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Language learning strategies in relation to advanced Chinese vocabulary and writing proficiency

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ABSTRACT

The study investigated the relationship between the language learning strategies (LLSs) employed by international undergraduate students at universities in Qinghai Province, China, and their proficiency in advanced Chinese vocabulary and writing. Data was collected from 45 advanced-level students selected through purposive sampling, using Oxford's strategy inventory for language learning (SILL), an advanced Chinese vocabulary knowledge test, and advanced Chinese writing test scores. The descriptive analysis revealed moderate language learning strategy usage, with a preference for speaking and listening development. This result indicates a limited strategy usage. The correlation analysis showed no significant relationship between strategy usage and advanced Chinese vocabulary or writing proficiency. However, a strong relationship was observed between advanced Chinese vocabulary and writing proficiency. The absent relationship between strategy usage and proficiency levels suggests insufficient Chinese language proficiency among the students. The significant relationship highlights the crucial role of vocabulary in enhancing Chinese writing skills. The results provide practical insights for enhancing the use of strategies and vocabulary teaching to improve advanced writing and Chinese proficiency among international undergraduate students.

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1. INTRODUCTION

The four cognitive developmental stages proposed by Piaget have provided valuable insights into cognitive development. The exploration of cognitive development in adults has prompted numerous researchers to investigate language acquisition. Pioneers such as Miller, Galante, Pribram, Mandler, and Rothkopf introduced the concept of general strategy, which was subsequently applied to learning. The 1970s marked a significant period during which language learning strategies (LLSs) received considerable attention for their crucial role in second language acquisition [1]. Research on good language learners has rapidly gained momentum and became an integral part of applied linguistics over the last 3 decades [2].

Since the 1970s, researchers have used various terms to describe LLSs. Rigney and Oxford in Kölemen [3] referred to them as specific actions, while Weinstein and Mayer in Wael *et al.* [4], and Griffiths in Agustin *et al.* [5] described them as learning behaviors. In contrast, Rubin in Kölemen [3] and Chamot in Wael *et al.* [4] characterized these strategies as techniques and approaches. Despite these terminological differences, the definitions share core features. They conceptualize LLSs as tools, behaviors, or methods that

facilitate language acquisition. These strategies enable learners to make language learning more efficient, enjoyable, self-directed, and adaptable to new contexts.

Since 1977, there has been a consistent increase in the publication of research on LLSs. Oxford in Kölemen [3] taxonomy of LLSs and the strategy inventory for language learning (SILL) has had a lasting influence on this field. A systematic review by Thomas *et al.* [6] of the core components of language learning strategy research revealed a strong predominance of questionnaire-based studies, most of which were aligned with Oxford's categorization of strategies. Oxford divided LLSs into direct and indirect strategies. Direct strategies engage with the target language, including memory, cognitive, and compensation strategies. Indirect strategies coordinate the learning process by enabling learners to regulate their emotions and collaborate with others. These strategies include metacognitive, affective, and social strategies [3]. Numerous researchers have reported positive relationships between strategy utilization and successful language learning. For example, Dreyer and Oxford in Griffiths and Cansiz [7] identified a positive relationship between the application of strategies and successful TOEFL scores. Following this, studies by Griffiths, Kyungsim, and Leavell in Griffiths and Cansiz [7] yielded similar results. Chamot in Agustin *et al.* [5] also uncovered the critical role of learning strategies in enhancing speaking skills, particularly among less successful learners. Recent researches [8]–[12] consistently demonstrated a positive correlation between strategy usage and successful language learning, underscoring the crucial role of learning strategies in achieving language proficiency.

