Constructivist learning environment, learning style preference, and language ability of Chinese college EFL learners

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Abstract

The environment is a significant aspect that cannot be overlooked among the various factors influencing human development. The personal factors of students, such as their learning style preference, also play an essential role in developing their English language ability. This study aims to explore the impact of Constructivist Learning Environment and Learning Style Preference on the Language Ability of Chinese College EFL Learners, as well as the relationship among the three variables, and then to propose a project to improve the effectiveness of College English learning. Four hundred non-English Major College students in China, consisting of first- and second-year students from liberal arts and science majors, were surveyed via questionnaire. This study used a descriptive correlational method to describe and explain the relationship among these three variables. Descriptive statistical findings revealed significant positive correlations among constructivist learning environment, learning style preference, and the language ability of Chinese college EFL learners. While responses based on demographic profiles showed limited variations, recognizing gender-based differences and offering targeted language support is crucial. Recommendations include enhancing students' collaborative skills through structured peer learning activities, tailoring instructional strategies to accommodate and enhance group learning preferences, and improving students' English oral expression skills through targeted activities and exercises. These findings underscore the complexity of language learning dynamics within a constructivist framework. In future research, the researcher may explore how the constructivist learning environment and learning style preferences interact, leading to more precise pedagogical practices.

Keywords: constructivist learning environment, learning style preference, English language ability, Chinese college EFL learners

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1. Introduction

The complexity of the Chinese higher education system and the global demand for English proficiency underscores the critical need to understand factors influencing English language ability. This study builds upon the foundation of previous research, aiming to delve into the intricate relationships among constructivist learning environment, learning style preference, and the language ability of Chinese college EFL learners. Through analysis of these variables, this research endeavors to illuminate the pathways to improved academic outcomes, ultimately leading to the formulation of a language learning program to meet the needs of the students.

The environment is a significant aspect that cannot be overlooked among the various factors influencing human development. Students' personal factors, such as their learning style preference, also play an essential role in their ability development. Numerous investigations have delved into the influence of constructivist learning environments on student engagement, motivation, and academic success. A meta-analysis emphasized the enduring positive correlation between constructivist instructional methods and student achievement, highlighting the importance of these approaches in contemporary education (Shi et al., 2020). A substantial body of research has also scrutinized the connection between learning style preferences and English language proficiency in diverse educational contexts. This study specifically explored the academic performance of undergraduates with different learning style preferences, revealing a statistically significant impact of learning style on students' achievements (Ariastuti & Wahyudin, 2022). Moreover, extensive research has investigated various facets of language proficiency, acquisition, and assessment in English language education. The utilization of technology-mediated language assessment tools was examined, offering insights into the viability and reliability of online language proficiency assessments (Kunnan et al., 2022).

The synthesis of these strands of research forms the theoretical framework for this study. By incorporating insights from previous research, the researcher seeks to refine and extend existing knowledge, providing a nuanced understanding of how these elements interconnect in the context of EFL education in Chinese colleges. Despite the progress made in understanding the dynamics of Constructivist Learning Environments, Learning Style Preferences, and English Language Ability in EFL education, a distinct set of research gaps emerges when examining these variables within the Chinese context.

The identified research gaps underscore the need for a targeted and culturally sensitive investigation into the correlation among Constructivist Learning Environment, Learning Style Preference, and Language Ability of Chinese college EFL learners. The localized challenges and nuances in Chinese college EFL education call for a targeted investigation to bridge existing gaps and contribute context-specific insights. The existing research predominantly focuses on Western educational settings, often overlooking the unique cultural and educational landscape of China. Therefore, there needs to be more literature concerning how the principles of constructivism and learning style preferences align with the traditional pedagogical approaches in Chinese higher education.

Addressing these gaps will contribute to the academic discourse and provide practical insights for educators and policymakers to tailor interventions that align with Chinese college EFL education's specific needs and challenges. Additionally, the revised measurement tools from this research can serve as helpful reference measurement instruments for future research and measurement related to constructivist learning environments, learning style preference, and language ability among college EFL learners. Furthermore, it provides a basis and reference for educational management departments and university English teachers in formulating training programs, professional development of teachers, and classroom teaching. It offers suggestions for developing student's language ability.

In conclusion, this study systematically analyzes the factors of Constructivist Learning Environments, Learning Style Preferences, and English Language Ability influencing the development of language ability among college EFL learners. Ultimately, the study's strong rationale lies in its potential to inform and shape EFL education practices, fostering a more dynamic and effective learning environment for Chinese college students.

Objectives of the study - This study explored and analyzed the correlation among constructivist learning environment, learning style preference, and language ability of Chinese college EFL learners in a private university. Specifically, the researcher aims to determine the demographic profile of the respondents in terms of sex, grade, major, college entrance examination English test score; identify the constructivist learning environment of the respondents in terms of goal orientation, constructivist teaching, learner autonomy, teacher-student interaction, peer effect, student-student cooperation, and curriculum assessment; assess the learning style preference of the respondents in terms of visual learning style, auditory learning style, tactile learning style, kinesthetic learning style, group learning style and individual learning style; identify the language ability of the respondents in terms of reading comprehension, written expression, listening comprehension, oral expression, pragmatic ability, and organizational competence; test the significant differences of responses in constructivist learning environment, learning style preference, and the language ability of Chinese college EFL learners when grouped according to sex, grade, major, college entrance examination English test score; test the relationships among constructivist learning environment, learning style preference and the language ability of Chinese college EFL learners and propose a language learning program based on the findings of the study.

