Multilingualism and Cultural Awareness: A Correlational Analysis in Language Education in Indonesian Higher Education

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Abstract

Balancing teaching national, regional, and foreign languages presents a challenge for higher education, illustrated by the use of hypertext for multilingual communication. This study investigates the correlation between proficiency in multilingualism and cultural awareness among higher education students. Embedded mixed methods design explores the relationship between multilingualism and cultural awareness quantitatively and qualitatively in higher education in Indonesia. Participants are from various universities in Indonesia, including the State University of Makassar, the State University of Jakarta, the State University of Surabaya, Palangka Raya State Islamic Institute, Timor University, and the University of Northern Sumatra, and they have diverse ethnic and linguistic backgrounds. The questionnaire distributed via Google Form passed validity and reliability tests. The quantitative research used Pearson's r analysis of the relationship between multilingualism learning and cultural awareness. In the qualitative strand, thematic analysis investigates cultural awareness-based multilingualism learning strategies. The research findings reinforce the positive and significant relationship between multilingual learning and cultural awareness, suggesting multilingual competence not only enhances cultural knowledge and participation in cultural practices but deepens understanding of the socio-cultural context and strengthens capacity and positive attitudes towards cultural learning. The study aids practitioners in developing inclusive learning strategies and provides policymakers with empirical evidence for crafting policies to empower multicultural communities.

Keywords: *Cultural Awareness, Language Learning, Multilingualism, Indonesian Higher Education*

Introduction

The advancement of science and technology necessitates global communication among nations employing international languages. Many countries utilize both national and local languages concurrently, resulting in multilingualism. This phenomenon complicates the landscape of multilingual language instruction worldwide (Alshihry, 2024; Fang et al., 2023; Gao & Yang, 2023). Therefore, teaching multilingualism must begin from early childhood. (Aleksić et al., 2024; Opare-Kumi, 2024; Perrigo et al., 2024). In Indonesia, classroom studies on multilingual students encompassing various local languages, Indonesian, and foreign languages stem from ethnic and cultural motivations, including Bugis, Makassar, Toraja, Java, Batak, and others. Language serves as a conduit for expressing emotions and ideas in the modern digital era (Li et al., 2023), thereby fostering multilingual acceptance of information within communities (Tardel et al., 2023, p. 1727).

Remote communities in Northern Australia have long engaged in multilingual communication (Ireland et al., 2024, p. 1). Multilingualism is gaining prominence in the globalized landscape and aspirations for social mobility, such as enhancing individual global competitiveness and promoting educational internationalization (Choi & Poudel, 2024; Xu & Krulatz, 2023). In Indonesian higher education, multilingualism signifies an individual's capacity to communicate across cultures, underlining its significance as a tool for cross-cultural awareness and comprehension. Pedagogical innovations must align with the principles of multilingualism (Perry, 2023, p. 1565). Research in this domain sheds light on how language education can enhance multilingual competence, including through translation (Fortunato Queiroz et al., 2023; Mohebbi, 2023; Shidhaye et al., 2023), adaptation, and cross-culturalism (Ionov et al., 2023; Kaibao & Afzaal, 2024), as well as reading literacy motivating multilingual learning (Anggia & Habók, 2023).

Cultural awareness among university students strengthens national identity and intercultural dialogue. The process of cultural reproduction through educational systems varies across nations, with school-level factors contributing to social stratification (Azubuike et al., 2023, p. 1). Balancing the teaching of Indonesian as a national language, regional languages as cultural heritage, and foreign languages as global communication tools poses a challenge for higher education institutions, exemplified by hypertext as a medium for multilingual communication. The adoption of multilingual education in Kazakhstan as a response to globalization integrates the country into the global community (Kemaladinovna et al., 2023, p. 85). Vocabulary presents itself in a series of euphemistic expressions (Azis & Juanda, 2023, p. 51).

Several researchers have explored the relationship between multilingualism and cultural awareness (Rainey et al., 2023; Siebenhütter, 2023; Wu & Forbes, 2023), enriching students' multilingual identity through Japanese language acquisition. Sociocultural shifts influence students' identity development, fostering patterns of group convergence and divergence (Wu & Forbes, 2023). Research on multilingual identity encompasses speakers in Northeast Thailand (Siebenhütter, 2023) and patients engaging multilingual chatbots (Rainey et al., 2023). Despite previous studies, there is a dearth of research on multilingualism and cultural awareness in the context of classroom learning encompassing local languages, Indonesian, and foreign languages among university students. This study addresses the research gap by focusing on multilingualism in higher education, drawing from the interdisciplinary fields of

anthropolinguistics and sociocultural studies. It aims to enhance educational strategies that comprehensively develop language skills and promote understanding and appreciation of cultural diversity. The research hypothesis is as follows:

H_{1a-c}: MC has a significant relationship with MLP, PF, and SI.

H_{1d-e}: MLP has a significant relationship with PF and SI.

H_{1f}: PF has a significant relationship with SI.

H_{2a-c}: CKC has a significant relationship with CPP, SC, and CAC.

H_{2d-e}: CPP has a significant relationship with SC and CAC.

H_{2f}: SC has a significant relationship with CAC.

H_{3a-d}: MC has a significant relationship with CKC, CPP, SC, and CAC.

H_{3e-h}: MLP has a significant relationship with CKC, CPP, SC, and CAC.

H_{3i-l}: PF has a significant relationship with CKC, CPP, SC, and CAC.

H_{3m-p}: SI has a significant relationship with CKC, CPP, SC, and CAC.

This study investigates the correlation between proficiency in multilingualism and cultural awareness among higher education students from diverse cultural backgrounds in Indonesia. This research provides valuable insights for educational practitioners and policymakers by strengthening the understanding of the importance of integrating multilingual approaches and cultural awareness in higher education settings. The findings from this study can assist practitioners in developing learning strategies that are more inclusive and responsive to students' cultural diversity. For policymakers, this research provides an empirical basis for designing educational policies that are more holistic and oriented toward empowering multicultural communities.

Second Language Acquisition

Second Language Acquisition (SLA) is a complex and multidisciplinary process that includes linguistic, psychological, and social aspects of language learning that involves not only mastery of grammatical and vocabulary aspects, but the ability to speak communicatively in various social contexts. SLA research includes a socio-cultural perspective emphasizing the importance of interaction and social context in language learning as a process of identity formation and social affiliation (Alzamil, 2023; Cheng, 2023; Kim & Michel, 2023; Z. Zhang & Huang, 2024). This approach is supported by technological innovations such as natural machine translation (NMT) and chatbots as effective learning aids, encouraging technology-based second language teaching strategies (Juanda Juanda, 2024, p. 49; Polakova & Klimova, 2023; Zheng et al., 2023).

SLA research considers the affective and conative, social, anxiety, and motivational variables of language learning and communication, as well as the role of environment and genetics. Various studies reveal that factors such as frustration and unmet psychological needs hinder second language acquisition (Alamer et al., 2023; Austin & Yanovych, 2024; Ostrolenk et al., 2023). Research shows that productive vocabulary knowledge and listening practice are essential for sentence comprehension (Allal-Sumoto et al., 2024; Menks et al., 2024; Putra et al., 2024; J. Zhang et al., 2023). Finally, studies of cognitive adaptation and individual attention, as well as mother tongue (L1) use and explicit teaching in the classroom, offer insights into translingual pedagogy in online teaching (Gerosa & Gui, 2023; Habók et al., 2024, p. 1; Kujala et al., 2023, p. 1; Leavens et al., 2023, p. 55; Tai, 2023, p. 1).

Anthropolinguistics

Anthropolinguistics studies the relationship between language and culture, exploring how language is shaped and influenced by social and cultural contexts. The approach focuses on understanding various aspects of communication, including language variation, speech practices, language ideologies, as well as the role of language in the formation of ethnic, social and individual identities. Anthropolinguistics provides critical insights into social and cultural dynamics, enriching the understanding of human diversity through the lens of language. Over the past decade, learning cultures around the world have been impacted by the rapid use of technology in education (Schwartz et al., 2023, p. 1).

Sociocultural Approach

The socio-cultural approach is grounded in the social and cultural context of Vygotsky's theory. Knowledge is constructed through social interaction and cultural mediation highlights the importance of collaborative learning environments, where students participate in socially significant practices and build understanding through peer and educator dialog (Dunifa, 2024, p. 305). This enables language learners to master language structures, understand and appreciate linguistic and cultural diversity. Teacher learning pathways as professional development, viz: formal participation in continuing education; non-formal forms, such as workshops and training; and informal learning activities (Lai, 2023, p. 1).

Multilingualism includes learning models that highlight the challenges of cultural conceptions in learning (Guile, 2023, pp. 1–10). Exploration of the educational dilemma of resourcing meaningful teaching and learning experiences and the challenge of multimodal complexity of pedagogical intentions and examples (Twiner et al., 2021, p. 1). Customized assignments, additional guidance, and peer/group learning were identified as effective strategies facilitating low ability students (Lusta et al., 2023, p. 1).

Multilingualism in Higher Education

Multilingualism in higher education involves the development of multiple language communication competencies influenced by theories of Second Language Learning (SLA). According to Krashen (2003) multilingual competence is facilitated by the processes of acquisition and learning. Acquisition is the unconscious assimilation of natural language and learning is the understanding of language rules. Krashen (2003) emphasizes the importance of language acquisition input when learners are exposed to language materials that are only slightly above their current level of competence. Ellis (2015) highlights the role of intelligence and SLA language ability. Multilingualism skills can be obtained from reading literary works such as short stories, for example short stories that have environmental moral values (Juanda, Djumingin, et al., 2024).

