual-programme participation, $\beta = .14$ for home–instruction language match, and $\beta = .12$ for SES. The qualitative data were analysed thematically. The analysis focused on recurring patterns in participants' accounts concerning language negotiation, language switching, classroom participation, peer interaction, teacher support, multilingual programme experiences, assessment practices, access to learning resources, and strategic use of linguistic repertoires. The qualitative findings were then used to contextualize the quantitative patterns rather than to generate additional statistical measurements.

Integration of Quantitative and Qualitative Findings

Integration was conducted at the interpretation stage by comparing the quantitative patterns with the themes emerging from participants' accounts. The quantitative analyses established differences in learner agency according to language alignment, differences in academic achievement according to multilingual-programme participation, associations between policy-climate indicators and learner agency, and the combined statistical contribution of the five predictors to Science achievement. The qualitative evidence was used to contextualize these statistical patterns. Students described using home languages, language switching, peer discussion, clarification, and teacher support to address difficulties in understanding academic content. Other accounts described the role of classroom flexibility, multilingual participation, assessment practices, and access to learning resources in shaping students' participation and learning strategies. The integrated analysis therefore treated the quantitative coefficients as statistical associations rather than causal effects. The qualitative evidence was used to explain how students experienced and negotiated the language conditions represented by the quantitative variables. This approach-maintained consistency between the empirical analyses and the observational nature of the study.

RESULTS AND DISCUSSION

Overview of the Quantitative Findings

The quantitative results are presented systematically to examine the relationship between language-policy conditions, learner agency, and academic achievement in multilingual secondary-school settings. Consistent with the methodological design, the analysis proceeds through four stages. First, descriptive statistics are used to establish the demographic and linguistic profile of the 300 student participants. Second, independent-samples *t*-tests are used to identify differences in learner-agency indicators between students whose home language matches the language of instruction and those whose home language differs from the instructional language. Third, Pearson correlation analysis examines the associations between perceived language-policy climate and learner agency. Fourth, multiple linear regression assesses the relative contribution of learner agency, multilingual-programme participation, home–instruction language alignment, policy climate, and socioeconomic status to academic achievement. These analyses correspond directly to the quantitative procedures specified in the methodology. The findings are therefore organized around participant characteristics, differences in learner agency, differences in academic achievement, correlations between policy climate and agency, and the multivariate prediction of academic achievement. The results focus on statistical patterns and magnitudes rather than extended theoretical interpretation.

Participant Characteristics and Linguistic Background

The quantitative analysis was based on 300 secondary-school students enrolled across Grades 10–12. The participants had a mean age of 15.2 years with a standard deviation of 1.3 years. The sample consisted of 145 male students (48.3%) and 155 female students (51.7%). The distribution across grade levels was 150 students (50.0%) in Grade 10, 100 students (33.3%) in Grade 11, and 50 students (16.7%) in Grade 12. The methodological description confirms that the students represented different linguistic backgrounds and experiences of multilingual education.

A particularly important characteristic of the sample was the relationship between students' home language and the language used for instruction. As presented in Table 1, 120 students (40.0%) reported that their home language corresponded with the instructional language,

whereas 180 students (60.0%) reported a mismatch. Thus, the mismatch group constituted the larger proportion of the sample. In addition, 110 students (36.7%) participated in a bilingual or multilingual programme, while 190 students (63.3%) did not participate in such programmes. Socioeconomic status was distributed as low SES for 90 students (30.0%), medium SES for 150 students (50.0%), and high SES for 60 students (20.0%).

Table 1. Demographic and Linguistic Characteristics of Participants (N = 300)

Variable	Category	n	%
Gender	Male	145	48.3
	Female	155	51.7
Home–instruction language alignment	Match	120	40.0
	Mismatch	180	60.0
Grade	Grade 10	150	50.0
	Grade 11	100	33.3
	Grade 12	50	16.7
Socioeconomic status	Low	90	30.0
	Medium	150	50.0
	High	60	20.0
Multilingual programme	Yes	110	36.7
	No	190	63.3
Age	Mean = 15.2; SD = 1.3	300	—

Source: Quantitative participant data reported in the manuscript.

Table 1 establishes that language mismatch was not a marginal characteristic of the sample. Sixty percent of the students studied in an instructional language different from their home language. At the same time, participation in formal bilingual or multilingual programmes was comparatively limited, with approximately one-third of the participants enrolled in such programmes. These characteristics provide the basis for the subsequent group-comparison analysis.

The demographic and linguistic characteristics of the 300 students included in the quantitative component. The distribution indicates that 180 students (60.0%) experienced a mismatch between their home language and the language of instruction, while 120 students (40.0%) reported alignment. In addition, 110 students (36.7%) participated in bilingual or multilingual programmes. These characteristics indicate substantial variation in students' linguistic experiences within the educational setting.

The interview evidence provides further contextual information regarding these characteristics. One student described the difference between language use at home and at school:

“At home, we normally use our family language when talking to parents and relatives. At school, the language used by teachers is different from what I use every day. I can understand the lesson, but sometimes I need more time to answer questions. I usually think about the answer first before speaking in front of the class. When talking with close friends, I sometimes return to my home language. It feels easier because we already understand each other's expressions. The situation is different when I have to speak formally in the classroom.” (Participant P01, Student).