In the 1990s, a pioneering study by Yang in Wang [13] identified a crucial correlation between LLSs and Chinese proficiency. This research marked a significant milestone in the research on Chinese language strategies. Correlation studies available in the China National Knowledge Infrastructure (CNKI) database [13]–[15]. These studies investigated the use of LLSs among international students and their relationship with Chinese proficiency. Despite these efforts, the limited number of studies highlights a significant insufficiency in empirical research in journals. Additionally, literature specific to Qinghai Province is even more scarce, with only four references available. Among these, two are outdated, while the other two were contributed by Dang [16] and Li [17]. These works mainly focus on the development of international education rather than providing empirical insights into Chinese language teaching and learning, underscoring a more significant gap in existing research. This study aims to fill the gap by investigating LLSs, providing insights into the use of learning strategies by international undergraduate students at universities in Qinghai Province, and their relationship to advanced Chinese vocabulary and writing proficiency. The study adopted Oxford's language learning strategy framework to address the following research questions:

i) What LLSs do international undergraduate students employ?
ii) What is the relationship between strategy usage, advanced Chinese vocabulary, and writing proficiency?

The findings of this study have important implications for the teaching of Chinese as a second language. They offer valuable insights for language learning strategy instruction, vocabulary and writing development for international undergraduate students. In addition to these pedagogical benefits, the results provide essential empirical evidence for research on Chinese LLSs, laying a foundation for future comparative studies in this area.

2. METHOD

The study employed a quantitative research approach to investigate the LLSs used by international undergraduate students and their relationships with advanced Chinese vocabulary and writing proficiency [18]. It followed a series of systematic procedures, including defining the population and sampling, developing and validating instruments, collecting data, analyzing the data, presenting the results, and discussing the findings. The population consisted of international undergraduate students in universities across Qinghai Province, China. The province has four universities: Qinghai University, Qinghai Normal University, Qinghai Nationalities University, and Qinghai Institute of Technology. Of these four universities, only Qinghai Nationalities University has offered an undergraduate program in Chinese language and literature for international students since 2016. Therefore, the participants were exclusively drawn from this university, ensuring homogeneity among the participants. There are 48 international undergraduate students in the College of International Education at Qinghai Nationalities University. The students were selected using purposive sampling, guided by specific criteria. These criteria included: i) the students finished the intermediate level of study and ii) they completed advanced Chinese language courses and assessments. Of the 48 international undergraduate students, 45 met these criteria, with the remaining 3 studying at an intermediate level. Thus, the final sample consisted of 45 advanced-level international undergraduate students, including 4 from the class of 2016, 13 from the class of 2017, 4 from the class of 2018, 9 from the class of 2019, 12 from the class of 2020, and 3 from the class of 2021. The details of the participants' backgrounds are shown in Table 1.

Table 1. The participants' background information

Class	Quantity	Gender		Status
Class of 2016	4	2 Male	2 Female	Graduated
Class of 2017	13	11 Male	2 Female	Graduated
Class of 2018	4	4 Male		Graduated
Class of 2019	9	7 Male	2 Female	Graduated
Class of 2020	12		12 Female	Not graduated
Class of 2021	3		3 Female	Not graduated

The instruments used for data collection included Oxford's SILL, an advanced Chinese vocabulary knowledge test, and writing scores from two advanced Chinese writing tests administered by the College of International Education at Qinghai Nationalities University. The SILL questionnaire contained 50 items divided into six categories: memory strategies (items 1-10), cognitive strategies (items 11-23), compensation strategies (items 24-29), metacognitive strategies (items 30-38), affective strategies (items 39-44), and social strategies (items 45-50). A pilot test was conducted on 40 international students from other universities who responded to each item on the SILL using a 5-point Likert scale. The reliability of the SILL was assessed using Cronbach's alpha, which yielded a coefficient of .944, indicating high reliability. In addition, the internal consistency of the strategy items within their respective categories was examined, with all items showing statistically significant results ($P<.05$). Moreover, experts reviewed the SILL's content validity. A professor from the Faculty of Foreign Language Studies at Qinghai Normal University evaluated the English-to-Chinese translation and confirmed that it largely preserved the questionnaire's original structure and intent. In addition, lecturers from the College of International Education at Qinghai Nationalities University assessed the questionnaire's presentation. They verified that it was well aligned with the theoretical concepts of LLSs.