Krashen introduced the concept of affective filters that emotional states such as anxiety, self-confidence, and motivation facilitate or inhibit language acquisition. Ellis (2015) on willingness to communicate and learners' beliefs, Vygotsky (1978) social relationships, emphasized the importance of a supportive educational environment and positive learners' attitudes towards language learning.
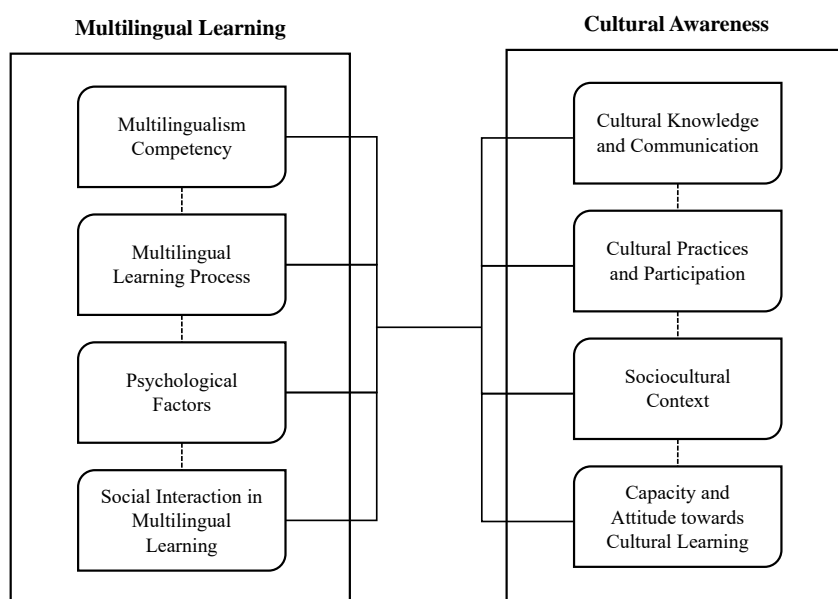
Cultural Awareness

Cultural awareness in the understanding of intercultural communication, emphasizes the importance of cultural knowledge and how to communicate in different cultural contexts. According to Duranti (1997), cultural knowledge of values, beliefs, norms and behaviors governs the social interactions of a particular society. With around 25% of preschool children in Australia communicating in a language other than English, developing a better understanding of early childhood educators' viewpoints and engagement with children's linguistic and cultural aspects is essential (Slaughter et al., 2024, p. 1).

Cultural practices include daily activities that reflect cultural values and traditions, while participation in such practices allows individuals to gain insight into intercultural competence. The role of culture in English language learning identifies the challenges and opportunities of language educators incorporating culture into teaching methodologies (Hossain, 2024, p. 1; Juanda, Afandi, et al., 2024). Socio-cultural emphasized by Vygotsky (1978), interest plays an important role in the learning process, the social and cultural environment, shaping knowledge and cultural awareness that depends not only on cognitive abilities but attitudes and perceptions towards other cultures. Figure 1 illustrates the conceptual model of this critically evaluated research.

Figure 1

Conceptual Framework

Method

Research Design

Embedded mixed methods design explores the relationship between multilingualism and cultural awareness quantitatively and qualitatively in higher education in Indonesia. In this design, there are two strands with the QUAN(qual) model. In the quantitative strand, a survey strategy was chosen as the main method of data collection, allowing researchers to measure and analyze the relationship between various variables related to multilingual competence and cultural awareness. These research variables are Multilingualism Competency (MC),

Multilingual Learning Process (MLP), Psychological Factors (PF), Social Interaction in Multilingual Learning (SI), Cultural Knowledge and Communication (CKC), Cultural Practices and Participation (CPP), Sociocultural Context (SC), and Capacity and Attitude towards Cultural Learning (CAC). By identifying and measuring these variables, the research reveals how these aspects are interrelated and contribute to the development of multilingual competence and cultural awareness among university students. The strategy for measuring the variables was to survey students from various universities in Indonesia. Data that has been processed in the quantitative strand is processed again in the qualitative strand.

Population and Sample
Population N=537 students from State University of Makassar, State University of Surabaya, State University of Jakarta, University of Northern Sumatra, Timor University, and Palangka Raya State Islamic Institute. Sample n=388 from simple random sampling technique. This technique guarantees data neutrality against subjectivity in certain ethnicities in Indonesia. The sample size was calculated based on Slovin's formula with an e-value of 0.05 (5%). The number of samples on qualitative data was 60. Data collection was carried out in January and February 2024.

Table 1
Demographic Data

Demographics	n	Percentage	Cumulative
Gender			
Male	69	17.78%	17.78%
Female	319	82.22%	100.00%
University			
Palangka Raya State Islamic Institute	23	5.93%	5.93%
State University of Surabaya	62	15.98%	21.91%
Timor University	65	16.75%	38.66%
State University of Jakarta	54	13.92%	52.58%
State University of Makassar	164	42.27%	94.85%
University of Northern Sumatra	20	5.15%	100.00%
Age			
17-20	333	85.82%	85.82%
21-24	53	13.66%	99.48%
25-28	2	0.52%	100.00%
Neighborhood			
Rural	222	57.22%	57.22%
Urban	166	42.78%	100.00%

Instruments, Procedures, and Data Collection
The instrument in the form of a questionnaire was distributed through Google Form. The collected data was analyzed to evaluate the relationship between variables. This method was chosen because it provides the convenience of collecting data efficiently and quickly through an online platform, allowing researchers to obtain data from a number of respondents in a short period of time. Furthermore, the questionnaire was tested for validity and reliability to increase confidence in the instrument.

Table 2
Validity and Reliability of Instruments

Item	Validity	Cronbach's α	Item	Validity	Cronbach's α
MC1_1	0.593***	MC = 0.638	SI2_2	0.558***	
MC1_2	0.510***		SI3_1	0.564***	
MC2_1	0.695***		SI3_2	0.451***	
MC2_2	0.328***		CKC1_1	0.574***	CKC = 0.610
MC3_1	0.660***		CKC1_2	0.642***	
MC3_2	0.399***		CKC2_1	0.633***	
MC4_1	0.594***		CKC2_2	0.561***	
MC4_2	0.513***		CPP1_1	0.419***	CPP = 0.649
MLP1_1	0.470***	MLP = 0.663	CPP1_2	0.375***	
MLP1_2	0.485***		CPP2_1	0.577***	
MLP2_1	0.621***		CPP2_2	0.481***	
MLP2_2	0.465***		CPP3_1	0.521***	
MLP3_1	0.688***		CPP3_2	0.540***	
MLP3_2	0.624***		SC1_1	0.653***	SC = 0.686
PF1_1	0.639***	PF = 0.619	SC1_2	0.579***	
PF1_2	0.546***		SC2_1	0.710***	
PF2_1	0.405***		SC2_2	0.421***	
PF2_2	0.514***		SC3_1	0.741***	
PF3_1	0.659***		SC3_2	0.641***	
PF3_2	0.452***		CAC1_1	0.570***	CAC = 0.611
PF4_1	0.616***		CAC1_2	0.601***	
PF4_2	0.348***		CAC2_1	0.616***	
SI1_1	0.562***	SI = 0.619	CAC2_2	0.544***	
SI1_2	0.558***		CAC3_1	0.528***	
SI2_1	0.578***		CAC3_2	0.380***	

* p < .05, ** p < .01, *** p < .001

The research instrument is valid in measuring aspects of multilingualism and cultural awareness with the majority of items having significant validity values above 0.5. Although there are some items with lower validity values, such as MC2_2 and PF4_2, the overall values indicate the reliability of the instrument. The research instrument showed reliability levels of Cronbach's α values ranging from 0.610 to 0.686 for all variables, including Multilingualism Competency (MC), Multilingual Learning Process (MLP), and others. These values indicate sufficient internal consistency for the study. Therefore, the instruments reliably measured the constructs under study, supporting the reliability of the research results.

Data Analysis
The quantitative research used Pearson's r correlational analysis of the relationship between multilingualism learning (MC, MLP, PF, and SI) and cultural awareness (CKC, CPP, SC, and CAC). First, researchers traced the distribution of ethnic groups, mother tongues, regional and foreign languages studied, and learning methods. Next, researchers investigated the normality of data distribution and correlation between variables. The software used in quantitative analysis was Jeffrey's Amazing Statistics Program (JASP) version 0.18.3. In the qualitative strand, thematic analysis investigates cultural awareness-based multilingualism learning strategies. Respondents' answers via Google Forms were processed using Nvivo 14 software. The qualitative analysis stages consisted of data condensation, data display, and conclusion drawing/verification (Miles et al., 2014).

Results

Descriptive Statistics and Participant Characteristics

Table 3 displays descriptive statistics for the variables measured in the multilingualism and cultural awareness t-study. MC (Multilingualism Competency) averaged 3.369 with SE (Standard Error) of 0.027 and SD (Standard Deviation) of 0.542, signifying a moderate level of multilingual competence among participants. MLP (Multilingual Learning Process) and PF (Psychological Factors) averaged higher, indicating a positive engagement of the multilingual learning process and the influence of psychological factors. SI (Social Interaction in Multilingual Learning) and CKC (Cultural Knowledge and Communication) showed lower averages than other variables, indicating potential for further development. CPP (Cultural Practices and Participation) had the lowest SD, indicating consistency of cultural participation among respondents. SC (Sociocultural Context) and CAC (Capacity and Attitude towards Cultural Learning) averaged higher, indicating a strong sociocultural context and capacity and attitudes that support cultural learning among students.

