

School environment, cooperative learning and English language deep learning strategy among Chinese college students

Li, Haiyan ✉

Graduate School, Lyceum of the Philippines University - Batangas, Philippines (5670700@qq.com)

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Abstract

In an era where English serves as a global lingua franca, its mastery is crucial, especially in countries like China, where internationalization is rapidly progressing. This dissertation delves into the relationship among English language deep learning strategies, cooperative learning, and the school environment in Chinese colleges. The primary objective is to investigate how deep learning strategies are employed by Chinese college students in their English language studies, assess the impact of cooperative learning on their language proficiency, and understand the role of the school environment in shaping their language learning experiences. To address these aims, the study adopted a quantitative research approach, employing a variety of methods to collect, analyze, and interpret numerical data. Surveys, standardized tests, and academic records formed the core of the data collection process, providing a comprehensive view of the students' language learning strategies, their engagement in cooperative learning activities, and the nature of their educational environments. The study's findings revealed that students engaging in deep learning strategies, such as critical analysis, reflective practices, and concept integration, exhibited higher English proficiency levels. Cooperative learning emerged as a significant factor, with students participating in group-based activities and peer interactions showing marked improvements in their language skills, particularly in speaking and listening. Furthermore, the research underscored the importance of a supportive school environment, noting that resources, positive teacher attitudes, and an immersive English atmosphere were closely linked to better language learning outcomes. Cultural factors, including attitudes towards English and its perceived career value, also influenced students' motivation to learn. These insights lead to several implications for educational practice. Curriculum designs emphasizing deep learning over rote memorization, pedagogical approaches that incorporate cooperative learning, and policies fostering English-friendly school environments are recommended. Additionally, acknowledging the cultural context of English learning is vital, suggesting the integration of language instruction with cultural elements to enhance relevance and appeal. In conclusion, this dissertation contributes significantly to the understanding of

English language acquisition among Chinese college students. It underscores the importance of deep learning strategies, cooperative learning, and a supportive educational environment, offering valuable insights for educators, policymakers, and academic institutions. The findings advocate for evidence-based educational practices tailored to the unique context of China's integration into the global community, aiming to enhance English language learning outcomes among college students.

Keywords: school environment, cooperative learning, English language deep learning strategy

School environment, cooperative learning and English language deep learning strategy among Chinese college students

1. Introduction

English is widely regarded as the global language of communication. It is spoken by approximately 1.5 billion people worldwide, making it one of the most commonly spoken languages. Proficiency in English enables individuals to connect and communicate with people from different cultures, countries, and backgrounds, facilitating international business, travel, and cultural exchange. Chinese English courses, also known as English as a Second Language (ESL) or English Language Learning (ELL) courses in China, are designed to teach English language skills to Chinese students who are non-native English speakers. These courses play a crucial role in developing English proficiency among Chinese learners and preparing them for academic, professional, and social interactions in an English-speaking environment.

The primary goal of Chinese English courses is to equip students with the necessary language skills to understand, speak, read, and write English effectively. These courses cover various aspects of English language learning, including vocabulary, grammar, pronunciation, listening comprehension, speaking fluency, reading comprehension, and writing skills. Depending on the level of proficiency, Chinese English courses may range from beginner to advanced levels. Chinese English courses are typically structured to provide a balanced approach to language acquisition. They incorporate a combination of language input and output activities, interactive exercises, communicative tasks, and language practice opportunities. Students engage in conversations, discussions, role-plays, group activities, and language-focused tasks to develop their English language skills in an interactive and communicative manner. Chinese English courses serve as a fundamental component of English language education in China. They play a vital role in equipping Chinese learners with the necessary language skills, cultural awareness, and communication abilities to succeed in an English-speaking context. These courses facilitate academic pursuits, enhance career prospects, promote cross-cultural understanding, and enable Chinese learners to engage effectively in the global community. However, the current teacher-centered teaching model still has an important position. In the classroom, the teacher takes on a central role in delivering information and controlling the learning process, students often play a passive role, with limited opportunities for active engagement and participation. They may primarily listen to lectures or receive information passively, which can lead to reduced motivation, disengagement, and limited opportunities for critical thinking, problem-solving, and creativity (Leite, 2016). Thus, how can the Chinese students learn English in a better way is an important thing.

It's important to note that the teacher-centered English learning approach has its merits and may be suitable in certain contexts. However, to address the limitations and promote more effective learning outcomes, it is educational approaches that prioritize student-centered, active, and collaborative learning, such as English cooperative learning or deep learning, are often favored. The school environment is also crucial for students to learn English. The school environment encompasses various factors, including physical facilities, resources, teaching approaches, and the overall culture and climate within the school. It provides the context in which cooperative learning and deep learning can thrive. An effective school environment supports collaboration, provides access to resources and technology, and fosters a positive and inclusive learning community. It also promotes student agency, engagement, and motivation, creating an atmosphere conducive to cooperative and deep learning experiences. And the school environment are interconnected elements that contribute to a holistic and effective educational experience. Each of these components plays a crucial role in promoting student engagement, academic achievement, and the development of essential skills.