The advanced Chinese vocabulary knowledge test was developed based on the read's word associates test (WAT) framework [19] and guided by a table of specifications (TOS). The vocabulary corpus was drawn from the "grade standards", the latest research outcome for assessing Chinese language proficiency for international Chinese education [20]. The 30 words were randomly selected from the fifth-level word list to evaluate students' advanced vocabulary knowledge. According to the TOS, each word had one correct associate to assess paradigmatic relationships and two collocates to evaluate syntagmatic relationships. This design allowed for three correct answers per word, culminating in a total score of 90 points. A pretest of the advanced Chinese vocabulary knowledge test was conducted among international undergraduate students from the classes of 2017, 2019, 2020, and 2021, resulting in 30 completed responses for reliability analysis. The Cronbach's alpha coefficient, rather than the Kuder-Richardson formula, was employed because it is more appropriate for the type of vocabulary test used in this study. The resulting coefficient was .954, indicating strong reliability. Additionally, the internal consistency between the target words and their respective parts of speech was examined. The analysis showed that all words demonstrated significant consistency, with P-values below .05. Furthermore, lecturers from the College of International Education at Qinghai Nationalities University reviewed the test and affirmed its content validity. They acknowledged that while assessing syntagmatic relationships is challenging for international undergraduate students, it offers a meaningful approach to evaluating their vocabulary usage. The reviewers confirmed that the test content is appropriate and valid.

The SILL questionnaire and vocabulary test were administered to 45 international undergraduate students online and in class. Data were collected using Google Forms, Tencent Survey, and paper-based tests. The quantitative data were analyzed using SPSS. Initially, descriptive statistics, such as means and standard deviations, were employed to explore the LLSs used by the students. Subsequently, Pearson correlation tests were conducted to investigate the relationships among LLSs, advanced Chinese vocabulary, and writing proficiency. In cases where significant correlations were found, one-way analysis of variance (ANOVA) tests were carried out to examine group differences. These statistical methods effectively and comprehensively addressed the research questions relevant and significant to teaching Chinese as a second language.

3. RESULTS AND DISCUSSION

3.1. International undergraduate students' use of language learning strategies

The use of LLSs by international undergraduate students at Qinghai Nationalities University is illustrated in Table 2. In this table, MEM represents memory strategies, COG represents cognitive strategies, COM represents compensation strategies, MET represents metacognitive strategies, AFF represents affective strategies, and SOC represents social strategies. The assessment of language learning strategy utilization followed Oxford's interpretation of the score range, wherein: i) a score range of 3.50-5.00 indicated high

strategy use; ii) a score range of 2.50-3.49 corresponded to medium strategy use; and iii) a score range of 0.00-2.49 signified low strategy use [11]. The descriptive analysis results show that international undergraduate students employed a medium level of overall LLSs (M=3.28, SD=.54). Among the six strategy categories, metacognitive strategies were the highly employed strategies (M=3.63, SD=.72), followed by social strategies (M=3.46, SD=.69), cognitive strategies (M=3.25, SD=.63), memory strategies (M=3.17, SD=.61), compensation strategies (M=3.06, SD=.61), and affective strategies (M=3.01, SD=.75). These results show that except metacognitive strategies, the students' use of memory, cognitive, compensation, affective, and social strategies remains at a medium level. According to Oxford's taxonomy, memory, cognitive, and compensation strategies involve direct engagement with the target language, while metacognitive, affective, and social strategies help coordinate the learning process. The findings indicate that international undergraduate students employ memory, cognitive, and compensation strategies to a moderate extent in developing their Chinese skills. Similarly, their use of affective and social strategies is also moderate, except for metacognitive strategies, which are highly used.

Table 2. Descriptive analysis results of language learning strategy usage

Variables	Mean	Std. Deviation	Strategy use	Rank
MEM	3.17	.61	Medium	4
COG	3.25	.63	Medium	3
COM	3.06	.61	Medium	5
MET	3.63	.72	High	1
AFF	3.01	.75	Medium	6
SOC	3.46	.69	Medium	2
LLSs	3.28	.54	Medium	