Table 3

Descriptive Statistics

Variable	Valid	Missing	Mean	SE	SD
MC	388	0	3.369	0.027	0.542
MLP	388	0	3.454	0.029	0.575
PF	388	0	3.384	0.029	0.580
SI	388	0	3.300	0.028	0.561
CKC	388	0	3.184	0.029	0.581
CPP	388	0	3.220	0.021	0.422
SC	388	0	3.479	0.035	0.681
CAC	388	0	3.418	0.026	0.520

Table 4 illustrates the distribution of ethnic groups in Indonesia, showing the percentage representation of various ethnicities.

Table 4

Distribution of Ethnic Groups in Indonesia

Ethnic	%	Ethnic	%
Jawa	25.77%	Banjar	1.80%
Bugis	17.78%	Melayu	1.55%
Makassar	15.72%	Mandar	1.03%
Toraja	4.38%	Mandailing	1.03%
Betawi	3.61%	Manggarai; Tetun	0.77%
Timor	3.35%	Belu; Sasak; Massenrempulu; Bima; Minang; Tionghoa;	0.52%
Sunda; Dawan	2.84%	Mbojo; Ruteng; Nilu; Konjo; Bajawa; Leu; Dayak Bakumpai; Lio Flores Maumere; Palembang; Luwu; Fehan; Timor Lidak; Kasong; Biboki; Banibin; Bali; Atambua; Sabu; Manubenani; Sumba; Marae; Karo; Balila; Kefamenanu; Mbero; Umaklar; Uma Baradik; Aslakan; Malaka; Maktihan; Mollo; Biboki Anleu; Nonot Forenain; Batak Toba; Pattinjo	0.26%
Batak	2.58%		
Dayak	2.06%		

The dominance of some ethnic groups can be observed through the disparity in percentage representation. Javanese ethnicity stands out with the highest percentage of 25.77%, followed

by Bugis and Makassar 17.78% and 15.72%. Dominance is attributed to historical, geographic and demographic factors, including population concentration in certain areas, historical migration and cultural influences. Table 4 provides insight into Indonesia's diverse ethnic landscape, reflecting cultural heritage and plurality.

Table 5 maps the diversity of mother tongues among participants, showing the dominance of Indonesian with 61.08% identifying it as the mother tongue of the students. Indonesian is not only a lingua franca but the dominant mother tongue in Indonesia. Javanese 8.76% and Bugis 6.96% as the next most common mother tongue, demonstrating significant linguistic diversity in Indonesia.

Table 5

Mother Tongue

Mother Tongue	%	Mother Tongue	%
Indonesian	61.08%	Manggarai	1.55%
Javanese	8.76%	Dayak; Toraja; Batak	1.03%
Buginese	6.96%	Dawan	0.77%
Makassarese	5.67%	Bima; Mandailing; Sundanese; Betawi; Konjo	0.52%
Banjarese	2.58%	Dayak Bakumpai; Lio Flores Maumere;	0.26%
Tetun	2.06%	Massenrempulu; Lio Ende; Marae;	
Malay	1.80%	Minangkabau; Batak Toba; Tiochiu; Mamasa;	
		Kemak; Belu; Tae	

Languages such as Makassar, Banjar and Tetun were also represented. This wide variety of mother tongues, including regional languages represented by only one or two respondents, such as Dayak Bakumpai and Lio Flores Maumere, highlights the complexity of Indonesia's linguistic landscape. The dominance of Indonesian plays an important role in uniting the various ethnic and cultural groups in Indonesia, while the existence of many other languages emphasizes the importance of preserving and respecting linguistic and cultural diversity. Based on these results, Indonesian is displacing the dominance of regional languages as mother tongues. Furthermore, Table 6 presents the regional languages studied by tertiary students.

Table 6 illustrates the distribution of local language learning among university students. Javanese dominates as the most learned local language, followed by Bugis and Makassar with 26.80%, 17.01% and 16.75% respectively. The dominance of Javanese is due to several factors. Firstly, the geographical and demographic spread of Javanese as the largest ethnic group in Indonesia. Second, the presence of Javanese as an important historical and cultural center in Indonesia, including its role in politics, education, and media, increases its influence in various sectors. Thirdly, the nationally recognized and valued richness of Javanese culture and literature promotes the learning and maintenance of this language. Despite the encouragement of learning various local languages, such as the diversity of languages that university students study, Javanese remains dominant due to its strong sociohistorical and cultural influence in Indonesia. In addition, students study foreign languages as Table 7.

Table 6

Local Language Learned

Mother Tongue	%	Mother Tongue	%
Javanese	26.80%	Betawi Language; Mandarese	0.77%
Buginese	17.01%	Bunak Language; Bima Language;	0.52%
Makassarese	16.75%	Palembang Language; Lio Language	
Dawan Language	5.67%	Konjo Language; Manado Language;	0.26%
Sundanese	5.15%	Balinese; Flores Language; Madurese;	
Malay; Toraja Language	3.87%	Pakpak Language; Mamuju Language;	
Tetun Language	3.35%	Pattinjo Language; Belu Language;	
Dayak Language	2.06%	Selayar Language; Bajawa Language;	
Manggarai Language;	1.80%	Mamasa Language; Pattae Language;	
Banjarese		Marae Language; Moronene Language;	
Timorese	1.55%	Sasak Language; Sumbanese; Tetun Terik	
Batak Language	1.29%	Language; Karo Language;	
		Massenrempulu Language; Mamasa	
		Language	

Table 7 shows the foreign language learning preferences, with English taking the top spot significantly with 63.40%, followed by Korean, Arabic, and Japanese with much lower numbers of learners. The dominance of English as the most studied foreign language by students can be attributed to its status as a global lingua franca, international communication, business, science, and technology, as well as the influence of popular culture and English-language media. Korean comes second, influenced by the popularity of Korean pop culture (K-pop and Korean dramas) among the younger generation. Arabic came third, reflecting the importance of this language in religious studies. Japanese and German are in the top five, indicating interest in learning about the culture, education and job opportunities in those countries. Mandarin, Spanish, Italian, Portuguese, Turkish and Russian, despite having fewer learners, reflect the diversity of linguistic interests and openness to diverse cultural influences. This order reflects a combination of globalization, international relations, pop culture influences, and economic and religious considerations in choosing a foreign language to learn.

Table 7

Foreign Language Learned

Mother Tongue	%
English	63.40%
Korean	12.11%
Arabic	8.25%
Japanese	6.96%
German	4.90%
Mandarin	2.58%
Spanish; Italian	0.52%
Portuguese; Turkish; Russian	0.26%

In addition, Figure 2 presents forms of multilingual learning in various methods.

Figure 2

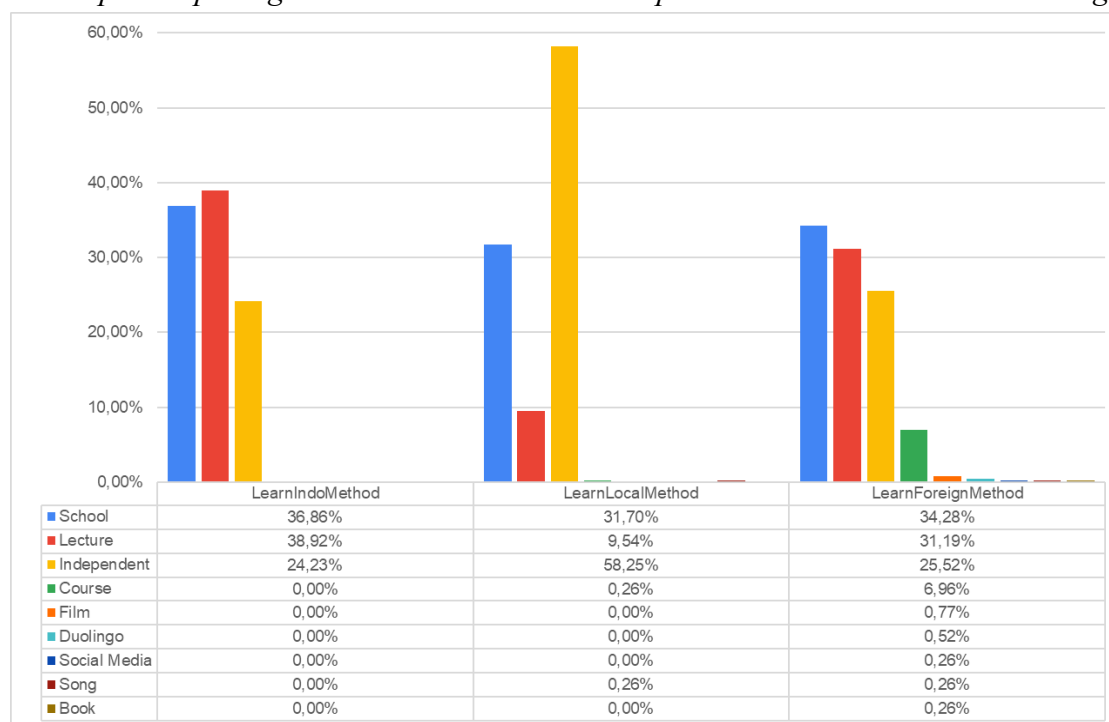*Scatterplot Depicting the Correlation between Response Rates and Evaluation Ratings*

	LearnIndoMethod	LearnLocalMethod	LearnForeignMethod
■ School	36,86%	31,70%	34,28%
■ Lecture	38,92%	9,54%	31,19%
■ Independent	24,23%	58,25%	25,52%
■ Course	0,00%	0,26%	6,96%
■ Film	0,00%	0,00%	0,77%
■ Duolingo	0,00%	0,00%	0,52%
■ Social Media	0,00%	0,00%	0,26%
■ Song	0,00%	0,26%	0,26%
■ Book	0,00%	0,00%	0,26%

Figure 2 outlines the methods of learning Indonesian, local languages, and foreign languages. For LearnIndoMethod, Lecture method dominates with 38.92%, followed by School with 36.86%, and Independent with 24.23%. This shows that formal methods such as lecture and school education are preferred for learning national languages. In the context of Learn Local Method, Independent becomes a very dominant method with 58.25%, while School has 31.70%, and Lecture only 9.54%, illustrating the strong tendency of learning local languages through personal initiative rather than through formal educational institutions. LearnForeignMethod, School became the main method with 34.28%, indicating the main choice of formal education in foreign language learning, followed by Lecture with 31.19%, and Independent 25.52%. Other methods such as Course, Film, Social Media, Duolingo, Song, and Book were used less, indicating that while there is a variety of learning methods, the formal approach remains at the forefront of language education. These methods incorporate structured teaching, independent activities, and the utilization of various language acquisition media in various learning contexts.