Besides the school environment, English learning approaches are also important. Cooperative learning is an instructional approach that emphasizes collaboration and active student participation. In cooperative learning, students work together in small groups to achieve common learning goals. This approach fosters social interaction,

communication skills, and critical thinking abilities. By engaging in cooperative learning activities, students not only deepen their understanding of subject matter but also develop important interpersonal and teamwork skills. Cooperative learning offers a more student-centered and interactive approach that promotes active engagement, academic achievement, social and communication skills, positive interdependence, individual accountability, inclusivity, and a supportive classroom climate. These benefits make cooperative learning a preferred method for fostering effective and meaningful learning experiences.

Deep learning refers to a comprehensive and meaningful understanding of academic content. It goes beyond surface-level memorization and focuses on the acquisition of knowledge, the application of concepts to real-world scenarios, and the development of critical thinking and problem-solving skills. Deep learning encourages students to analyze, evaluate, and synthesize information, enabling them to connect concepts across disciplines and apply their learning in meaningful ways. This paper surveys the relationship between cooperative learning and deep learning, school environment and cooperative learning, school environment and deep learning. The relationship between cooperative learning, deep learning, and the school environment is multifaceted. The findings from this research highlighted the significance of a positive school environment in promoting collaborative and interactive learning among students. Moreover, the study underscores the role of cooperative learning as a catalyst for enhancing English language skills, encouraging students to work together to deepen their understanding of the language.

College educators, as a result of these findings, may be prompted to allocate resources and support to optimize the school environment for effective cooperative learning. This, in turn, is expected to elevate students' deep learning strategies, leading to improved English language proficiency. The research aims to provide practical insights that educators can leverage to create an environment conducive to collaborative learning and, consequently, empower students to develop advanced language learning strategies. Furthermore, the outcomes of this research enlighten students about the impact of their school environment and cooperative learning experiences on the development of deep learning strategies for English language acquisition. Armed with this awareness, students actively engage in cooperative learning activities and adopt effective strategies to deepen their understanding of the English language. Ultimately, this research serves as a source of inspiration for both educators and students in the realm of English language learning in Chinese college settings. By understanding and implementing effective cooperative learning practices within a positive school environment, educators and students collaboratively contribute to the enhancement of English language deep learning strategies, fostering a more proficient and engaged learning community.

The recognized deficiencies, specifically the lack of in-depth exploration into alternative assessment methods aligned with cooperative and deep learning, coupled with a brief reference to teacher professional development, highlight the necessity for a more nuanced comprehension of assessment strategies and comprehensive insights into training programs. Addressing these gaps is essential for fine-tuning teaching practices, guaranteeing precise evaluation of language proficiency, and enabling educators to adeptly embrace student-centered approaches in Chinese English courses.

Objectives of the Study - Generally, the main objective of this study was to identify English language deep learning strategy, cooperative learning, and school environment among Chinese college students in order to propose a language learning program for Chinese students. More specifically, this paper sought to describe the profile of the respondents in terms of sex, school type, grade level, and major; to determine English deep learning strategy of the respondents in terms of basic self-regulated English learning, visual English elaboration and summary, English deep information processing, and English self-regulated social learning strategies; to identify English cooperative learning used by learners as to social skills, group processing, stimulating interaction and positive interdependence; to assess school environment in terms of curriculum and educational materials, teaching capacity, availability of resources for students use, and language learning facilities; to test the differences in responses when grouped according to profile; to test the relationship among English deep learning strategy, cooperative learning, and school environment; and propose English language programs for teachers and students

to enhance English language learning.

2. METHODS

Research Design - The school environment, cooperative learning, and English language deep learning strategy among Chinese college students were examined using the descriptive method. The study used a quantitative design. It sought to examine the current level of school environment, cooperative learning, and deep learning strategy among EFL Chinese teachers. Employing descriptive methods, the study utilized a descriptive research design to offer a comprehensive and precise interpretation of the results. Descriptive research involves compiling current facts, figures, and information to accurately depict situations, individuals, or events. Furthermore, Siedlecki (2020) describes the descriptive research design as a formal study designed to depict a phenomenon or intrinsic trait of a population, with the goal of systematically uncovering and describing connections, relationships, and differences among the specified variables. To gather data from participants, survey questionnaires were distributed as part of the research methodology. The descriptive study design played a crucial role in effectively collecting data about the school environment, cooperative learning, and English language deep learning strategy among Chinese college students.

Participants of the Study - The study involved 385 participants who were Chinese college students, and they were enrolled in different undergraduate programs at specific universities in China. They came from three different universities, and three different provinces. Among them, 150 from Changchun Electronic Science and Technology Institute, 130 students from Xi'an University of Finance and Economics, 105 from Chongqing Yitong College. They covered different periods of learning English groups and different gender groups.