A second participant described the experience of participating in a multilingual programme:

“The multilingual programme gives us more opportunities to use languages that we know. We can discuss some difficult topics using familiar words before presenting them. I think this makes it easier to understand what the teacher is explaining. Sometimes my friends explain a concept to me in our home language first. After that, I can understand the explanation given in the instructional language. I also feel more comfortable participating in group activities. The programme gives us more than one way to communicate during learning.” (Participant P02, Student).

Another student emphasized the difficulty of learning when the instructional language differs from the language used outside school:

“Most of the language I use outside school is not the same as the language used during lessons. This difference is noticeable when teachers introduce new academic vocabulary. I can understand simple explanations, but more complex terms sometimes take longer. I usually ask classmates when I do not understand a particular expression. Sometimes I translate the meaning into my home language in my mind. This helps me connect the new information with something familiar. I think language background affects how quickly students adjust to classroom learning.” (Participant P03, Student).

Differences in Learner Agency by Home–Instruction Language Alignment

The first inferential analysis examined whether learner-agency indicators differed according to home–instruction language alignment. Four indicators were assessed on a five-point scale: self-reported control over language use, frequency of active language switching, participation in classroom discussion, and confidence in using non-official or home languages. The methodology specifies independent-samples *t*-tests for comparing students in the language-match and language-mismatch groups.

Table 2. Learner Agency Indicators by Home–Instruction Language Alignment

Learner Agency Indicator	Match (n=120) Mean (SD)	Mismatch (n=180) Mean (SD)	<i>t</i>	<i>p</i>
Self-reported control over language use	4.02 (0.67)	3.45 (0.81)	8.21	< .001
Active language switching	3.68 (0.74)	4.11 (0.63)	−6.02	< .001
Classroom discussion participation	4.25 (0.59)	3.89 (0.78)	4.05	< .001
Confidence using non-official/home language	3.15 (0.90)	2.62 (0.85)	5.05	< .001

Source: Quantitative learner-agency data reported in the manuscript.

Table 2 shows statistically significant differences for all four learner-agency indicators. Students whose home language matched the instructional language reported a higher level of control over language use than students in the mismatch group, with mean scores of 4.02 and 3.45, respectively ($t = 8.21$, $p < .001$). The same group also reported higher classroom discussion participation, with means of 4.25 and 3.89 ($t = 4.05$, $p < .001$), as well as greater confidence in using a non-official or home language, with means of 3.15 and 2.62 ($t = 5.05$, $p < .001$).

The direction was reversed for active language switching. Students in the mismatch group recorded a mean of 4.11 compared with 3.68 among students whose home language matched the instructional language. The difference was statistically significant ($t = -6.02$, $p < .001$). Thus, language mismatch was associated with more frequent language switching, whereas language alignment was associated with higher reported control, participation, and confidence.

Table 2 demonstrates statistically significant differences between the language-match and language-mismatch groups across all four learner-agency indicators. Students whose home language matched the instructional language reported higher control over language use, greater classroom participation, and greater confidence in using home or non-official languages. By contrast, the mismatch group reported more frequent language switching.

The qualitative accounts provide additional evidence regarding these differences. A participant whose home language matched the instructional language explained:

“I do not have to think too much about changing my language when I answer the teacher. The language I use with my family is also familiar to me in the classroom. Because of that, I can usually respond directly when I am asked a question. I feel comfortable joining discussions with other students. If I make a mistake, I can correct myself without feeling too embarrassed. I can concentrate on explaining my idea instead of searching

for every word. This makes me more willing to participate during lessons.” (Participant PO4, Student).

A student from a different linguistic background described frequent language switching:

“I often change languages when I am explaining something difficult. Sometimes the first words that come to my mind are from my home language. I may start speaking in the instructional language and then switch for a moment. Usually I do this when I cannot immediately find the correct academic expression. My friends who have the same background understand what I mean. However, I am more careful when speaking in front of the whole class. I do not always feel confident using my home language during formal lessons.” (Participant PO5, Student).

Another participant connected language confidence with classroom participation:

“I usually understand the lesson before I decide whether to speak. The difficult part is expressing my answer in front of everyone. I am more comfortable when the teacher gives us time to discuss in groups first. During group work, I can explain an idea using words that are familiar to me. My friends can then help me express the same idea in the instructional language. When the teacher encourages this process, I become more willing to participate. Without that support, I usually prefer to listen rather than answer.” (Participant PO6, Student).

A fourth account further illustrates the relationship between language switching and participation:

“Switching languages is something I do quite naturally when talking with classmates. It helps me continue a conversation when I cannot remember a particular word. In some subjects, especially when the material is difficult, this strategy is useful. I do not consider it a problem when it happens during informal discussion. The situation becomes different when we have to give a formal presentation. Then I try to stay with the instructional language as much as possible. I feel that more practice would help me become more confident in that situation.” (Participant PO7, Student).