Normality Test

Figure 3 displays a series of quantile-quantile plots (Q-Q plots) for the variables Multilingualism Competency (MC), Multilingual Learning Process (MLP), Psychological Factors (PF), Social Interaction (SI), Cultural Knowledge and Communication (CKC), Cultural Practices and Participation (CPP), Sociocultural Context (SC), and Capacity and Attitude towards Cultural Learning (CAC). Q-Q plot is a graphical tool to assess whether a distribution of data follows a certain distribution, normally distributed. In this graph, all plots show that the data points (denoted by black circles) mostly follow the red line to represent normal distribution.

Figure 3

Normality of Data Distribution Based-on Q-Q Plot
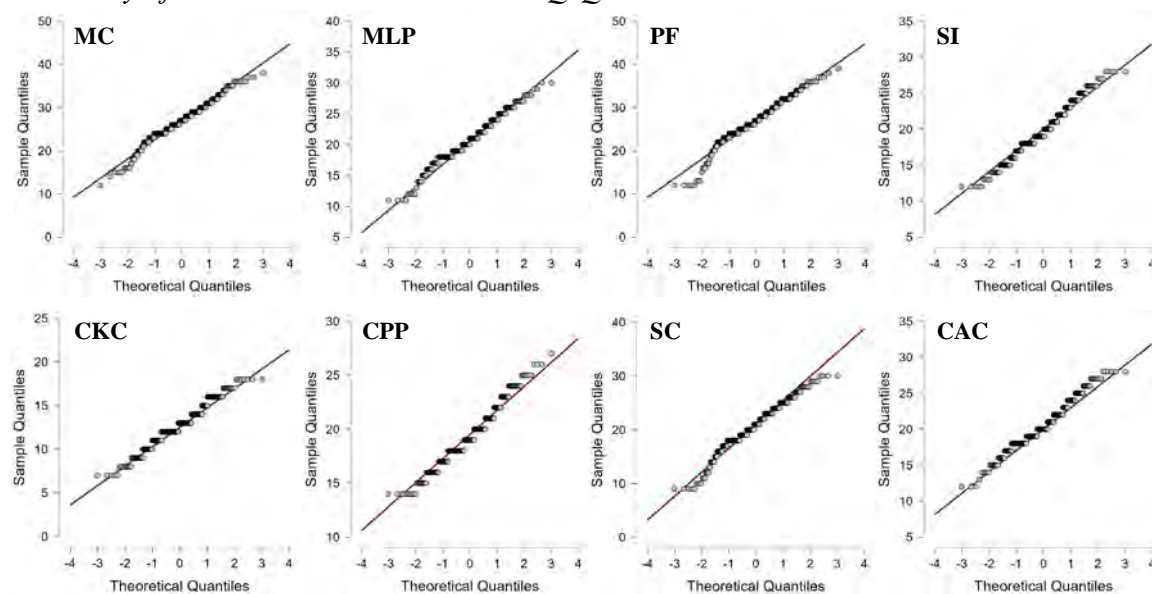
When these data points are clustered close to and follow the line without deviating significantly upward or downward indicates that the sample distribution is close to a normal distribution. The precision between the theoretical quantiles and the sample quantiles indicates that there is no notable deviation from the normality of the regression analysis and hypothesis testing. This trend indicates that the data for each variable tends to be normal.

Relationship between Multilingualism Learning Variables

Table 8 and Figure 4 display the relationships between variables related to multilingual learning. Table 8 shows significant Pearson correlation coefficients between pairs of variables with all p values less than 0.05, indicating significant relationships. MC (Multilingualism Competency) is positively correlated with MLP (Multilingual Learning Process), PF (Psychological Factors), and SI (Social Interaction), with r coefficients of 0.568, 0.537, and 0.504 respectively. These correlations indicate that multilingual competence correlates with how one engages in the learning process, which is influenced by psychological factors and social interaction.

Table 8

Correlation between Multilingualism Learning Variables

Hypothesis	Correlation	Pearson's r	p
H1a	MC-MLP	0.568***	< .001
H1b	MC-PF	0.537***	< .001
H1c	MC-SI	0.504***	< .001
H1d	MLP-PF	0.559***	< .001
H1e	MLP-SI	0.371***	< .001
H1f	PF-SI	0.381***	< .001

* p < .05, ** p < .01, *** p < .001

Figure 4

Correlation Plot of Multilingualism Learning Variables
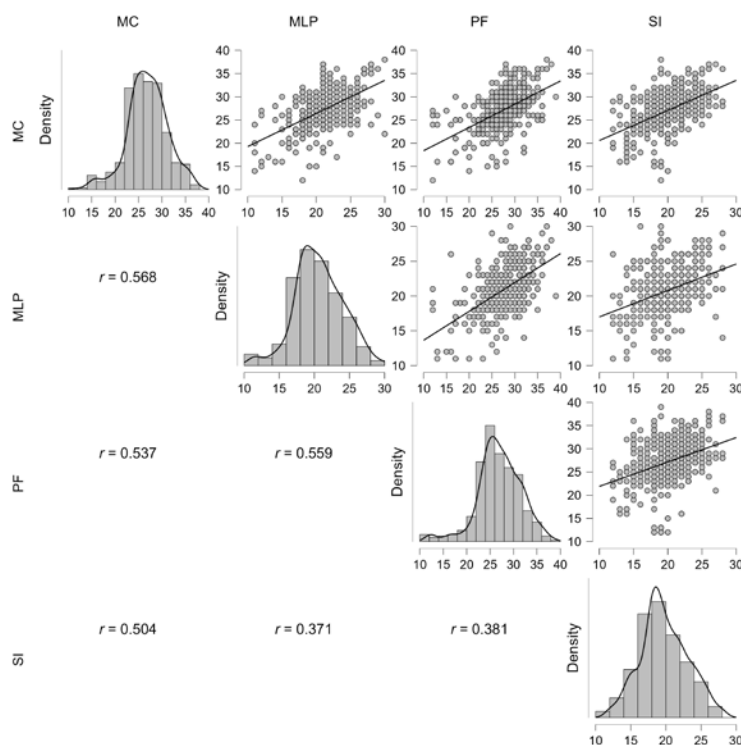
The correlation between MLP and PF was also strong (r = 0.559), indicating a close relationship between the learning process and psychological factors. Weaker but still significant correlations were found between MLP and SI (r = 0.371), as well as PF and SI (r = 0.381), signaling social interaction and psychological factors are interrelated although not as strong as the relationship with MC. The correlation plot supports this finding, showing a scatterplot with the trend line showing a positive trend as language learning requires a combination of multilingual ability (MC), effective learning strategies (MLP), psychological resilience and motivation (PF) and opportunities to interact using the language in social contexts (SI). All these aspects reinforce each other in effective multilingual learning.