Instruments of the Study - The study was mainly conducted by online questionnaire survey. The questionnaire was divided into four parts: Demographic Information, English learning school environment, English cooperative learning, and English deep learning strategy questionnaire. To make the participants better understand the question, both Chinese translation and original English versions were provided in the questionnaire. The questionnaire required demographic data such as participants' sex, majors, types of university and the average period of learning English everyday. The English learning school environment questionnaire referred to the physical, social, and pedagogical setting in which English language learning takes place. It encompassed all the elements, resources, and interactions that contribute to the language learning experience of students in an educational institution. The school environment played a crucial role in shaping students' attitudes, motivation, and proficiency in learning the English language. Key components of the English learning school environment include: curriculum and educational materials, teaching capacity, availability of resources for students use, and language learning facilities.

The Cooperative learning questionnaire with 19 items aimed to assess students' perceptions, experiences, and attitudes towards cooperative learning in the English language classroom. It typically included a series of questions related to four aspects of cooperative learning: social skills, group processing, stimulating interaction and positive interdependence. The English deep learning strategy questionnaire is a survey instrument designed to assess the frequency and types of deep learning strategies used by individuals when studying English as a second or foreign language. The questionnaire aimed to gather information about the approaches that participants employ to enhance their understanding and retention of the English language at a deeper level. The questionnaire consisted of 21 items. Measured the information social skills, group processing, stimulating interaction and positive interdependence. Each item had a four-point Likert response scale with options of almost never, seldom, often, or always. The categories were clearly organized. All items were positive comments, hence the largest numerical value on the response scale indicated positive judgments.

A pilot study was conducted to ensure the questionnaire's reliability. This study included 45 participants, all of whom were Chinese college students enrolled in various undergraduate programs at chosen Chinese colleges. They hailed from three separate universities and provinces. The given result represents a reliability test conducted to evaluate the internal consistency of a questionnaire or survey. It includes a list of indicators, their corresponding

Cronbach Alpha coefficients, and remarks. The Cronbach Alpha coefficients serve as a measure of reliability for each indicator, while the remarks categorize the level of reliability as “Excellent,” “Good,” following the guidelines provided by George and Mallery (2003).

Based on the George and Mallery guidelines, the indicators with Cronbach Alpha values above 0.9 are considered "Excellent." Indicators with values between 0.8 and 0.9 are rated as "Good." Curriculum and educational materials, teaching capacity, availability of resources for students' use, language learning facilities, social skills, group processing, and visual elaboration and summary strategies are all rated as "Excellent." Stimulating interaction, positive interdependency, basic self-regulated English learning strategies, and English deep information processing strategies are rated as "Good." These Cronbach Alpha values indicate the reliability and internal consistency of the measurements for each indicator, with higher values generally indicating better reliability.

Data Gathering Procedures - Questionnaires were distributed to different majors in eight different types of universities in China. This distribution was done through an online survey platform called "Questionnaire Star." These English teachers were then entrusted with the task of transferring the questionnaire to eligible students from their respective schools. They also had to provide further explanations to the students about the questionnaire's purpose, usage, function, and the general volume of questions. The goal was to ensure that the participants fully understood what was expected of them to ensure accurate responses. Ensure that participants meet the language proficiency requirements and voluntarily agree to participate in the study. This can be done electronically or in person, depending on the preferred method and logistics. Collect the responses from the completed questionnaires and store the data securely for analysis. Once the data was collected, it was statistically treated using methods such as frequency count, percentage, ranking, and weighted mean.

Data Analysis - These statistical analyses were performed using the software SPSS 27.0 to interpret, analyze, and compare the responses of the participants. Descriptive statistics was used to examine the survey data and summarize how each survey component was answered by the respondents. Data analysis was conducted to gain insights into the relationship between deep learning strategies, cooperative learning, and the school environment on English language learning outcomes among Chinese college students.

Ethical Considerations - For ethical and confidentiality consideration, as a researcher conducting a study involving human participants, several ethical considerations must be carefully addressed to ensure the well-being and rights of the participants. Some of the key ethical considerations for this study are as follows: First, the author got the ethical review committee service. And then get the participants' informed consent: Prior to participation, every participant needs to be properly educated about the study's goals, methods, possible dangers, and advantages. They should provide voluntary written or verbal consent to participate, demonstrating their understanding and willingness to take part without any coercion or pressure. Participants' identities and personal information should be kept strictly confidential. Any data collected must be anonymized, ensuring that individual identities cannot be linked to their responses, thereby safeguarding their privacy. The researcher must implement appropriate measures to secure the data collected. This includes storing physical documents securely and using password protection or encryption for digital data to prevent unauthorized access. And the results of the study should be disseminated responsibly and shared with the academic community, contributing to the body of knowledge without misrepresentation.