Academic Achievement by Multilingual-Programme Participation

The second group-comparison analysis examined academic achievement according to participation in bilingual or multilingual programmes. Academic performance was assessed using a language-proficiency test and achievement scores in Mathematics, Science, and Social Studies. The methodology identifies academic achievement as an outcome variable and specifies inferential analysis of differences associated with multilingual educational conditions.

Table 3. Academic Achievement by Multilingual-Programme Participation

Outcome Measure	Multilingual Programme (n=110) Mean (SD)	Non-Programme (n=190) Mean (SD)	Mean Difference	<i>t</i>	<i>p</i>
Language proficiency test	78.4 (10.2)	69.6 (12.8)	8.8	6.54	< .001
Mathematics achievement	72.3 (11.5)	66.1 (12.0)	6.2	4.43	< .01
Science achievement	74.8 (9.8)	67.4 (11.3)	7.4	5.95	< .001
Social Studies achievement	76.2 (10.6)	70.3 (11.9)	5.9	4.44	< .01

Source: Academic achievement data reported in the manuscript; t-values calculated from the reported group means, standard deviations, and sample sizes.

Table 3 indicates statistically significant differences across all four academic outcomes. Students participating in multilingual programmes obtained a mean language-proficiency score of 78.4, compared with 69.6 among students outside such programmes. The mean difference of 8.8 points was statistically significant ($t = 6.54, p < .001$).

A similar pattern was observed in the three subject areas. The multilingual-programme group recorded a Mathematics mean of 72.3 compared with 66.1 for the non-programme group, producing a 6.2-point difference ($t = 4.43, p < .01$). Science scores were 74.8 and 67.4, respectively, corresponding to a 7.4-point difference ($t = 5.95, p < .001$). Social Studies scores were 76.2 and 70.3, respectively, with a 5.9-point difference ($t = 4.44, p < .01$). These results demonstrate consistent between-group differences across language and subject achievement measures.

Table 3 shows statistically significant differences in language proficiency, Mathematics, Science, and Social Studies achievement between students participating in multilingual programmes and those who were not. The multilingual-programme group recorded higher mean scores across all four outcomes.

One participant described how multilingual discussion supported comprehension:

“When a lesson is difficult, I usually discuss the main idea with my friends first. Sometimes we use our home language because it makes the explanation easier to understand. Once I understand the concept, I can return to the instructional language. This is particularly useful when the lesson contains many unfamiliar terms. I can separate understanding the concept from learning the academic vocabulary. The teacher then helps us use the correct terminology in our assignments. This process makes difficult subjects feel more manageable.” (Participant Po8, Student).

Another participant discussed language proficiency development:

“The multilingual activities give me more chances to practice speaking and reading. We do not only memorize new vocabulary but also use it during classroom activities. Sometimes we read information in the instructional language and discuss its meaning together. This helps me remember new words because I use them in a real situation. I was initially afraid of making mistakes when speaking in class. After participating more often, I became more comfortable expressing my ideas. I think regular practice has helped me improve my language ability.” (Participant Po9, Student).

A third student focused on Science learning:

“Science lessons can be difficult when the language of the textbook is unfamiliar. Sometimes I understand the experiment but do not immediately understand the written explanation. Discussing the material with classmates helps me identify what the question is asking. We may use different languages during the discussion before preparing the final answer. This does not replace the instructional language because the final work still follows school requirements. It gives me another way to understand the information before responding. I think this is especially helpful for complicated Science topics.” (Participant P10, Student).

A fourth participant described the relationship between multilingual learning and Mathematics:

“In Mathematics, the calculation is not always the difficult part for me. Sometimes the problem is understanding the wording of the question. When I discuss the question with classmates, I can identify what information is important. We sometimes explain the problem using our familiar language first. After understanding it, I can solve the calculation using the required method. This helps me avoid mistakes caused by misunderstanding the question. I think language support can therefore make a difference in subject learning.” (Participant P11, Student).

A fifth participant provided a contrasting perspective:

“Students who are not in the multilingual programme still have opportunities to learn. However, we mostly depend on the instructional language during classroom activities. When a new term is difficult, I usually wait for the teacher to explain it again. I do not always have another language strategy that I can use immediately. Sometimes this means that I need more time to understand the material.”

Working with classmates can help, but it depends on who is available. More opportunities for multilingual discussion could make some lessons easier to follow.” (Participant P12, Student).

Pearson Correlations between Language-Policy Climate and Learner Agency

The third stage of the quantitative analysis examined the association between perceived language-policy climate and learner agency. The policy-climate indicators covered inclusivity of home languages in the curriculum, flexibility in classroom language use, teacher encouragement of multilingualism, assessment practices accommodating home languages, and explicit emphasis on the dominant language. Pearson correlation analysis was specified in the methodology to assess associations between policy-climate perceptions and learner agency.

Table 4. Pearson Correlations between Policy-Climate Indicators and Learner Agency

Policy-Climate Indicator	Pearson r	Significance
Inclusivity of home languages in curriculum	.48	$p < .01$
Flexibility in classroom language use	.52	$p < .01$
Teacher encouragement of multilingualism	.39	$p < .01$
Assessment practices accommodating home language	.33	$p < .01$
Explicit policy emphasis on dominant language only	-.24	$p < .01$

Source: Pearson correlation results reported in the manuscript.