Relationship between Cultural Awareness Variables

Table 9 and Figure 5 show the statistical relationships between variables relating to cultural awareness in the context of multilingualism. According to the table, all relationships between variables showed high statistical significance (p < .001) with varying Pearson correlation coefficients. CKC (Cultural Knowledge and Communication) is positively correlated with CPP (Cultural Practices and Participation) to a lesser extent (r = 0.267), but has a stronger correlation with SC (Sociocultural Context) (r = 0.483), indicating that cultural knowledge and communication are more closely related to sociocultural context than cultural practices and participation. The relationship between CPP and SC is also strong (r = 0.421 and r = 0.382), suggesting cultural practice participation is related to the broad sociocultural context.
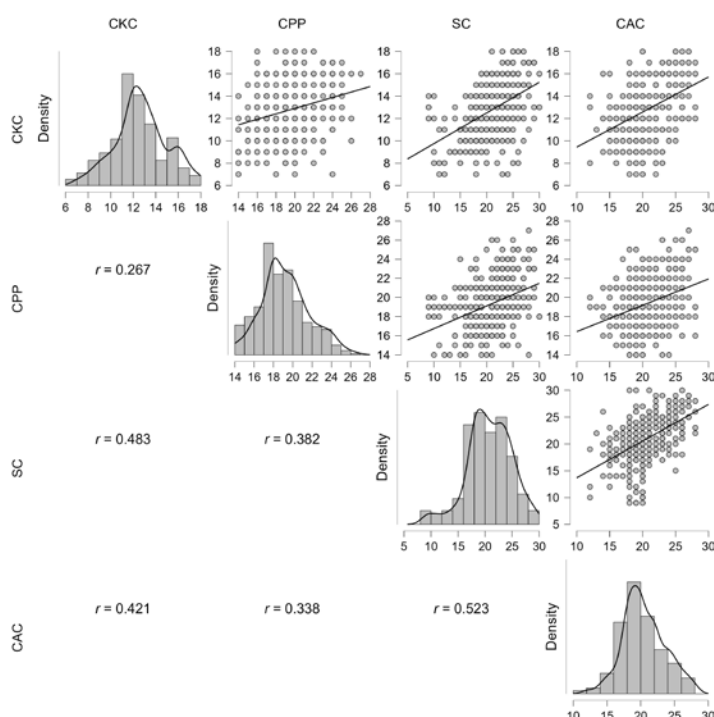
Table 9

Correlation between Multilingualism Cultural Awareness

Hypothesis	Correlation	Pearson's r	p
H2a	CKC-CPP	0.267***	< .001
H2b	CKC-SC	0.483***	< .001
H2c	CPP-SC	0.421***	< .001
H2d	CPP-SC	0.382***	< .001
H2e	CPP-CAC	0.338***	< .001
H2f	SC-CAC	0.523***	< .001

* p < .05, ** p < .01, *** p < .001

Figure 5

Correlation Plot of Multilingualism Cultural Awareness

The relationships between CPP and CAC (Capacity and Attitude towards Cultural Learning) and between SC and CAC were also significant (r = 0.338 and r = 0.523), indicating that cultural learning capabilities and attitudes are intertwined with participation in cultural practices and the socio-cultural context. The correlation plot reinforces these results by displaying a scatter of points depicting a positive relationship between the variables. This is because in multilingual contexts, cultural understanding is gained through contextualized social interaction and active participation in cultural practices. Both strengthen one's capacity and attitude towards cultural learning, such as: Javanese, Bugis, Makassarese, Toraja, Betawi, Timorese, Dawan, Batak, Dayak and Banjar.

Relationship between Multilingualism Learning and Cultural Awareness

Table 10 and Figure 6 display the relationship between multilingual learning and cultural awareness. All hypotheses show significant positive correlations with p-values less than 0.001, confirming the strength and significance of the relationship between the variables. The correlations between MC (Multilingualism Competency) and the cultural awareness variables

(CKC, CPP, SC, and CAC) are in the moderate to strong range (r = 0.341 to r = 0.553), indicating that multilingualism competency has a positive relationship with cultural knowledge, participation in cultural practices, socio-cultural context, and cultural learning capacity and attitude. The strong correlation between MC and SC (r = 0.553) indicates that the higher one's multilingual competence, the more likely one is to engage in and understand diverse socio-cultural contexts as multilingual competence often entails and promotes interaction of various cultures which enhances cultural awareness.

Table 10

Correlation between Multilingualism Learning and Cultural Awareness

Hypothesis	Correlation	Pearson's r	p
H3a	MC-CKC	0.378***	< .001
H3b	MC-CPP	0.341***	< .001
H3c	MC-SC	0.553***	< .001
H3d	MC-CAC	0.495***	< .001
H3e	MLP-CKC	0.286***	< .001
H3f	MLP-CPP	0.245***	< .001
H3g	MLP-SC	0.497***	< .001
H3h	MLP-CAC	0.434***	< .001
H3i	PF-CKC	0.323***	< .001
H3j	PF-CPP	0.286***	< .001
H3k	PF-SC	0.530***	< .001
H3l	PF-CAC	0.422***	< .001
H3m	SI-CKC	0.431***	< .001
H3n	SI-CPP	0.334***	< .001
H3o	SI-SC	0.497***	< .001
H3p	SI-CAC	0.523***	< .001

*$p < .05$, ** $p < .01$, *** $p < .001$

The same correlation was seen between MLP (Multilingual Learning Process), PF (Psychological Factors), and SI (Social Interaction) with the cultural awareness variable with a lower but significant correlation. This suggests that multilingual learning process, psychological factors, and social interaction play an important role in increasing cultural awareness. The correlations identified confirm that multilingual learning and cultural awareness are interrelated and mutually reinforcing in an educational context.

Figure 6

Correlation Plot of Multilingualism Learning and Cultural Awareness
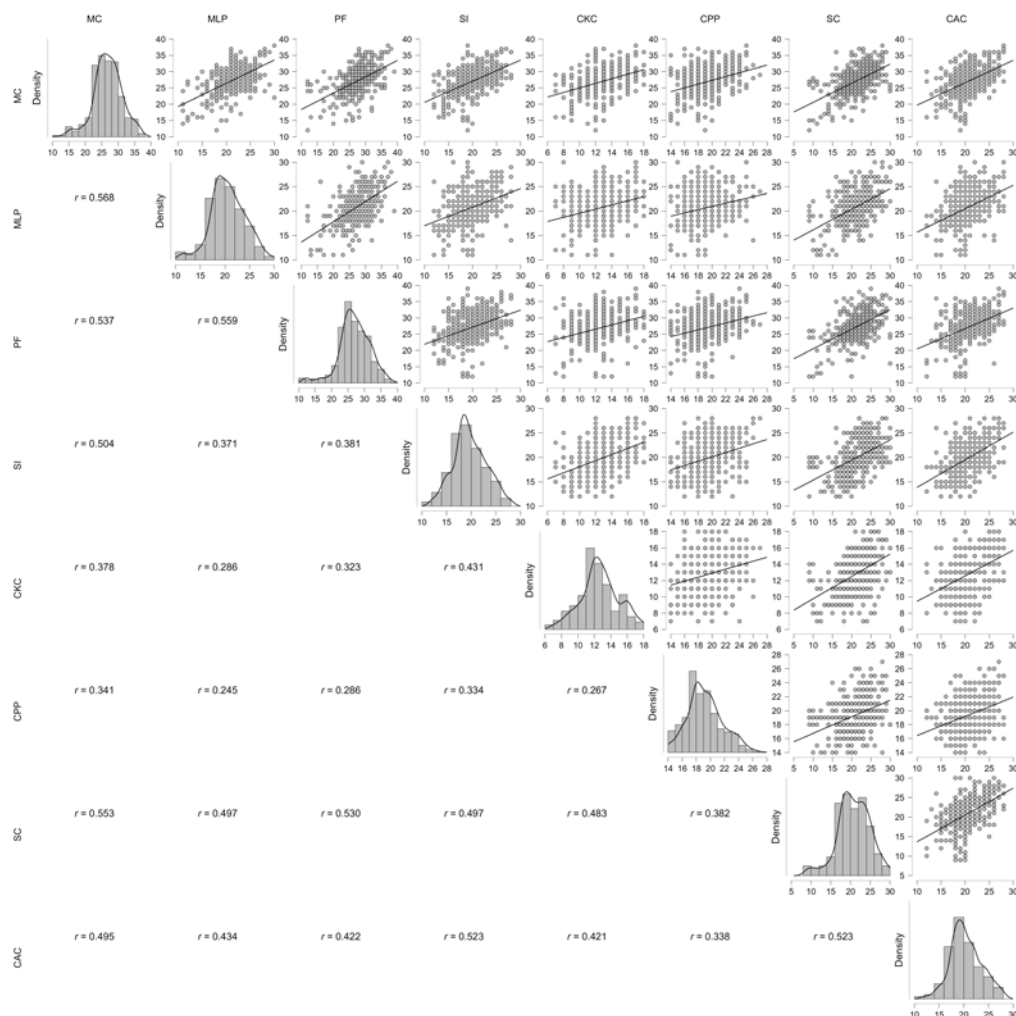
The findings show a significant correlation between multilingual learning and cultural awareness seen in the context of the mother tongue, local language, and foreign language learned, as well as the learning methods used. Indonesian as the dominant mother tongue has provided the basis for students to develop higher multilingual competence by facilitating increased cultural awareness. The ability to interact in various regional languages, such as Javanese, Bugis and Makassarese learned by a number of students, enriches their social interactions, enabling deeper participation in diverse socio-cultural contexts and cultural practices. This is reinforced by the increased learning of foreign languages such as English, Korean, and Arabic, which not only opens students to a wider global culture, but strengthens their capacity to learn and adapt to the context of cultural acculturation. Various learning methods are practiced, such as: school, lecture, and self-directed learning. Indonesia's rich multilingual environment provides a conducive background for the development of multilingual skills and cultural awareness in Indonesia, particularly North Sumatra, Java, South Sulawesi, and East Nusa Tenggara.

Multilingualism Learning Strategies in order to Increase Students' Cultural Awareness
Increasing students' cultural awareness is achieved through multilingualism learning strategies that are well integrated in the educational curriculum. Students are given the opportunity to understand and appreciate cultural diversity through the use of different languages. Multilingualism learning strategies such as the use of learning materials reflecting diverse cultures, intercultural collaboration among students, and an emphasis on understanding cultural context in teaching can help create a learning environment that is inclusive and responsive to today's global needs.