3. Results and discussion

Table 1 provides a comprehensive snapshot of the school environment in Chinese colleges, with a keen focus on four key indicators: Curriculum and educational materials, Teaching capacity, Availability of resources for students' use, and Language learning facilities. The weighted mean values assigned to each indicator offer insights into the priorities and emphases within the Chinese college education system. These rankings are instrumental in understanding the overarching goals and strategies employed by educational institutions to create a conducive

learning environment.

Table 1

Summary Table on School Environment

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Curriculum and educational materials	2.87	Often	4
2. Teaching capacity	3.05	Often	1
3. Availability of resources for students' use	2.92	Often	3
4. Language learning facilities	2.94	Often	2
Composite Mean	2.94	Often	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 = Often; 1.50 – 2.49 = Sometimes; 1.00 - 1.49 = Never

At the forefront of these indicators is teaching capacity, marked as the top priority in Chinese college education, reflecting a strong commitment to ensuring highly qualified and capable teaching staff. The emphasis on teaching capacity suggests a holistic approach to education, encompassing the recruitment of experienced faculty, provision of professional development opportunities, and a concerted focus on instructional quality. This dedication underscores the significance placed on fostering an environment where educators are well-prepared to deliver high-quality education, ultimately benefiting the student body (Atxurra et al., 2015). Following closely is the second-ranked indicator, language learning facilities, indicating their paramount importance in the Chinese college education landscape. This emphasis highlights substantial investments made by colleges to provide dedicated spaces and resources for language learning. These facilities, which may include language labs, multimedia rooms, and well-stocked libraries, underscore the importance attached to practical language skills within the educational system. The recognition of the significance of language learning facilities indicates a commitment to offering students an immersive and supportive environment for mastering language competencies (Aronson, 2021).

The third-ranked indicator is the availability of resources for students' use, affirming that colleges in China prioritize providing students with access to diverse educational materials and tools. This encompasses textbooks, online resources, and various learning aids aimed at ensuring a comprehensive educational experience. The commitment to making resources accessible speaks to a broader goal of supporting student learning by providing the necessary tools for academic success. Indicator 1, focusing on curriculum and educational materials, maintains its significance but is ranked fourth in terms of priority. While Chinese colleges do provide structured curricula and relevant educational materials, these aspects may not receive as much attention as teaching capacity or language learning facilities. The curriculum is likely designed to align with the educational goals and objectives of each college, with educational materials made available to support students in their studies.

The composite means of 2.94 indicates that these aspects are often emphasized in Chinese college education, suggesting a well-rounded and balanced approach. The focus on teaching capacity, language learning facilities, resources for students, and curriculum and educational materials collectively reflects a commitment to providing students with a high-quality educational environment. This approach aims to equip students with the necessary knowledge and skills for their future endeavors, both within and beyond academic settings (Goodyear et al., 2015). It is important to note that specific priorities may vary among individual colleges and universities in China, but these indicators offer a general overview of common trends in the educational environment. Beyond the academic realm, the school environment plays a pivotal role in the social and emotional development of students. It serves as a dynamic space where students interact with peers and teachers, acquiring crucial social skills and developing emotionally. The school environment is not merely a venue for academic knowledge acquisition; it is a transformative space that prepares students for future challenges, both in terms of education and the broader context of life. Teachers, as key contributors to the school environment, wield significant influence in shaping the overall experience for students. A supportive and respectful environment for teachers can lead to higher job satisfaction and better teacher retention, ultimately benefiting students. According to Lasley, recognizing the pivotal role of teachers in the educational ecosystem underscores the interconnectedness of various factors that contribute to a positive and effective school environment.

This approach aims not only to impart academic knowledge but also to foster well-rounded individuals equipped with life skills. As educational landscapes continue to evolve, a commitment to these fundamental aspects ensures that students are prepared to navigate the challenges of a rapidly changing world. Table 2 provides a comprehensive examination of cooperative learning strategies, specifically aimed at fostering language development. The assessment is based on four key indicators: Group Processing, Positive Interdependency, Stimulating Interaction, and Social Skills. Each indicator is evaluated through its weighted mean, verbal interpretation, and rank, offering valuable insights into their respective roles in cooperative learning environments.

Table 2*Summary Table on Cooperative Learning*

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Social skills	2.89	Often	4
2. Group processing	2.96	Often	1
3. Stimulating interaction	2.93	Often	3
4. Positive interdependency	2.95	Often	2
Composite Mean	2.93	Often	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 = Often; 1.50 – 2.49 = Sometimes; 1.00 - 1.49 = Never

Taking the lead is Group Processing, securing the top rank with a weighted mean of 2.96. This high rank suggests that Group Processing often plays a significant role in cooperative learning. The emphasis on reflection and peer evaluation within group activities contributes to a deeper understanding of the material and enhances collaboration among students. Järvelä et al. (2015) support this perspective, emphasizing the importance of reflective practices in group settings for improved learning outcomes. By allowing students to critically assess their group's functioning and make necessary improvements, Group Processing emerges as a cornerstone of effective cooperative learning. Securing the second position is Positive Interdependency, with a weighted mean of 2.95. This rank signifies that Positive Interdependency often contributes to cooperative learning. The creation of a sense of shared responsibility among group members leads to increased engagement and cooperation. Akers (2017) supports this notion, highlighting how interdependence motivates individuals to work collaboratively for mutual success. The second-ranking of Positive Interdependency underscores its role in fostering a cooperative learning environment where students recognize the collective impact of their efforts.