The analysis further identified 17 individual strategy items highly used by international undergraduate students, including 2 memory strategies, 3 cognitive strategies, 2 compensation strategies, 7 metacognitive strategies, and 3 social strategies. No highly used strategy was identified in affective strategies. The students' use of memory strategies shows that when learning vocabulary, they use the strategy of repeated writing or vocalizing words (M=3.91, SD=.79) higher than the strategy of making sentences (M=3.73, SD=.78). This result indicates that they prefer mechanical memorization for vocabulary learning. In cognitive strategies, the students highly use the strategies of talking in Chinese (M=3.78, SD=.93), watching Chinese programs or movies (M=3.69, SD=1.02), and speaking like Chinese (M=3.56, SD=1.01). These results suggest that they prioritize listening and speaking skills, particularly the speaking skills. Furthermore, the students use guessing (M=3.69, SD=1.13) more than using synonyms (M=3.56, SD=.94) to compensate for their inadequate vocabulary learning. Based on the findings, it can be seen that the students at Qinghai Nationalities University prioritize speaking and listening development, preferring to memorize vocabulary through repeated writing, vocalizing, and guessing.

The other 10 individual strategies highly employed by international undergraduate students are strategies from the metacognitive and social strategy categories. The highest use of metacognitive strategy is chatting with people who can speak Chinese (M=3.84, SD=1.13), followed by the strategies of looking for better learning methods (M=3.80, SD=.87), setting goals (M=3.80, SD=.89), paying attention to Chinese-speaking foreigners (M=3.69, SD=.95), monitoring progress (M=3.67, SD=.98), learning from mistakes (M=3.62, SD=.94), and looking for ways to use Chinese (M=3.51, SD=1.04). This high number of metacognitive strategies indicates the students' positive attitudes toward Chinese learning. In social strategies, learning Chinese culture has achieved the highest mean value of all strategy items (M=4.16, SD=.98), indicating their strong willingness to learn Chinese culture. In summary, international undergraduate students at Qinghai Nationalities University exhibit positive attitudes and a strong willingness to learn Chinese and its culture. However, in the process of developing their language skills, they prioritize speaking and listening, relying on mechanical memorization to learn vocabulary. This finding suggests that they are selective in their strategy usage and place less emphasis on academic development. The 17 individual strategy items highly used by international undergraduate students are presented in Table 3.

3.2. Relationship between language learning strategies, advanced Chinese vocabulary, and advanced Chinese writing proficiency

The correlation results in Table 4 show that the LLSs are not significantly correlated with advanced Chinese vocabulary proficiency (r=-.01, P>.05). Similarly, memory (r=-.13, P>.05), cognitive (r=.09, P>.05), compensation (r=-.23, P>.05), metacognitive (r=.18, P>.05), affective (r=-.04, P>.05), and social strategies (r=-.06, P>.05) also show no correlation with advanced Chinese vocabulary proficiency. In the analysis of the correlation between LLSs and advanced Chinese writing proficiency, no significant correlation was found

among these variables. The correlation coefficients between the LLSs (r=-.03, P>.05), memory (r=-.06, P>.05), cognitive (r=.04, P>.05), compensation (r=-.14, P>.05), metacognitive (r=.09, P>.05), affective (r=-.09, P>.05), social strategies (r=-.09, P>.05), and writing proficiency were low, with all P-values higher than .05. However, a significant correlation between advanced Chinese vocabulary and writing proficiency was identified (r=.66, P<.05). This finding suggests that improvements in advanced Chinese vocabulary skills are closely related to enhancements in Chinese writing abilities, underscoring the critical role of advanced vocabulary in developing writing proficiency. The results of Pearson correlation tests are presented in Table 4.