Figure 7
Percentage Coverage of Multilingual Learning and Cultural Awareness
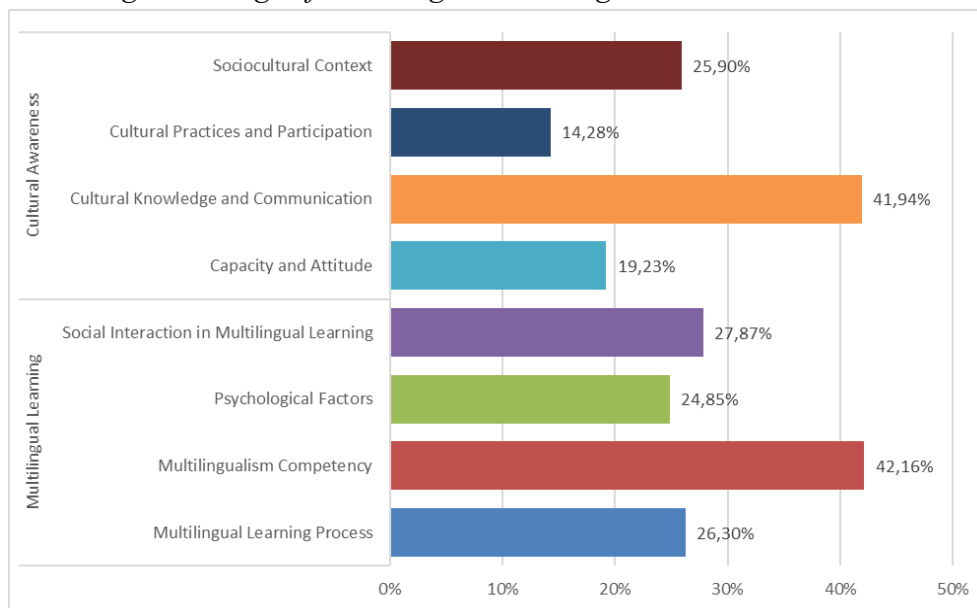
Figure 7 shows the distribution of various elements in multilingual learning and cultural awareness. There is significant emphasis on multilingual competence and cultural knowledge and communication as core in facilitating effective language education. These aspects go beyond other elements such as the socio-cultural context and the multilingual learning process indicates a practical language skills approach with an understanding of cultural diversity in the region. This reflects Indonesia's linguistic landscape of various mother tongues and local languages ranging from the most widely spoken Indonesian and Javanese to less prevalent, yet no less important languages such as Konjo or Marae, forming a complex mosaic of linguistic diversity. Proficiency in foreign languages such as English as the most studied language followed by Korean and Arabic highlights the global dimension of language learning that complements local linguistic and cultural engagement. This layered approach to language education not only encourages cultural awareness but equips students to contribute to both local and global communities.

Table 11

Multilingualism Learning and Cultural Awareness Strategies for Students

Multilingual Learning Strategies	Multilingual Learning Strategies
Attitudinal adjustment	Educator training
Learning openness	Technological support
Communication skills	Cultural integration
Inclusive content development	Language proficiency enhancement
Active cultural participation	Motivation and confidence
Cultural practices adoption	Self-directed learning
Cultural identity exploration	Community engagement
Societal norms influence	Intercultural collaboration

Table 11 maps out strategies for multilingual learning and cultural awareness to improve language education among university students. For multilingual learning, the proposed strategies include training educators to effectively teach languages, technology support enabling interactive and outreach learning, integration of culture in the curriculum, enhancement of language proficiency, building student motivation and confidence, student self-guided learning, community engagement, and intercultural collaboration. Strategies to increase cultural awareness include adjusting attitudes that support diversity, openness to learning to accept and appreciate differences, developing effective communication skills, creating inclusive content that reflects various cultures, active participation in cultural activities, adopting cultural practices, exploring cultural identity, and understanding the influence of social norms. All of these strategies are designed to create an educational environment conducive for students to become competent language learners and individuals who are aware of cultural diversity. Shown in data (1) and (2).

> (1) "To improve the effectiveness of multilingual learning, it is important to focus on developing more diverse and inclusive content and using technologies that support adaptive and personalized learning" (Student's answer no. 007).

> (2) "Governments and educational institutions need to provide accessibility to quality and affordable language learning resources for all. This can be done by providing textbooks, apps and language courses at affordable prices" (Student's answer no. 023).

Data (1) and (2) derived from students' opinions above emphasize the importance of diversity and inclusiveness of multilingual learning content development as well as the role of technology in facilitating adaptive and personalized approaches. This is in line with the multilingual learning strategies outlined earlier. The use of technology and inclusive content are noted as key components in effective language education. Cultural perspectives and contexts in learning materials, students not only acquire language skills but a broader cultural sensitivity. Secondly, data (3) and (4) highlighted the key role of governments and educational institutions in ensuring that language learning resources are available and accessible to all levels of society towards equity in education. The accessibility of quality and affordable resources allows students from various cultural backgrounds to participate in multilingual learning that can increase cultural awareness and strengthen multicultural identity as a distinctive feature of Indonesia. This supports the previously discussed strategy of creating a holistic and egalitarian learning system that not only improves linguistic competence but also enriches students' social and cultural experiences. This is shown in the following data (3), (4).

(3) "Integrate materials and content that reflect diverse cultures and languages around the world in the education curriculum" (Student's answer no. 002).

(4) "Encourage intercultural collaboration among students from different language backgrounds to enhance cross-cultural understanding and tolerance" (Student's answer no. 158).

This student opinion highlights the importance of integrating educational materials that reflect global cultural and linguistic diversity and the importance of intercultural interaction as an educational tool. Curriculum integration with culturally and linguistically diverse materials, as mentioned in data (3), supports the multilingual learning and cultural awareness strategies outlined earlier, enriching the learning process with multiple perspectives and preparing students to operate in an increasingly connected global sphere. This approach not only advances language skills but also develops a deep understanding of different social and cultural contexts. Meanwhile, data (4) underlines the importance of intercultural collaboration, which is in line with previous strategies such as community engagement and intercultural collaboration. Such collaborations encourage students to interact and learn from each other, deepen cross-cultural understanding and tolerance, and build strong communication bridges between different language groups. These two initiatives, when implemented, can enhance the learning dynamics in higher education environments and shape graduates who are ready to face the challenges and opportunities in a multicultural and multilingual society.

Discussion

Findings related to the distribution of ethnic groups in Indonesia, mother tongue, local and foreign languages learned, and multilingual learning methods highlight the country's rich linguistic and cultural diversity. Indonesian, as a lingua franca, is dominant as a mother tongue, reflecting its widespread influence in various walks of life as well as the displacement of regional languages. Javanese, Bugis and Makassar are the most studied local languages, demonstrating the importance of geographical, demographic and cultural factors. In the context of foreign languages, English stands out as the most studied, followed by Korean and Arabic, reflecting global influences and cultural links with Indonesia's significant Muslim population. Learning methods show a strong preference for formal approaches through school and college education, as well as personal initiative in learning local languages, confirming the importance of formal education structures and self-study in language learning. These findings underscore the importance of promoting multilingual education that integrates cultural awareness, reflects the diversity of Indonesia, and prepares students to participate in a diverse global community.

Interaction between linguistic, social and political factors in linguistically rich environments. Bilingual children perform slightly better than multilinguals on LSA measures (Farangi & Naami, 2024). Minority language advocates emphasize the importance of using students' mother tongue in the educational curriculum (Farangi & Naami, 2024, p. 1). Attitudes towards the second language play an important role in language maintenance (Santosa, 2024, p. 146). Most learners develop metalinguistic awareness skills, showing higher levels of awareness when decoding new language systems than participants with lower MeLA scores (Spechtenhauser & Jessner, 2024, p. 1). The protection of children's rights that have so far not been analyzed or translated linguistically. The findings of this study shed light on the channels

and types of errors triggered by interference in multilingual communication regarding children's rights (Stepanova, 2019, p. 3).

The research findings reinforce the positive and significant relationship between multilingual learning and cultural awareness, suggesting multilingual competence not only enhances cultural knowledge and participation in cultural practices but deepens understanding of the socio-cultural context and strengthens capacity and positive attitudes towards cultural learning. The strong correlation between multilingual competence and cultural awareness indicates that the higher one's multilingual ability, the greater their engagement and understanding of cultural diversity. Cultural knowledge and communication, which are closely related to the socio-cultural context, are more likely to be acquired through contextualized social interaction and active participation in cultural practices, confirming the importance of a multilingual approach in education that integrates language learning with elements of cultural awareness. This finding is reinforced by Wu & Forbes (2023) research which discusses the influence of sociocultural factors on students' multilingual identity. Siebenhütter (2023) research exploring how a multilingual profile influences one's self-concept concurs with our findings on the link between multilingual competence and increased cultural awareness.

Multilingualism learning strategies enhance cultural awareness including the integration of cultural diversity curricula aimed at creating learning environments that are inclusive and responsive to global needs, by utilizing technology for adaptive and personalized learning, Rainey et al. (2023) on the use of multilingual chatbots showed technology supports multilingual learning and cultural interaction, in line with the multilingualism learning strategies we found. In addition, the research of Bąk et al. (2019) highlights the importance of paying attention to cultural and subcultural diversity in developing inclusive curriculum and learning strategies.