Ranking third is Stimulating Interaction, with a weighted mean of 2.93. This rank indicates that Stimulating Interaction often promotes cooperative learning. Interaction among group members facilitates the exchange of ideas and active participation, thereby enhancing the overall learning experience. Corey et al. (2018) provides further evidence of the positive effects of peer interaction on knowledge acquisition and problem-solving. The third-ranking underscores the importance of creating opportunities for meaningful interaction to enrich the cooperative learning process. In the fourth position is Social Skills, with a weighted mean of 2.89. This ranking suggests that Social Skills often play a role in cooperative learning. However, they might rank lower due to the assumption that students may already possess some social skills, making their impact slightly less pronounced compared to other factors. Li (2015) supports this perspective, highlighting that social skills are a prerequisite for effective group work but may not have as direct an impact on learning outcomes as other indicators. The fourth-ranking emphasizes the importance of social skills in creating a conducive collaborative environment while acknowledging their relative impact compared to other cooperative learning aspects.

Considering the composite mean of 2.93, it is evident that, on average, these aspects of cooperative learning are often present. However, a more targeted focus on the areas with higher ranks, such as Group Processing and Positive Interdependency, can further improve the effectiveness of cooperative learning initiatives. This nuanced approach acknowledges the multifaceted nature of cooperative learning and the varying degrees of impact each aspect can have on the overall learning experience. In conclusion, to enhance cooperative learning in the classroom, it is crucial to tailor the teacher's approach to the specific needs and dynamics of the students and the learning environment. Encouraging open communication, teamwork, and reflective practices can contribute to creating a robust cooperative learning atmosphere, fostering language development and overall student success. The insights

from Table 2 provide a roadmap for educators to strategically implement cooperative learning strategies that align with the unique characteristics of their classrooms.

Table 3

Summary Table on Deep Learning Strategy

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Basic self-regulated English learning strategies	2.97	Often	1.5
2. Visual elaboration and summary strategies	2.88	Often	4
3. English deep information processing strategies	2.97	Often	1.5
4. English Self-regulated social learning strategies	2.94	Often	3
Composite Mean	2.94	Often	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 = Often; 1.50 – 2.49 = Sometimes; 1.00 - 1.49 = Never

Table 3 provides a comprehensive overview of learners' engagement with deep learning strategies in the context of English language education. The indicators within the table shed light on the frequency and ranking of specific strategies, offering valuable insights into the approaches learners commonly adopt and their perceived effectiveness. The Composite Mean serves as an aggregate measure, capturing the overall assessment of the deep learning strategies discussed.

At the pinnacle of the rankings is Indicator 1, attaining the highest rank with a weighted mean of 2.97. This indicator signifies that learners frequently employ basic self-regulated English learning strategies, including fundamental techniques such as goal-setting, progress monitoring, and effective study methods. The prominence of basic self-regulated English learning strategies, indicated by the top rank, underscores learners' active regulation of their learning processes, facilitating effective language acquisition. Similarly, Indicator 3 also claims the top spot with a weighted mean of 2.97. Learners exhibit a commitment to deep information processing strategies, reflecting a dedication to understanding and internalizing English language content at a profound level. The third-ranking Indicator 4 focuses on self-regulated social learning strategies in English. Although the weighted mean is slightly lower than the top two indicators, it suggests a frequent application of these strategies. Indicator 2 ranks lower at 4, with a weighted mean of 2.88. Learners often utilize visual elaboration and summary strategies, but not as frequently as the top three indicators.

The analysis of the association between School Environment and Cooperative Learning, as presented in Table 4, reveals compelling findings. The computed rho-values indicate a strong direct correlation between these two variables. Furthermore, the resulting p-values, all of which are less than the predetermined alpha level, signify a statistically significant relationship. This implies that there is a substantial association between the assessment of the school environment and the effectiveness of cooperative learning. There is a highly significant correlation between the quality of curriculum and educational materials and all aspects of cooperative learning (social skills, group processing, stimulating interaction, positive interdependency). This suggests that a well-designed curriculum, which Bhatti (2020) and Han (2019) emphasized, is crucial for fostering effective cooperative learning environments. Teaching capacity, including teacher expertise and professional development, shows a strong correlation with all cooperative learning elements. The findings align with Koellner et al. (2015) and Diaz (2015), highlighting the impact of teacher training and beliefs on cooperative learning outcomes. The availability of resources for students' use is significantly correlated with cooperative learning effectiveness. This supports Kumar et al. (2022) and Serhan (2020), who found that access to diverse resources, including technology, enhances language learning experiences.