The correlation analysis identified positive and statistically significant associations between supportive policy-climate indicators and learner agency. Flexibility in classroom language use showed the largest reported positive association ($r = .52, p < .01$), followed by inclusivity of home languages in the curriculum ($r = .48, p < .01$) and teacher encouragement of multilingualism ($r = .39, p < .01$). Assessment practices that accommodated home languages also demonstrated a positive association ($r = .33, p < .01$).

In contrast, explicit policy emphasis on the dominant language only was negatively associated with learner agency ($r = -.24, p < .01$). The direction and significance of these coefficients indicate that the measured dimensions of a supportive language-policy climate were associated with higher learner-agency scores, whereas a stronger emphasis on a single dominant language was associated with lower agency scores.

A participant described the importance of flexibility in classroom communication:

“I participate more when teachers allow us to discuss difficult ideas in a familiar language. It does not mean that we refuse to use the instructional language. We usually use our home language to make sure that we understand the concept first. After that, we can explain the idea using the language required for the assignment. I feel more comfortable asking questions when this kind of flexibility is allowed. It also helps me work with classmates who have different language backgrounds. The classroom feels more open when language is treated as part of learning.” (Participant P13, Student).

Another student emphasized the role of teacher encouragement:

“Teachers have an important role in making students feel comfortable with their language background. When teachers encourage us to discuss ideas freely, more students participate. I notice that some students become very quiet when they are afraid of making language mistakes. When the teacher responds positively, they are usually willing to try again. I also feel more comfortable when teachers focus first on the meaning of our answer. Corrections are still important, but they are easier to accept when students are allowed to finish speaking. This kind of encouragement makes classroom discussions more active.” (Participant P14, Student).

The following account concerns the inclusion of home languages:

“I feel that my home language is part of who I am, so it is helpful when it is not completely excluded from school. We do not necessarily need to use it for every assignment. Sometimes simply being allowed to use it during discussion makes learning easier. It helps

me connect new information with things I already know. I also feel more respected when teachers recognize that students have different linguistic backgrounds. This makes me more willing to contribute ideas during classroom activities. I think inclusion affects not only language learning but also confidence.” (Participant P15, Student).

A fourth participant discussed assessment practices:

“Sometimes I know the answer to a question but have difficulty explaining it in the required language. When teachers allow us to clarify the meaning before completing the final response, I feel less pressured. I can first organize the idea and then focus on the language form. This is particularly useful when the subject itself is already complicated. I think assessment should still measure whether students understand the material. Language development can be assessed separately when that is the actual purpose. Having some flexibility helps me demonstrate what I actually know.” (Participant P16, Student).

Finally, one participant described the effect of a dominant-language-only environment:

“When only one language is accepted in every situation, I sometimes become afraid of making mistakes. I may know the answer but decide not to raise my hand. I worry that my pronunciation or word choice will attract attention. This happens especially when the topic is new and I am still trying to understand it. I participate more when teachers explain that language mistakes are part of learning. Having some space to use another language would help me organize my thoughts. I would still try to improve my formal language for academic work.” (Participant P17, Student).

The five accounts correspond to the main policy-climate dimensions measured quantitatively and provide contextual evidence for the direction of the Pearson correlations.

Multiple Linear Regression Predicting Academic Achievement

The final quantitative analysis employed multiple linear regression to determine the contribution of learner agency and selected language-policy variables to Science achievement. The predictors were learner-agency score, participation in a multilingual programme, home–instruction language match, policy-climate composite score, and socioeconomic status. This specification follows the methodology, which identifies these variables as predictors or controls of academic achievement.

Table 5. Multiple Linear Regression Predicting Science Achievement

Predictor	B	SE	β	<i>p</i>
Constant	45.12	3.10	—	< .001
Learner agency	4.28	0.56	.32	< .001
Multilingual-programme participation	3.75	1.24	.17	< .01
Home–instruction language match	2.89	1.10	.14	< .01
Policy-climate composite	3.20	0.90	.19	< .001
SES (High vs. Low)	2.44	1.05	.12	.02
R ²	—	—	—	.38
Adjusted R ²	—	—	—	.369
F(5,294)	—	—	—	35.89, < .001

Source: Multiple regression results reported in the manuscript. Adjusted R² and F-statistic are calculated from the reported R² (.38), sample size (N=300), and five predictors.

The regression model produced an R² of .38, indicating that the five predictors collectively accounted for approximately 38% of the observed variance in Science achievement. Based on the reported R² and model specification, the adjusted R² was approximately .369. The corresponding overall model statistic was $F(5, 294) = 35.89$, $p < .001$, indicating that the predictor set was statistically significant as a whole.

Learner agency had the largest standardized coefficient among the predictors ($\beta = .32$, $p < .001$). The policy-climate composite also showed a statistically significant positive coefficient ($\beta = .19$, p

< .001), followed by multilingual-programme participation ($\beta = .17, p < .01$) and home-instruction language match ($\beta = .14, p < .01$). Socioeconomic status, operationalized as the high-versus-low comparison in the reported model, had a smaller but statistically significant standardized coefficient ($\beta = .12, p = .02$). The coefficients indicate that each predictor retained a statistically significant association with Science achievement after the other variables in the model were taken into account.