This finding is supported by Vygotsky (1978) theory which emphasizes the role of social interaction and cultural mediation in the learning process. This approach is also in line with Krashen (2003) theory of second language acquisition, comprehensible input and affective filters and cultural awareness. In addition, Duranti (1997) concept of anthropolinguistics, which highlights the relationship between language and culture and the role of language in social construction. Ellis (2015) asserts that individual traits, including motivation and language anxiety affect the efficiency of acquiring language. It critically examines the role of culture in English language learning and identifies the challenges and opportunities that language educators face in incorporating culture into their teaching methodologies (Habók et al., 2024; Hossain, 2024, p. 1; Kujala et al., 2023). Learning cultures around the world have been impacted differently by the rapid spread of technology in education (Gerosa & Gui, 2023; Juanda & Azis, 2023; Schwartz et al., 2023, p. 1). Factors such as frustration and unmet psychological needs can hinder second language acquisition (Alamer et al., 2023; Austin & Yanovych, 2024; Ostrolenk et al., 2023). Cognitive adaptation and individual attention, as well as the use of mother tongue (L1) and explicit teaching in classroom settings, offer important insights into the development of translingual pedagogy, particularly online teaching (Leavens et al., 2023, p. 55; Tai, 2023, p. 1).

Conclusion

The context of multilingualism education based on cultural awareness in Indonesia emphasizes the importance of understanding and appreciating the linguistic and cultural diversity that exists. With Indonesian as the dominant mother tongue and a diversity of regional languages such as Javanese, Bugis, and Makassarese, as well as foreign languages such as English, Korean, and Arabic being studied by students, multilingualism education becomes an important means of raising cultural awareness. Learning approaches that integrate linguistic and cultural experiences, from interacting in various regional languages to learning foreign languages, enrich students' social interactions and enable them to participate more deeply in various socio-cultural contexts. Through learning strategies that include intercultural collaboration, the use of technology, and diverse learning methods, education in Indonesia can facilitate the development of multilingual competence and deep cultural awareness, supporting students in contributing to a diverse global community. This research provides valuable insights for educational practitioners and policymakers by strengthening the understanding of the importance of integrating multilingual approaches and cultural awareness in higher education settings. The findings from this study can assist practitioners in developing learning strategies that are more inclusive and responsive to students' cultural diversity. For policymakers, this research provides an empirical basis for designing educational policies that are more holistic and oriented toward empowering multicultural communities. Future research could explore the impact of using learning technologies, such as virtual reality and language learning apps in improving students' cultural awareness and multilingual language skills.

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Ethics Declarations

Competing Interests

No, there are no conflicting interests.

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References

Alamer, A., Morin, A. J. S., Alrabai, F., & Alharfi, A. (2023). Introducing the Basic Psychological Needs Frustration in Second Language Scale (BPNF-L2): Examining its factor structure and effect on L2 motivation and achievement. *Acta Psychologica*, *240*, 1–12. https://doi.org/https://doi.org/10.1016/j.actpsy.2023.104021

Aleksić, G., Bebić-Crestany, D., & Kirsch, C. (2024). Factors influencing communication between parents and early childhood educators in multilingual Luxembourg. *International Journal of Educational Research*, *124*, 1–14. https://doi.org/https://doi.org/10.1016/j.ijer.2023.102309

Allal-Sumoto, T. K., Şahin, D., & Mizuhara, H. (2024). Neural activity related to productive vocabulary knowledge effects during second language comprehension. *Neuroscience Research*, 1–10. https://doi.org/https://doi.org/10.1016/j.neures.2024.01.002

Alshihry, M. A. (2024). Dynamic Multilingual Proficiency: Investigating Variation and Development in Language Abilities. *Theory and Practice in Language Studies*, *14*(2), 358–364.

Alzamil, D. A. (2023). Nunation and the L2 acquisition of English indefinite articles by L1 Najdi and Hijazi speakers. *Heliyon*, *9*(5), 1–24. https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e15243

Anggia, H., & Habók, A. (2023). Textual complexity adjustments to the English reading comprehension test for undergraduate EFL students. *Heliyon*, *9*(1), e12891. https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e12891

Austin, G., & Yanovych, A. (2024). Affect and conation in second language learning: Survey data from Ukrainian learners of English. *Data in Brief*, *53*, 1–6. https://doi.org/https://doi.org/10.1016/j.dib.2024.110090

Azis, & Juanda. (2023). Student mental health euphemisms. *XLinguae*, *16*(1), 51–59. https://doi.org/10.18355/XL.2023.16.01.04

Azubuike, O. B., Moore, R., & Vaidya, G. (2023). Using Bourdieu's theory of cultural reproduction to examine English language learning: A multilevel study in three lower- and middle-income countries. *Social Sciences & Humanities Open*, *8*(1), 1–15. https://doi.org/https://doi.org/10.1016/j.ssaho.2023.100578

Bąk, T., Kardis, M., Valco, M., Kalimullin, A. M., & Galushkin, A. A. (2019). A philosophical-sociological diagnosis of youth subcultures in the context of social changes. *XLinguae*, *12*(2), 163–185. https://doi.org/10.18355/XL.2019.12.02.14

Cheng, J. (2023). Acquisition of English liaison among Chinese EFL learners from the perspective of language transfer. *Heliyon*, *9*(10), 1–24. https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e20418

Choi, T.-H., & Poudel, P. P. (2024). Enactment of English medium instruction in under-resourced educational contexts: A case of multilingual public secondary schools in Nepal. *System*, *121*, 1–14. https://doi.org/https://doi.org/10.1016/j.system.2024.103223

Dunifa, L. (2024). The Roots of Demotivation in Studying English: Sociocultural Values among Students in a Rural Area. *Studies in English Language and Education*, *11*(1), 304–320. https://doi.org/10.24815/siele.v11i1.31040

Duranti, A. (1997). *Linguistic Anthropology*. Cambridge University Press.

Ellis, R. (2015). *Understanding Second Language Acquisition* (2nd ed.). Oxford University Press.

Fang, F., Soleimanzadeh, S., Zhang, W., & Elahi Shirvan, M. (2023). Chinese students' multilingual identity constructions after studying abroad: A multi-theoretical perspective. *System*, *115*, 1–12. https://doi.org/https://doi.org/10.1016/j.system.2023.103053

Farangi, M. R., & Naami, A. (2024). A study of early multilingualism in Iran: The effects of mother tongue literacy, socio-economic status and foreground TV exposure. *Acta Psychologica*, *243*, 1–10. https://doi.org/https://doi.org/10.1016/j.actpsy.2024.104167

Fortunato Queiroz, C. A. U., de Lima Isaac, M., & Angelo Hyppolito, M. (2023). Cross-cultural adaptation of the new Reynell developmental language scales to Brazilian Portuguese. *Brazilian Journal of Otorhinolaryngology*, *89*(6), 1–8. https://doi.org/https://doi.org/10.1016/j.bjorl.2023.101332

Gao, X. (Andy), & Yang, W. (2023). Multilingualism and language teacher education. *System*, *118*, 1–8. https://doi.org/https://doi.org/10.1016/j.system.2023.103127

Gerosa, T., & Gui, M. (2023). Earlier smartphone acquisition negatively impacts language proficiency, but only for heavy media users. Results from a longitudinal quasi-experimental study. *Social Science Research*, *114*, 1–14. https://doi.org/https://doi.org/10.1016/j.ssresearch.2023.102915

Guile, D. (2023). Machine learning – A new kind of cultural tool? A "recontextualisation" perspective on machine learning + interprofessional learning. *Learning, Culture and Social Interaction*, *42*, 1–10. https://doi.org/https://doi.org/10.1016/j.lcsi.2023.100738

Habók, A., Oo, T. Z., & Magyar, A. (2024). The effect of reading strategy use on online reading comprehension. *Heliyon*, *10*(2), 1–17. https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e24281

Hossain, K. I. (2024). Reviewing the role of culture in English language learning: Challenges and opportunities for educators. *Social Sciences & Humanities Open*, *9*, 1–10. https://doi.org/https://doi.org/10.1016/j.ssaho.2023.100781

Ionov, M., Dubinina, E., Tregubenko, I., Zvartau, N., & Konradi, A. (2023). Russian-language translation and cultural adaptation of the Norwegian 'Patient Experience Questionnaire.' *PEC Innovation*, *2*, 1–11. https://doi.org/https://doi.org/10.1016/j.pecinn.2023.100174

Ireland, S., Bukulatjpi, D. Y., Bukulatjpi, E. D., Gundjarraŋbuy, R., Adair, R., Roe, Y., Moore, S., Kildea, S., & Maypilama, E. Ḻäwurrpa. (2024). Djäkamirr: Exploring principles used in piloting the training of First Nations doulas in a remote multilingual Northern Australian community setting. *Women and Birth*, 1–9. https://doi.org/https://doi.org/10.1016/j.wombi.2023.12.007

Juanda, & Azis. (2023). Dolphin Conservation in Pengelana Laut Short Story: Greg Garrard's Ecocriticism Study. *Theory and Practice in Language Studies*, *13*(9), 2303–2312. https://doi.org/10.17507/tpls.1309.17

Juanda, J., Afandi, I., & Yunus, A. F. (2024). Digital Short Story Literacy and the Character of Environmentally Concerned Students. *Journal of Language Teaching and Research*, *15*(2), 415–427. https://doi.org/10.17507/jltr.1502.10

Juanda, J., Djumingin, S., Mantasiah, R., Afandi, I., & Intang, D. (2024). Ecoliteracy digital short stories among students in Indonesia. *Journal of Turkish Science Education*, *21*(2), 254–270. https://doi.org/10.36681/tused.2024.014

Juanda Juanda, I. A. (2024). *Assessing text comprehension proficiency : Indonesian higher education students vs ChatGPT Juanda – Iswan Afandi*. *17*(1), 49–68. https://doi.org/10.18355/XL.2024.17.01.04

Kaibao, H., & Afzaal, M. (2024). The translation teaching platform based on multilingual corpora of Xi Jinping: The Governance of China: Design, resources and applications. *Acta Psychologica*, *242*, 1–10. https://doi.org/https://doi.org/10.1016/j.actpsy.2023.104110

Kemaladinovna, Z. S., Abdrakhmanova, Z., Bokenbaiuly, M. S., Dauletova, G., & Kussainovna, M. A. (2023). Sociolinguistic aspects of polylinguistic (trilingualism) education in the western region of Kazakhstan. *XLinguae*, *16*(2), 85–99. https://doi.org/10.18355/XL.2023.16.02.07

Kim, Y., & Michel, M. (2023). Linguistic alignment in second language acquisition: A methodological review. *System*, *115*, 103007. https://doi.org/10.1016/j.system.2023.103007

Krashen, S. (2003). *Explorations in language Acquisition and Use*. Heinemann.