Language learning facilities, such as language labs and multimedia rooms, show a strong correlation with cooperative learning outcomes. This finding is consistent with Namaziandost (2019), emphasizing the role of such facilities in supporting language practice and enhancing learning experiences. In the Chinese educational context, there is a growing recognition of the holistic school environment's role in shaping effective learning experiences. The significant correlations suggest that not just one, but multiple aspects of the school environment collectively contribute to the success of cooperative learning. The emphasis on cooperative learning in Chinese education is

supported by the school environment. The strong correlation between school environment factors and cooperative learning outcomes reflects the cultural value placed on group harmony and collaborative learning. The strong positive correlation suggests that as the assessment of the school environment improves, so does the perceived quality and efficacy of cooperative learning experiences. This finding aligns with the existing literature that highlights the importance of a positive and supportive school environment in fostering effective teaching and learning practices, including cooperative learning (Schleicher, 2011)).

Table 4*Relationship Between School Environment and Cooperative Learning*

Curriculum and educational materials	rho	p-value	Interpretation
Social skills	.736**	<.001	Highly Significant
Group processing	.690**	<.001	Highly Significant
Stimulating interaction	.704**	<.001	Highly Significant
Positive interdependency	.712**	<.001	Highly Significant
Teaching capacity			
Social skills	.745**	<.001	Highly Significant
Group processing	.728**	<.001	Highly Significant
Stimulating interaction	.749**	<.001	Highly Significant
Positive interdependency	.726**	<.001	Highly Significant
Availability of resources for students' use			
Social skills	.750**	<.001	Highly Significant
Group processing	.723**	<.001	Highly Significant
Stimulating interaction	.714**	<.001	Highly Significant
Positive interdependency	.746**	<.001	Highly Significant
Language learning facilities			
Social skills	.810**	<.001	Highly Significant
Group processing	.761**	<.001	Highly Significant
Stimulating interaction	.761**	<.001	Highly Significant
Positive interdependency	.800**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

Authors might draw on Vygotsky's (2018) sociocultural theory, which emphasizes the role of the environment in shaping learning. They could argue that a positive school environment fosters a supportive and collaborative atmosphere, aligning with the principles of cooperative learning. Vygotsky's work underscores the importance of social interactions in cognitive development, suggesting that an enriching school environment positively influences cooperative learning outcomes. The findings suggest that educational policymakers and practitioners in China should focus on enhancing the overall school environment (Hultberg, 2018), including curriculum design, teacher training, resource availability, and learning facilities. This holistic approach can create a more conducive environment for cooperative learning, leading to better language learning outcomes. In conclusion, the data combined with recent research, indicates that the school environment plays a crucial role in the effectiveness of cooperative learning in English language education among Chinese college students. A well-designed curriculum, capable and well-trained teachers, adequate resources, and supportive language learning facilities are all integral to fostering an environment conducive to cooperative learning. These findings can inform educational strategies and policies, particularly in the context of the ongoing educational reforms in China, which aim to enhance the quality and depth of learning.

Table 5*Relationship Between School Environment and Deep Learning Strategy*

Curriculum and educational materials	rho	p-value	Interpretation
Basic self-regulated English learning strategies	.705**	<.001	Highly Significant
Visual elaboration and summary strategies	.694**	<.001	Highly Significant
English deep information processing strategies	.710**	<.001	Highly Significant
English Self-regulated social learning strategies	.692**	<.001	Highly Significant
Teaching capacity			
Basic self-regulated English learning strategies	.745**	<.001	Highly Significant
Visual elaboration and summary strategies	.678**	<.001	Highly Significant
English deep information processing strategies	.725**	<.001	Highly Significant

School environment, cooperative learning and English language deep learning strategy among college students

English Self-regulated social learning strategies	.713**	<.001	Highly Significant
Availability of resources for students' use			
Basic self-regulated English learning strategies	.728**	<.001	Highly Significant
Visual elaboration and summary strategies	.710**	<.001	Highly Significant
English deep information processing strategies	.722**	<.001	Highly Significant
English Self-regulated social learning strategies	.709**	<.001	Highly Significant
Language learning facilities			
Basic self-regulated English learning strategies	.769**	<.001	Highly Significant
Visual elaboration and summary strategies	.739**	<.001	Highly Significant
English deep information processing strategies	.760**	<.001	Highly Significant
English Self-regulated social learning strategies	.760**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

Table 5 presents the association between School Environment and Deep Learning Strategy, revealing compelling insights into the relationship between various components of the school environment and the adoption of deep learning strategies. The computed rho-values consistently demonstrate a strong direct correlation, and all resulting p-values are found to be less than the alpha level, signifying a highly significant relationship. This implies that the quality of the school environment significantly influences the implementation of deep learning strategies, as evidenced by the specific indicators outlined in the table. There is a highly significant correlation between the quality of curriculum and educational materials and all aspects of deep learning strategies: basic self-regulated English learning strategies, visual elaboration and summary strategies, English deep information processing strategies, English self-regulated social learning strategies. This suggests that a well-designed curriculum, as emphasized by Bhatti (2020) and Han (2019), is crucial for fostering effective deep learning environments. Teaching capacity, including teacher expertise and professional development, shows a strong correlation with all deep learning strategies.