Table 3. The 17 strategy items highly used by international undergraduate students

Variables		Items	Mean	SD
MEM	Q10	Repeated writing or vocalizing words	3.91	.79
	Q2	Making sentences	3.73	.78
COG	Q14	Talking in Chinese	3.78	.93
	Q15	Watching Chinese programs or movies	3.69	1.02
	Q11	Speaking like Chinese	3.56	1.01
COM	Q24	Guessing the word	3.69	1.13
	Q29	Using synonym	3.56	.94
MET	Q35	Chatting with people who can speak Chinese	3.84	1.13
	Q33	Finding better ways to learn	3.80	.87
	Q37	Setting goals	3.80	.89
	Q32	Noticing Chinese-speaking foreigners	3.69	.95
	Q38	Monitoring progress	3.67	.98
	Q31	Learning from mistakes	3.62	.94
	Q30	Finding more ways to use Chinese	3.51	1.04
SOC	Q50	Learning Chinese culture	4.16	.98
	Q49	Asking questions in Chinese	3.78	.99
	Q45	Asking for repetition	3.53	1.04

Table 4. Pearson correlation between strategy usage, advanced Chinese vocabulary, and writing proficiency

Variable	LLSs	MEM	COG	COM	MET	AFF	SOC	Vocabulary
Vocabulary	-.01	-.13	.09	-.23	.18	-.04	-.06	
Writing	-.03	-.06	.04	-.14	.09	-.09	-.09	.66**

Note: **p<.01

3.3. Differences in advanced Chinese writing proficiency based on vocabulary levels

Due to the significant correlation previously identified between advanced Chinese vocabulary and writing proficiency, a one-way ANOVA was conducted to examine differences in writing proficiency across three vocabulary levels. Before running the ANOVA test, the study examined the distribution of advanced Chinese vocabulary and writing scores. The Shapiro-Wilk test showed that the P-values for advanced Chinese vocabulary and writing proficiency were higher than .05, suggesting that the scores followed a normal distribution. As shown in Table 5, the results of the ANOVA test revealed significant differences in advanced Chinese writing across three vocabulary levels (F=16.05, df=2/42, P<.05). The descriptive results show that international undergraduate students with high vocabulary levels achieved the highest average writing score (M=82.19, SD=9.91), followed by those with medium vocabulary levels (M=79.82, SD=6.70), and those with low vocabulary levels (M=53.25, SD=24.81). These findings indicate that students with higher vocabulary proficiency demonstrate significantly stronger writing skills. The results of the ANOVA test are presented in Table 5.

Table 5. The results of ANOVA test for writing proficiency by vocabulary levels

Vocabulary levels	Writing M	Writing SD	Writing	Sum of square	df	Mean square	F	Sig.
Low	53.25	24.81	Between groups	6057.04	2	3028.52	16.05	.000
Medium	79.82	6.70	Within groups	7927.67	42	188.75		
High	82.19	9.91	Total	13984.70	44			

The significant differences in advanced Chinese writing based on vocabulary levels underscore the influence of vocabulary levels on advanced writing proficiency. Accordingly, the study employed a post hoc test to determine specific group differences. The Tamhane post hoc test results, presented in Table 6, show that international students with medium and high levels of advanced Chinese vocabulary proficiency

demonstrate superior performance in advanced Chinese writing compared to those with low proficiency. These findings highlight the significant impact of high vocabulary levels on writing skills. Notably, no statistically significant difference was detected between students with medium and high vocabulary levels in advanced Chinese writing abilities. This finding suggests that factors, in addition to vocabulary, impact advanced Chinese writing, which can be investigated in future studies. The results of the Tamhane post hoc test are shown in Table 6.

Table 6. Tamhane post hoc test results for comparisons between three vocabulary levels

Vocabulary		Difference	Std. error	Sig.
L-level	M-level	-26.57*	8.01	.024
	H-level	-28.94*	8.19	.015
M-level	L-level	26.57*	8.01	.024
	H-level	-2.37	2.85	.796
H-level	L-level	28.94*	8.19	.015
	M-level	2.37	2.85	.796