Kujala, T., Partanen, E., Virtala, P., & Winkler, I. (2023). Prerequisites of language acquisition in the newborn brain. *Trends in Neurosciences*, *46*(9), 726–737. https://doi.org/https://doi.org/10.1016/j.tins.2023.05.011

Lai, W.-F. (2023). Integrating sociocultural perspectives into a university classroom: A case study of students' experience. *Heliyon*, *9*(6), 1–7. https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e17228

Leavens, D. A., Elsherif, M. M., & Clark, H. (2023). What animals can tell us about attentional prerequisites of language acquisition. *Language & Communication*, *92*, 55–73. https://doi.org/https://doi.org/10.1016/j.langcom.2023.06.004

Li, Y., Qin, C., Qiu, S., He, Y., Pang, L., Xu, X., Yim, V. W. C., Tang, S., Du, H., Gong, W., Yang, F., Tucker, J. D., Tang, W., Wang, Y., Lin, L., Jit, M., Song, W., Li, C., Smith, J., … Wu, D. (2023). The effectiveness of pay-it-forward in addressing HPV vaccine delay and increasing uptake among 15–18-year-old adolescent girls compared to user-paid vaccination: a study protocol for a two-arm randomized controlled trial in China. *BMC Public Health*, *23*(1). https://doi.org/10.1186/s12889-022-14947-3

Lusta, A., Demirel, Ö., & Mohammadzadeh, B. (2023). Language corpus and data driven learning (DDL) in language classrooms: A systematic review. *Heliyon*, *9*(12), 1–19. https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e22731

Menks, W. M., Ekerdt, C., Lemhöfer, K., Kidd, E., Fernández, G., McQueen, J. M., & Janzen, G. (2024). Developmental changes in brain activation during novel grammar learning in 8-25-year-olds. *Developmental Cognitive Neuroscience*, *66*, 1–9. https://doi.org/https://doi.org/10.1016/j.dcn.2024.101347

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis a Methods Sourcebook* (3rd ed.). SAGE Publications.

Mohebbi, A. (2023). The use of cultural conceptualisations as a translation strategy for culture-specific jokes and humorous discourse: A remedy for a malady? *Ampersand*, *11*, 1–11. https://doi.org/https://doi.org/10.1016/j.amper.2023.100150

Opare-Kumi, J. (2024). English medium instruction in multilingual contexts: Empirical evidence from Ethiopia. *International Journal of Educational Development*, *105*, 1–18. https://doi.org/https://doi.org/10.1016/j.ijedudev.2024.102987

Ostrolenk, A., Courchesne, V., & Mottron, L. (2023). A longitudinal study on language acquisition in monozygotic twins concordant for autism and hyperlexia. *Brain and Cognition*, *173*, 1–11. https://doi.org/https://doi.org/10.1016/j.bandc.2023.106099

Perrigo, J. L., Stanley, L., Mixson, L. S., Espinosa, L., Morales, J., Beck, C., & Halfon, N. (2024). Examining holistic developmental strengths and needs of multilingual kindergartners using the Early Development Instrument. *International Journal of Educational Research Open*, *6*, 1–9. https://doi.org/https://doi.org/10.1016/j.ijedro.2023.100315

Perry, S. J. (2023). A Critical Discourse Analysis of ELT Institutional Contradictions in Language Policy and Recruitment in Japan. *Studies in English Language and Education*, *10*(3), 1546–1568. https://doi.org/10.24815/siele.v10i3.30335

Polakova, P., & Klimova, B. (2023). Using DeepL translator in learning English as an applied foreign language – An empirical pilot study. *Heliyon*, *9*(8), 1–7. https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e18595

Putra, I. M. S., Siahaan, D., & Saikhu, A. (2024). SNLI Indo: A recognizing textual entailment dataset in Indonesian derived from the Stanford Natural Language Inference dataset. *Data in Brief*, *52*, 1–12. https://doi.org/https://doi.org/10.1016/j.dib.2023.109998

Rainey, J. P., Blackburn, B. E., McCutcheon, C. L., Kenyon, C. M., Campbell, K. J., Anderson, L. A., & Gililland, J. M. (2023). A Multilingual Chatbot Can Effectively Engage Arthroplasty Patients Who Have Limited English Proficiency. *The Journal of Arthroplasty*, *38*(7, Supplement 2), S78–S83. https://doi.org/https://doi.org/10.1016/j.arth.2023.04.014

Santosa, B. (2024). Aspects of Successful Multilingualism. *Theory and Practice in Language Studies*, *14*(1), 146–153. https://doi.org/10.17507/tpls.1401.17

Schwartz, E., Shamir-Inbal, T., & Blau, I. (2023). Teacher prototypes in technology-enhanced instruction in elementary school second language acquisition: Comparing routine and emergency learning in different cultures. *Computers and Education Open*, *5*, 1–12. https://doi.org/https://doi.org/10.1016/j.caeo.2023.100155

Shidhaye, R., Bhide, V., Bangal, V., Shivajirao Behere, N., Shidhaye, P., Pulate, V., Tambe, S., & Thanage, C. (2023). Culturally sensitive translation of the Edinburgh Postnatal Depression Scale into Marathi language to assess perinatal depression in rural Maharashtra, India. *Journal of Affective Disorders Reports*, *11*, 1–8. https://doi.org/https://doi.org/10.1016/j.jadr.2022.100458

Siebenhütter, S. (2023). The multilingual profile and its impact on identity: Approaching the difference between multilingualism and multilingual identity or linguistic identity. *Ampersand*, *10*, 1–18. https://doi.org/https://doi.org/10.1016/j.amper.2023.100123

Slaughter, Y., Aliani, R., Bonar, G., & Keary, A. (2024). Early childhood educators' viewpoints on linguistic and cultural diversity: A Q methodology analysis. *Linguistics and Education*, *79*, 1–10. https://doi.org/https://doi.org/10.1016/j.linged.2023.101265

Spechtenhauser, B., & Jessner, U. (2024). Complex interactions in the multilingual mind: Assessing metalinguistic abilities and their effects on decoding a new language system in trilingual learners. *Lingua*, *301*, 1–24. https://doi.org/10.1016/j.lingua.2024.103678

Stepanova, V. V. (2019). Interference challenge to translation quality in multilingual legislation. *XLinguae*, *12*(4), 3–17. https://doi.org/10.18355/XL.2019.12.04.01

Tai, K. W. H. (2023). Transcending the boundaries of mode in online language teaching: A translanguaging perspective on English as a second language teachers' synchronous small group online tutorials. *System*, 1–98. https://doi.org/https://doi.org/10.1016/j.system.2023.103185

Tardel, A., Kapnas, D., Hansen-Schirra, S., Thiele, S., & Videsott, R. (2023). Linguistic landscaping: Eyetracking multilingual information processing. *Procedia Computer Science*, *225*, 1727–1737. https://doi.org/https://doi.org/10.1016/j.procs.2023.10.162

Twiner, A., Littleton, K., Whitelock, D., & Coffin, C. (2021). Combining sociocultural discourse analysis and multimodal analysis to explore teachers' and pupils' meaning making. *Learning, Culture and Social Interaction*, *30*, 1–13. https://doi.org/https://doi.org/10.1016/j.lcsi.2021.100520

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press.

Wu, X., & Forbes, K. (2023). Contextualising the temporal dimension in multilingual identity construction: A longitudinal Q methodological study with Chinese LOTE-learning public high school students. *System*, *116*, 1–15. https://doi.org/https://doi.org/10.1016/j.system.2023.103090

Xu, Y. (Sue), & Krulatz, A. (2023). "Multilingualism is a resource, not a difficulty": Exploring Norwegian teachers' beliefs and reported practices in multilingual settings. *Teaching and Teacher Education*, *136*, 1–12. https://doi.org/https://doi.org/10.1016/j.tate.2023.104332

Zhang, J., Li, H., Zhang, M., Wang, Z., Ao, X., Jian, J., Wei, N., Liu, H., Ding, G., & Meng, X. (2023). Functional preference of the left inferior parietal lobule to second language reading. *NeuroImage*, *270*, 1–12. https://doi.org/https://doi.org/10.1016/j.neuroimage.2023.119989

Zhang, Z., & Huang, X. (2024). The impact of chatbots based on large language models on second language vocabulary acquisition. *Heliyon*, *10*(3), 1–13. https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e25370

Zheng, Z., Degotardi, S., Sweller, N., & Djonov, E. (2023). Effects of multilingualism on Australian infants' language environments in early childhood education centers. *Infant Behavior and Development*, *70*, 1–13. https://doi.org/https://doi.org/10.1016/j.infbeh.2022.101799