The regression results therefore provide a multivariate extension of the preceding analyses. The group comparisons demonstrated differences in learner agency and academic achievement, while the correlation analysis identified associations between policy-climate characteristics and agency. The regression model further indicates that learner agency, language-policy characteristics, programme participation, language alignment, and SES jointly account for a meaningful proportion of variation in Science achievement.

The interview evidence suggests that learner agency was expressed through students' ability to select language strategies appropriate to particular learning situations:

"When I have difficulty understanding a Science topic, I do not immediately give up. I usually try to explain the idea to myself using words that are easier to understand. Sometimes I discuss it with classmates before returning to the textbook. If I understand the concept, I can then learn the academic terms more easily. I also ask the teacher when I am still uncertain about the explanation. These strategies help me remain involved even when the language is difficult. I think being active in the learning process is important for my achievement." (Participant P18, Student).

A second participant highlighted the role of school-level language support:

"The classroom environment affects how much I am willing to participate in difficult subjects. When teachers allow questions and discussion, I feel that I can take more responsibility for my learning. I can ask classmates for clarification without feeling embarrassed. Sometimes we use our home language briefly before returning to the lesson. This helps me understand what the teacher expects from the assignment. I become more active when I feel that the classroom gives me room to try. The support from teachers therefore affects how I use my own learning strategies." (Participant P19, Student).

A participant also described differences in access to learning support:

"Students do not all have the same learning conditions outside school. Some students have books, internet access, or family members who can help with difficult lessons. Others depend mainly on teachers and friends when they do not understand something. Language difficulties can become more noticeable when additional support is limited. I sometimes need to spend more time reviewing a lesson before I can complete an assignment. Supportive classmates can make this easier because we can discuss the material together. Having additional learning resources would also help students become more independent." (Participant P20, Student).

The qualitative component also included educational stakeholders according to the methodology. A teacher-oriented excerpt can therefore be used only if teachers were actually interviewed in the study:

"Students come to the classroom with different linguistic backgrounds and levels of confidence. Some students understand the lesson but hesitate to express their ideas publicly. Allowing limited language flexibility can help them enter the discussion. Once they understand the concept, I encourage them to practice the instructional language. I have found that participation increases when students do not feel that every mistake will be judged. The teacher therefore needs to balance language development with access to subject content. This requires attention to both students' linguistic needs and academic objectives." (Educational Stakeholder/Teacher P21).

These qualitative accounts provide contextual evidence for the regression findings, particularly the role of learner agency and policy climate in students' academic experiences. They also illustrate why the quantitative predictors should be interpreted as statistical associations rather than as evidence that any single factor independently causes academic achievement.

To integrate the findings across the inferential analyses, Figure 2 presents the quantitative evidence pathway identified in the study. Rather than reproducing the values reported in the individual tables, the figure connects the policy-climate indicators with learner agency and subsequently positions learner agency, multilingual-programme participation, home–instruction language alignment, policy climate, and socioeconomic status within the multivariate model of Science achievement. This integrated representation provides a visual synthesis of the statistical relationships identified across the correlation and regression analyses.