Note: *p<.05

3.4. Discussion of the results

International undergraduate students at Qinghai Nationalities University employed moderate LLSs. This finding is consistent with Lü and Lin in Wang [13], who found that Vietnamese international students employ learning strategies less frequently. Similar moderate strategy use was observed among Laotian students at Changzhou Mechanical and Electrical Vocational and Technical College [21]. Study by Liang and Zhang [15] also found that international students from Belt and Road countries and Africa used learning strategies at a low level. In contrast, studies by Cai in Zhou [22], and Liao [23] reported higher usage of LLSs among international students. These different levels of strategy use show that international students employ different extents of strategies when learning Chinese. Learners immersed in target-language environments generally employ a wider range of strategies because they rely on the language for daily interactions [24]. Peter and Hashim [24] review supports these perspectives, highlighting that successful language learners in immersion settings consistently apply appropriate strategies to achieve proficiency. Supporting these findings, Liao [23] found that international students learning Chinese in China use strategies more frequently than those studying in their home countries. In the present study, however, international undergraduate students demonstrated only moderate use of such strategies, contrasting with high strategy use reported among other international students. This comparison suggests that, although international undergraduate students at Qinghai Nationalities University are immersed in the target language environment, they employ a limited range of learning strategies. This limited use of strategies is evident in their emphasis on strategy items related to speaking and listening, indicating that they prioritize oral communication over academic development. The strategies employed by the students to improve their reading and writing are inadequate.

The correlation analysis revealed no statistically significant relationship between LLSs and advanced Chinese vocabulary proficiency. This finding contradicts the study by Qu [25], which identified significant relationships between memory, cognitive, and metacognitive strategies and Chinese vocabulary proficiency. Similarly, no statistically significant relationship existed between LLSs and advanced Chinese writing proficiency. While this result aligns with Lü and Lin in Wang [13], it contradicts the positive relationships reported by other previous studies [13], [21], [22], [26]. Specifically, study by Cai in Wang [13] and Zheng [21] reported significant correlations between the LLSs used by international students and their Chinese proficiency. Zhou [22] and Wang [26] found positive relationships not only between the LLSs and the Chinese proficiency test (HSK) but also between cognitive strategies and HSK writing proficiency. The positive relationships underscore the importance of employing LLSs, particularly cognitive strategies, in Chinese as a second language learning. Among the studies reporting positive relationships, Zhou [22] and Liao [23] found high levels of strategy use among international students. Cai in Zhou [22] observed that higher Chinese proficiency correlates with increased use of learning strategies among international graduate students. Zhou [22] found significant variations in language learning strategy usage between high and low proficiency levels. Liao [23] also discovered significant differences in using six strategy categories among international students in the target language environment. These findings demonstrate the effectiveness of employing LLSs in Chinese language learning.

The positive relationship between LLSs and successful English as a second language (ESL) or English as a foreign language (EFL) learning offers valuable insights for research on Chinese LLSs. Recent studies [27], [28] have emphasized the effectiveness of strategy use in enhancing ESL/EFL learning and teaching outcomes. Similarly, several researches [11], [29]–[31] found that successful learners employed

LLSs more frequently and effectively than their less successful counterparts. These findings again demonstrate the impact of strategy usage on achieving higher language proficiency. However, the present study revealed no significant correlation between LLSs and students' advanced Chinese vocabulary or writing proficiency. This finding suggests that students' strategy use has little impact on their proficiency development. Learners with weaker language skills often do not fully employ reading and writing strategies. The application of these strategies can be improved as their language abilities are enhanced. This finding aligns with the study, which shows that international undergraduate students focus less on developing reading and writing skills. Raoofi *et al.* [32] found that learners with higher writing proficiency employ more writing strategies than those with lower proficiency. These findings suggest that high language ability influences the use of LLSs while reading and writing strategies significantly contribute to the development of academic skills. The moderate use of strategies, less emphasis on academic skills, and the lack of a significant correlation between strategy use and language proficiency suggest that the students at Qinghai Nationalities University possess inadequate Chinese language competence and use limited LLSs.

Based on the findings, the study offers two practical implications. First, language learning strategy instruction should be incorporated into Chinese language courses, particularly the training of cognitive strategies. This implication aligns with Bećirović *et al.* [12], who found that cognitive strategies are significant positive predictors of successful language learning. Zhang *et al.* [33] experimental study also provides evidence for this implication. They found that the intervention of reading and writing strategies in the experimental group significantly improved reading and writing skills [33]. Similarly, Wang [13] also addressed the significance of language learning strategy instruction in international Chinese education. Second, the strong correlation and significant differences observed between advanced Chinese vocabulary and writing proficiency underscore the importance of vocabulary skills in developing writing proficiency.