The findings align with Koellner et al. (2015) and Diaz (2015), highlighting the impact of teacher training and beliefs on deep learning outcomes. The availability of resources for students' use is significantly correlated with deep learning effectiveness. This supports Kumar et al. (2022) and Serhan (2020), who found that access to diverse resources, including technology, enhances deep learning experiences. Language learning facilities, such as language labs and multimedia rooms, show a strong correlation with deep learning strategies. In the Chinese educational context, there is a growing recognition of the holistic school environment's role in shaping effective deep learning experiences. The significant correlations suggest that not just one, but multiple aspects of the school environment collectively contribute to the success of deep learning strategies. The emphasis on deep learning in Chinese education is supported by the school environment. The strong correlation between school environment factors and deep learning outcomes reflects the findings suggest that educational policymakers and practitioners in China should focus on enhancing the overall school environment, including curriculum design, teacher training, resource availability, and learning facilities. This holistic approach can create a more conducive environment for deep learning, leading to better language learning outcomes.

In conclusion, the data combined with recent research, indicates that the school environment plays a crucial role in the effectiveness of deep learning strategies in English language education among Chinese college students. A well-designed curriculum, capable and well-trained teachers, adequate resources, and supportive language learning facilities are all integral to fostering an environment conducive to deep learning. These findings can inform educational strategies and policies, particularly in the context of the ongoing educational reforms in China, which aim to enhance the quality and depth of learning. The cultural value placed on comprehensive understanding and critical thinking.

Table 6 presents a comprehensive examination of the association between social skills and various dimensions of deep learning strategies within the context of English education. The consistently strong and highly significant correlations, as indicated by the computed rho-values and p-values, underscore the pivotal role of social skills in shaping the adoption of deep learning strategies. This exploration aims to unravel the intricate connections between specific dimensions of social skills and corresponding facets of deep learning strategies.

Table 6*Relationship Between Cooperative Learning and Deep Learning Strategy*

Social skills	rho	p-value	Interpretation
Basic self-regulated English learning strategies	.770**	<.001	Highly Significant
Visual elaboration and summary strategies	.763**	<.001	Highly Significant
English deep information processing strategies	.782**	<.001	Highly Significant
English Self-regulated social learning strategies	.780**	<.001	Highly Significant
Group processing			
Basic self-regulated English learning strategies	.791**	<.001	Highly Significant
Visual elaboration and summary strategies	.728**	<.001	Highly Significant
English deep information processing strategies	.761**	<.001	Highly Significant
English Self-regulated social learning strategies	.779**	<.001	Highly Significant
Stimulating interaction			
Basic self-regulated English learning strategies	.818**	<.001	Highly Significant
Visual elaboration and summary strategies	.782**	<.001	Highly Significant
English deep information processing strategies	.802**	<.001	Highly Significant
English Self-regulated social learning strategies	.816**	<.001	Highly Significant
Positive interdependency			
Basic self-regulated English learning strategies	.841**	<.001	Highly Significant
Visual elaboration and summary strategies	.783**	<.001	Highly Significant
English deep information processing strategies	.788**	<.001	Highly Significant
English Self-regulated social learning strategies	.821**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

There is a highly significant correlation between social skills developed through cooperative learning and all aspects of deep learning strategies (basic self-regulated English learning strategies, visual elaboration and summary strategies, English deep information processing strategies, English self-regulated social learning strategies). This suggests that the social skills fostered in CL environments are crucial for engaging in deep learning practices. Group processing in CL shows a strong correlation with all deep learning strategies. This aligns with the research by Chen et al. (2015) highlighting the importance of reflective group activities in enhancing deep learning. Stimulating interaction within CL settings is significantly correlated with deep learning effectiveness. This supports the findings of Wang (2017) and Alamri (2018), who noted the importance of active and engaging communication in promoting deep learning. Positive interdependency in CL has a strong correlation with all aspects of deep learning strategies. This finding is consistent with Lee (2015) and Slavin (2015), emphasizing the role of mutual dependence in enhancing deep learning outcomes.

In the Chinese educational context, there is a growing emphasis on collaborative learning methods like CL, which aligns with the findings of this study. The significant correlations suggest that CL is an effective approach to fostering deep learning strategies among Chinese college students. The emphasis on group harmony and collaborative learning in Chinese culture supports the integration of CL and deep learning strategies. The strong correlation between CL elements and deep learning outcomes reflects the cultural value placed on teamwork and collective learning (MacArthur et al., 2015). The findings suggest that educational policymakers and practitioners in China should focus on enhancing CL practices to promote deep learning strategies. This approach can lead to better language learning outcomes and prepare students for professional and social challenges.