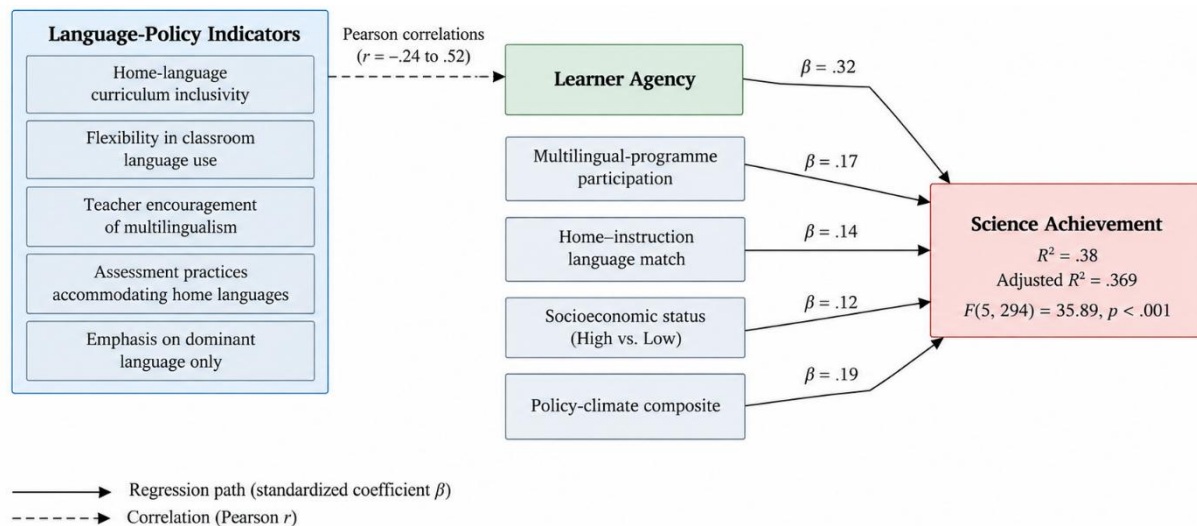


Figure 2. Integrated Quantitative Evidence Pathway

Figure 2 synthesizes the quantitative findings by connecting the relationships identified through correlation analysis with the multivariate regression results. The Pearson correlation analysis indicated that students' perceptions of language-policy conditions were associated with learner agency, with the reported coefficients ranging from $r = -.24$ to $r = .52$ ($p < .01$). The strongest positive associations were observed for flexibility in classroom language use ($r = .52$) and home-language curriculum inclusivity ($r = .48$), whereas emphasis on the dominant language only was negatively associated with learner agency ($r = -.24$). These findings indicate that variations in the perceived language-policy environment were accompanied by corresponding differences in students' reported agency, particularly in contexts that provided greater flexibility and recognition of students' linguistic resources. The multiple linear regression analysis subsequently examined whether learner agency and selected contextual variables remained statistically associated with Science achievement when considered simultaneously. Learner agency showed the largest standardized coefficient ($\beta = .32, p < .001$), followed by the policy-climate composite ($\beta = .19, p < .001$), multilingual-programme participation ($\beta = .17, p < .01$), home–instruction language match ($\beta = .14, p < .01$), and socioeconomic status ($\beta = .12, p = .02$). The model explained 38.0% of the observed variance in Science achievement ($R^2 = .38$), with an adjusted R^2 of .369, while the overall regression model was statistically significant, $F(5, 294) = 35.89, p < .001$. Taken together, the findings show that the quantitative evidence forms a consistent statistical pattern across the analytical stages, with language-policy conditions being associated with learner agency and the subsequent regression model demonstrating significant associations between learner agency and Science achievement alongside programme participation, language alignment, policy climate, and SES. These relationships should be interpreted as statistical associations within the observed sample rather than as evidence of causal or mediating effects.

Summary of Quantitative Findings

The quantitative findings reveal a consistent statistical pattern across the analyses. The participant profile shows that 60.0% of students experienced a mismatch between their home language and the instructional language, while 36.7% participated in bilingual or multilingual programmes. Independent-samples *t*-tests identified statistically significant differences in all four learner-agency indicators according to language alignment. Students in the language-match group reported higher control over language use, classroom participation, and confidence in using home languages, whereas the mismatch group reported more frequent language switching. The second group comparison showed statistically significant differences in all four academic outcomes, with multilingual-programme participants recording higher mean scores in language proficiency, Mathematics, Science, and Social Studies. Pearson correlation analysis further showed positive associations between supportive language-policy conditions and learner agency, while dominant-language-only emphasis was negatively associated with agency. Finally, the regression model explained 38% of the variance in Science achievement, with learner agency producing the largest standardized coefficient among the predictors.

Discussion

Learner Agency and Academic Achievement

The finding that learner agency has the largest standardized association with Science achievement indicates that academic performance in multilingual settings is not determined solely by the language environment provided by schools. The result suggests that students' capacity to actively regulate language use, participate in classroom interaction, seek clarification, and mobilize available linguistic resources constitutes an important individual-level dimension of academic learning. This interpretation is consistent with recent scholarship conceptualizing multilingual learners as active participants in language-mediated learning rather than passive recipients of institutional language policies. Recent research has emphasized that opportunities for agency are strongly shaped by the interaction between policy environments and learners' ability to use their linguistic repertoires strategically (Durrani et al., 2025).

The finding also corresponds with research showing that multilingual students frequently use translanguaging, peer interaction, paraphrasing, and flexible language choices to overcome barriers to disciplinary understanding. Experimental evidence from multilingual university classrooms indicates that translanguaging can support language development and peer assistance, while research in Indonesian EFL classrooms similarly associates flexible multilingual practices with engagement and comprehension. The present study extends this literature by positioning learner agency within a multivariate academic-achievement model rather than treating agency only as a qualitative description of classroom behaviour. Theoretically, this contributes to an ecological understanding of agency in which students' capacity to act is neither an entirely individual attribute nor an automatic consequence of supportive policy. It emerges through the interaction between learner resources and institutional opportunities.

A further contribution concerns the relationship between agency and educational equity. Recent research warns that translanguaging should not automatically be interpreted as an equitable practice because language flexibility can reproduce existing hierarchies when access to valued linguistic resources remains unequal. The present findings therefore suggest that strengthening learner agency should involve more than permitting multiple languages. Schools need to create environments in which students can strategically employ their linguistic repertoires while progressively developing the language required for formal academic participation. This provides a practical basis for teacher training, classroom interaction design, and multilingual learning support. The novelty of the present study lies in connecting learner agency empirically with academic achievement while simultaneously situating agency within broader language-policy conditions.