Furthermore, the study recommends prioritizing instruction in Chinese vocabulary. At the beginner level, teaching should focus on word forms and meanings. As students advance to the intermediate level, appropriate word usage is needed. At the advanced level, teaching should emphasize the contextual use of words and their coherence. Additionally, teachers can enhance writing courses by integrating vocabulary-building activities, such as implementing vocabulary quizzes and exercises. Moreover, writing assessments should consider vocabulary evaluation, focusing on aspects such as word level, appropriateness, and accuracy within students' writing. These implications will significantly enhance the teaching, assessment, and learning of advanced Chinese vocabulary and writing, as well as the application of LLSs among international undergraduate students.

It is important to acknowledge the limitations inherent in this study. Firstly, the study has a restricted population and a small sample size. This limitation is due to pandemic-related constraints and increasingly selective admission criteria for international undergraduate students. While this limitation may affect the generalizability of the findings, it was, to some extent, unavoidable. Although including international undergraduate students from other provinces was considered, differences in curricula and teaching practices across institutions would have compromised the homogeneity and comparability of the participants. In this regard, even a modest sample provides meaningful insights that can inform and support research on Chinese LLSs. The second limitation is a narrow focus on LLSs and Chinese proficiency. As noted by Kenol and Hashim [34], recent language learning strategy studies from 2013 to 2022 have increasingly considered personal factors, as well as socioeconomic, political, educational, religious, and cultural variables, that influence second language learners within a broader context. Although this study focused exclusively on individual learner variables, it offers valuable empirical evidence for future research. For example, future studies could reexamine variables such as LLSs and Chinese proficiency through longitudinal or comparative approaches. Other individual learner factors (e.g., learning styles, cognitive abilities, motivation, and the learning environment), along with language-related components (such as pragmatics, syntax, grammar, logical organization, and cultural competence) and teaching-related variables (including teaching methods and professional development), can be further explored in Chinese language learning strategy research.

4. CONCLUSION

The study revealed that international undergraduate students from Qinghai Nationalities University employed limited LLSs, as evidenced by their moderate strategy usage and less emphasis on academic development. Moreover, the absence of a relationship between these strategies and proficiency in advanced Chinese vocabulary and writing suggests that the students have insufficient Chinese language competence. In contrast, the significant correlation between advanced Chinese vocabulary and writing proficiency highlights the crucial role of vocabulary development in enhancing writing skills. These results highlight the urgent need to improve the strategy usage and Chinese proficiency of international undergraduate students.

Based on the findings, the study suggests integrating language learning strategy instruction and vocabulary enhancement into Chinese writing courses and assessments. This integrated approach could enhance the Chinese language proficiency and writing skills of international undergraduate students. While the study primarily focused on individual learner variables, which presents a limitation, the findings offer empirical evidence for future research, allowing for examining these variables over time. Additionally, the study recommends investigating a broader range of factors, including other individual, language-related, and teaching-related factors, to assess their impact on LLSs. These variables are crucial for teaching and learning Chinese as a second language.

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This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors state no conflict of interest.

INFORMED CONSENT

The study obtained informed consent from all participants. To ensure confidentiality, their identities were protected by replacing their real names with Chinese ones.

DATA AVAILABILITY

The data supporting the findings of this study are accessible through the UPSI Library (https://pustaka.upsi.edu.my), China National Knowledge Infrastructure (CNKI) (https://www.cnki.net), and Google Scholar (https://scholar.google.com). While some older but relevant sources are not included in the reference list due to their dated nature, their key findings have been integrated into the discussion to support the interpretation of the results. All references provide substantial evidence for the study's analysis and conclusions. Additionally, the data supporting this study are available from the corresponding author [MYMM], upon reasonable request.

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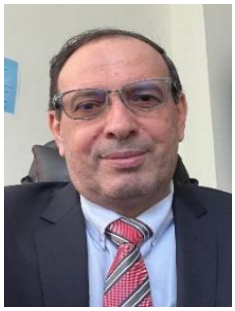

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