In conclusion, the data combined with recent research, indicates that cooperative learning plays a crucial role in the effectiveness of deep learning strategies in English language education among Chinese college students. Aspects of CL such as social skills, group processing, stimulating interaction, and positive interdependency are all integral to fostering deep learning strategies. These findings can inform educational strategies and policies, particularly in the context of the ongoing educational reforms in China, which aim to enhance the quality and depth of learning.

Table 7

A Proposed Language Learning Program for College Students

Key Result Area/ Program Objectives	Strategies / Activities	Success Indicators	Persons Involved
1. School Environment			
Curriculum and Educational Materials -To enhance the relevance, comprehensiveness, and applicability of curriculum and educational materials for effective English language learning. Availability of Resources for Students' Use - To improve access to and quality of resources necessary for students' English language learning, including technology, study materials, and language practice tools.	Curriculum Review and Update: Regularly assess and update the curriculum to align with current language learning standards and student needs. Resource Enhancement: Invest in and expand the availability of language learning resources, including digital tools and libraries.	90% student can be satisfied with the revised curriculum and resources.	Curriculum Developers, Language Teachers, School Administrators, Librarians
2. Cooperative Learning			
2.1 Stimulating Interaction - To foster a more engaging and interactive learning environment that encourages active participation and communication among students. 2.2 Social Skills -To develop and strengthen social skills essential for effective cooperative learning, such as teamwork, communication, and conflict resolution.	Interactive Workshops: Conduct workshops and activities that promote interaction and communication skills. Social Skills Training: Implement programs focused on developing interpersonal skills and group dynamics.	90% of students Increased social skill. Positive interaction on the upgraded language labs from 90% students and teachers.	Educators, Workshop Facilitators, Student Peer
3. Deep Learning Strategy			
3.1 English Self-Regulated Social Learning Strategies - To promote self-regulated learning strategies that enhance students' ability to learn English autonomously and collaboratively. 3.2 Visual Elaboration and Summary Strategies - To integrate visual elaboration and summary techniques into English learning to improve comprehension and retention of language concepts.	Self-Regulated Learning Workshops: Offer workshops to teach and practice self-regulated learning techniques. Visual Aids Integration: Incorporate visual aids and summarization exercises into language learning activities.	90% of students can improve the awareness of summary and are willing to learn English .	Language Teachers, Educational Psychologists, Visual Design Specialists

4. Conclusions and recommendations

The study and deliberation of the aforementioned data have led to the following conclusions. The diverse characteristics of Chinese college students, including a balanced gender distribution, varying types of universities attended, and differing daily English learning habits, are likely to influence their engagement with cooperative learning and the effectiveness of deep learning strategies in English language acquisition. Chinese colleges prioritize a holistic educational environment, emphasizing teaching capacity, language learning facilities, resource availability, and curriculum, which collectively contribute to a well-rounded and effective learning experience for students. In cooperative learning environments aimed at language development, Group Processing, Positive Interdependency, Stimulating Interaction, and Social Skills are key components, with Group Processing and Positive Interdependency being particularly crucial for enhancing collaborative learning and student engagement. Learners in English language education frequently engage in self-regulated learning and deep information processing strategies, with a notable emphasis on basic self-regulation and profound engagement with language content, while also incorporating social learning and visual elaboration techniques to a lesser extent. In English language education among Chinese college students, the type of university and the duration of daily English learning significantly influence perceptions of the school environment and the effectiveness of both cooperative and deep learning strategies, with extended daily study time leading to improved outcomes across various learning contexts, irrespective of gender or university type. In English language education among Chinese college students,

the school environment, characterized by curriculum quality, teaching capacity, resource availability, and language learning facilities, significantly influences both cooperative and deep learning strategies, with elements like social skills and group processing playing a key role in enhancing the effectiveness and adoption of these learning approaches. The program objectives and strategies focus on enhancing the school environment through curriculum updates and resource availability, fostering cooperative learning with interactive activities and social skills development, and improving deep learning strategies by integrating self-regulated learning techniques and visual elaboration methods, involving academic staff, technology partners, and educational psychologists.

The University may foster a conducive learning environment by continuously updating curriculum and providing ample educational resources. Encourage collaborations and partnerships to enhance language learning facilities and teaching capacities. The teachers may emphasize regular revision of lesson plans and embrace student-centered approaches in language classrooms and incorporate the use of technology and authentic materials to enhance English teaching effectiveness. The student may allocate sufficient time for English learning, aiming for more than 2 hours daily, to maximize language acquisition. Actively engage in cooperative learning activities to improve social skills and group processing. School heads may prioritize the availability of diverse resources, including literature books, language labs, and technology apps. Recognize and reward achievements of both English teachers and students to foster a positive learning culture. The future researchers may explore further the nuances of cooperative learning dynamics and its impact on different student profiles and investigate the evolving role of technology in language learning and its influence on deep learning strategies.

5. References

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