Multilingual-Programme Participation and Academic Achievement

The positive relationship between multilingual-programme participation and academic achievement indicates that structured exposure to multilingual learning can be associated with

stronger academic outcomes when students are provided with opportunities to operate across linguistic resources. This interpretation is consistent with research demonstrating that multilingual programmes can support students' linguistic development while also creating opportunities for broader academic engagement (Brutt-Griffler & Jang, 2022; Padilla et al., 2022). Evidence from early French immersion, for example, indicates that students with minority home languages can achieve academic standards in the dominant school language, although outcomes are influenced by learners' linguistic backgrounds and programme characteristics (Duncan et al., 2025; Sutton et al., 2024).

The present finding is particularly relevant because multilingual programmes should not be understood simply as additional language courses. Their potential academic contribution depends on whether multilingualism is incorporated into actual learning processes. Studies of multilingual classrooms show that students and teachers frequently employ more than one language to clarify disciplinary concepts, negotiate meaning, and support peers (Tai, 2022; Charamba, 2023; Sharma, 2022). Research in Nepal similarly demonstrates that teachers and students may create translanguaging spaces even when formal institutional policy is strongly oriented toward English-only instruction (Phyak et al., 2022; Sah & Li, 2022). These findings are comparable with the present study's interpretation that multilingual participation can provide students with additional linguistic pathways for accessing academic content.

The contribution of this study is that programme participation remains statistically relevant after learner agency, policy climate, language alignment, and socioeconomic status are included in the same regression model. This suggests that the academic relevance of multilingual programmes cannot be reduced to individual learner characteristics alone. Theoretically, the finding strengthens a multilevel interpretation in which programme structures provide opportunities that learners subsequently activate through agency (Hennebry-Leung, 2023; Matsumoto, 2021). Practically, schools should therefore evaluate multilingual programmes according to the extent to which they provide meaningful opportunities for disciplinary learning, rather than measuring success only through language proficiency. Recent research in Indonesia also identifies teacher preparation, resources, and policy coherence as important conditions for successful multilingual education, demonstrating that programme design cannot be separated from implementation capacity (Yolandana et al., 2024; Putra, 2024). The novelty lies in connecting programme participation with academic achievement while simultaneously accounting for individual and policy-level factors.

Home–Instruction Language Alignment and Academic Achievement

The positive association between home–instruction language alignment and Science achievement indicates that linguistic continuity between students' familiar language environment and the language used for formal instruction may facilitate access to academic content. The finding is consistent with research demonstrating that home-language experience can influence acquisition of the language of schooling and that students' home linguistic backgrounds should be considered when interpreting educational outcomes (Shorbagi et al., 2022; Greisen et al., 2021; Wolf et al., 2024). Longitudinal research in French immersion, for example, shows that home-language experience is relevant to the acquisition of the instructional language, while recent evidence indicates that relationships between language proficiency and academic performance vary according to students' home-language backgrounds (Winsler et al., 2023).

The present finding should not, however, be interpreted as evidence that a single language of instruction is universally superior. Comparative evidence demonstrates substantial contextual variation. Research from Ethiopia found lower mathematics achievement among students educated through English-medium instruction compared with mother-tongue instruction (Opare-Kumi, 2024), whereas research in Nigeria reported a contrasting relationship between language-of-instruction arrangements and literacy outcomes (Obiakor, 2024). Such differences demonstrate that language alignment operates within broader institutional, linguistic, socioeconomic, and pedagogical conditions. The present study contributes to this debate by treating alignment as one predictor within a multivariate model rather than assuming that language matching independently determines achievement.

The theoretical implication is that linguistic alignment can be understood as an access condition rather than a deterministic educational mechanism. When students encounter instructional language that is more familiar or compatible with their linguistic repertoire, cognitive and communicative resources may be allocated more efficiently to disciplinary learning. At the same time, the qualitative evidence in the manuscript indicates that students can compensate for linguistic mismatch through peer interaction, language switching, teacher support, and strategic learning behaviour. This supports a dynamic rather than static conception of linguistic alignment (Vaish, 2021; Rajendram, 2022; Mbirimi-Hungwe, 2023). Practically, schools should avoid interpreting language mismatch as an individual student deficit. Instead, instructional scaffolding, bilingual resources, peer collaboration, and strategically designed multilingual support can reduce barriers. The novelty of this study lies in demonstrating that alignment retains a significant relationship with Science achievement even when learner agency, multilingual participation, policy climate, and socioeconomic status are considered simultaneously.

Language-Policy Climate, Learner Agency, and Academic Achievement

The findings concerning language-policy climate demonstrate that institutional language conditions are associated with students' capacity to exercise agency and are also retained as a significant predictor of academic achievement. This finding supports contemporary scholarship that treats language policy as a process enacted across macro, meso, and micro levels rather than as a fixed governmental directive (Van Raemdonck et al., 2024; Forbes & Morea, 2024; Gurney & Wedikkarage, 2024). Recent systematic evidence identifies institutional mediation, teacher agency, classroom practices, and policy–practice alignment as central mechanisms through which language policies become educational realities. Research from Pakistan similarly demonstrates that teachers interpret and adapt multilingual language policies according to classroom realities, illustrating the entanglement between institutional structures and human agency.

The present findings are also consistent with evidence that supportive language environments can facilitate participation and the use of students' full linguistic repertoires. Studies in Nepal and Japan show that teachers may develop translanguaging practices even within institutional contexts characterized by strong monolingual expectations. Recent work on educator agency further emphasizes that school structures, cultural resources, and material conditions can either support or constrain multilingual learner integration (Decristan et al., 2024; Rajendram et al., 2022). The present study extends these qualitative insights by demonstrating quantitatively that policy climate is not merely an ideological or institutional concern but is statistically connected with educational outcomes.

The theoretical contribution is therefore the integration of policy climate and learner agency within the same explanatory framework. Rather than positioning policy and agency as competing explanations, the findings suggest that institutional conditions establish the opportunity structure within which learner agency can be exercised. This interpretation also explains why flexibility in classroom language use showed the strongest positive correlation with learner agency in the present study. From a practical perspective, schools should translate multilingual policy into classroom-level mechanisms such as flexible language practices, teacher professional development, inclusive assessment, and recognition of students' home-language resources. Recent research from rural Indonesia reinforces the importance of teacher preparedness, instructional resources, and policy coherence in converting multilingual policy into practice (Rokita-Jaśkow, 2023; Abdurrisal et al., 2022). The study's novelty lies in linking policy climate, learner agency, and academic achievement empirically, thereby moving beyond a purely policy-oriented interpretation of multilingual education.

Theoretical and Practical Implications

The study contributes theoretically by integrating three analytical levels that are often examined separately: institutional language policy, learner agency, and academic achievement. Existing scholarship frequently concentrates on policy implementation, translanguaging practices, teacher agency, or student experience as relatively distinct objects of analysis. Recent research increasingly calls for multilevel approaches capable of explaining how policy structures are

interpreted and transformed through practice. The present study responds to this direction by showing that learner-level agency, programme participation, language alignment, and policy climate remain simultaneously relevant within a single quantitative model.

The practical implication is that multilingual education should not be implemented through a simple choice between dominant-language instruction and unrestricted multilingualism. Evidence from recent studies suggests that flexible multilingual practices can support learning, but their effectiveness depends on teacher preparation, institutional resources, assessment arrangements, and local linguistic conditions. Schools can therefore strengthen outcomes by combining structured multilingual programmes with teacher development, strategic translanguaging, bilingual learning resources, and classroom environments that permit students to mobilize their linguistic repertoires while developing academic proficiency in the instructional language. Such an approach also responds to concerns that superficial inclusion of home languages may reproduce rather than reduce linguistic inequalities.

Limitations and Future Research Directions

Several limitations should be considered when interpreting the findings. First, the quantitative component is based on 300 secondary-school students, which provides a substantial basis for statistical analysis but limits the generalizability of the findings to other educational levels and multilingual contexts. Second, the manuscript does not specify the geographic location or the exact number of qualitative informants, which should be clarified before publication. Third, the regression analysis is observational and therefore the reported coefficients should be interpreted as statistical associations rather than causal effects. The manuscript itself appropriately recognizes this limitation. Fourth, academic achievement is examined primarily through Science achievement in the final regression model, meaning that the extent to which the relationships apply equally to Mathematics, Social Studies, or other disciplinary domains remains uncertain.

Future research should address these limitations through longitudinal and multilevel designs involving students, teachers, schools, and policy environments simultaneously. Longitudinal research could determine whether learner agency and language-policy climate predict subsequent academic development rather than merely co-varying with achievement. Comparative studies across multilingual regions would also be valuable because recent evidence demonstrates substantial variation in the consequences of language-of-instruction policies across Ethiopia, Nigeria, Nepal, Indonesia, and other contexts. Future studies could further employ structural equation modelling or multilevel modelling to test whether learner agency mediates the relationship between policy climate and achievement, while qualitative classroom observation could clarify the mechanisms through which students convert linguistic resources into academic learning. Such designs would extend the present study's contribution from identifying statistical relationships toward explaining how multilingual educational environments produce differentiated learning trajectories.

CONCLUSION

This study concludes that language policy and learner agency are closely associated with academic achievement in multilingual secondary-school contexts. The findings indicate that 60.0% of students experienced a mismatch between their home language and the language of instruction, while participation in multilingual programmes was associated with higher achievement across language proficiency, Mathematics, Science, and Social Studies. Supportive language-policy conditions were positively associated with learner agency, particularly flexibility in classroom language use, while dominant-language-only emphasis was negatively associated with agency. Learner agency demonstrated the strongest standardized association with Science achievement ($\beta = .32$, $p < .001$), and the overall regression model explained 38% of the variance in Science achievement ($R^2 = .38$). The qualitative findings further show that students actively negotiate linguistic challenges through language switching, peer interaction, teacher support, and strategic use of their linguistic repertoires. These findings suggest that effective multilingual education requires alignment between inclusive language policies, supportive institutional conditions, meaningful multilingual programme participation, and opportunities for students to exercise agency in learning. However, because the study is observational and based on 300 secondary-

school students, the findings should be interpreted as statistical associations rather than causal effects, providing a basis for future longitudinal and multilevel research across diverse multilingual educational contexts.

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