2. Methods

Research Design - The selection of the quantitative research method in this study was motivated by the descriptive research approach, concentrating on acquiring measurable data for statistical analysis from a subset of the population. This widely-used research technique facilitated the collection and depiction of the attributes within a particular demographic segment. Employing a descriptive design, the researcher in this study investigated the connections among the variables: the constructivist learning environment, learning style preference, and language ability. The researcher employed a survey research approach to collect data from respondents, where participants answered questions presented in questionnaires. Questionnaires were widely used in research to gather feedback and information from respondents.

Participants of the Study - The research involved participants from a private university in China's central region. These participants were categorized based on their majors, specifically liberal arts and science majors. The total participants comprised 5408 first-year and 4421 sophomore students, resulting in 9829 respondents. The researcher utilized the Raosoft online sample size calculator to determine an appropriate sample size, which suggested the distribution of 370 questionnaires to the targeted respondents.

Instrument of the Study - The study aimed to evaluate the dependability of measuring perceptual constructs such as the constructivist learning environment, learning style preferences, and language ability among Chinese college students. The questionnaire comprised four parts: Personal Data Information, the Perceptual Constructivist Learning Environment Questionnaire, the Learning Style Preference Questionnaire, and the English Language Ability Questionnaire. The questionnaire consisted of 62 items, rated on a 4-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." To ensure the reliability of the questionnaire, the researcher conducted a preliminary study involving 100 students from both first-year and second-year classes. Data from these participants were gathered using the "Golden Data" questionnaire tool, coded, and entered into SPSS 27.0 for analysis. Data collection primarily relied on a questionnaire, which underwent validation by experts, and a pilot test involving 100 college students to ensure its suitability for the current study. The adjusted questionnaire demonstrated a satisfactory Cronbach's alpha coefficient of .872. Cronbach Alpha coefficients for both the subscales and the entire questionnaire were computed to assess reliability. The results in The Reliability Test for Three Variables indicated that the Cronbach Alpha coefficients for all subscales ranged from 0.788 to 0.931, which demonstrated that the internal consistency reliability coefficients for both the subscales and the overall

questionnaire were deemed acceptable, surpassing the threshold of 0.70 as suggested by Dörnyei and Taguchi (2009).

Table 1

The Reliability Test for Three Variables

Indicators	Cronbach Alpha	Remarks
Constructivist Learning Environment		
Goal Orientation	0.881	Good
Constructivist Teaching	0.854	Good
Learner Autonomy	0.861	Good
Teacher-Student Interaction	0.931	Excellent
Peer Effect	0.892	Good
Student-Student Cooperation	0.905	Excellent
Curriculum Assessment	0.892	Good
Learning Style Preference		
Visual Learning Style	0.788	Acceptable
Auditory Learning Style	0.789	Acceptable
Tactile Learning Style	0.820	Good
Kinesthetic Learning Style	0.874	Good
Group Learning Style	0.880	Good
Individual Learning Style	0.870	Good
English Language Ability		
English reading comprehension	0.891	Good
English written expression	0.901	Excellent
English listening comprehension	0.876	Good
English oral expression	0.915	Excellent
English pragmatic ability	0.880	Good
English organizational competence	0.886	Good

Following the pilot study, 500 questionnaires were distributed to account for potential incomplete surveys during the data collection. Consequently, a final collection of 400 effective questionnaires was obtained. The research aimed to uncover students' perceptions regarding the constructivist learning environment, preferred learning styles, and language ability while exploring the relationships between these factors.

Data Gathering Procedures - Data in this study was gathered in two phases: the Pilot Test and the Main Research. The data collection process involved utilizing the "Golden Data" questionnaire tool for an online survey. Before the data collection, the questionnaire underwent validation through consultation with experts and a pilot test, ensuring the instrument's validity. The survey questionnaire also included a section where respondents consented to participate. The subsequent step involved contacting English teachers from the College English Department. The questionnaire, presented as a QR code, was sent to them with a detailed explanation of its specific purpose. English teachers were then responsible for distributing the questionnaire to eligible students in their classes during regular sessions. The researcher introduced the survey's aim and procedure, clarified the use and content of the questionnaire, and emphasized the importance of accurate responses. Given the extensive number of questions, the student's cooperation and patience were assumed to be essential for a thorough investigation. Upon receiving the QR code, interested students could directly scan it in WeChat to access the questionnaire link and respond using mobile phones. After submitting the questionnaire, respondents received a token as a reward to ensure both quantity and quality of feedback. Participants were assured that the results were unrelated to their course grades and that all information would be kept confidential. Students based their responses on their learning

experiences, and the collected questionnaires were exported using the "Golden Data" tool. The researcher entered the questionnaire data into an Excel form, meticulously checking input data for accuracy. The questionnaire was designed with a maximum limit of 500, prompting data collection when this threshold was reached.

Data Analysis - After collecting data, each survey was carefully reviewed individually, and any incomplete questionnaires were eliminated from the analysis. Of the collected questionnaires, 400 were considered suitable and assigned codes for statistical analysis to address the research inquiries. The Statistical Package for the Social Sciences (SPSS) was utilized to analyze the gathered data statistically. This research used a quantitative approach for data analysis, employing a range of statistical methods. Descriptive statistics such as frequencies, percentages, mean, and standard deviations were calculated to summarize students' responses regarding the perceptual constructivist learning environment, learning style preference, language ability, and background information. Pearson correlation analysis was conducted to explore relationships between perceptual constructivist learning environment, learning style preference, and language ability factors. Independent-sample t-tests were utilized to assess the statistical significance of grade differences using the perceptual constructivist learning environment, learning style preference, and language ability.

Ethical Considerations - This current inquiry systematically integrated ethical considerations into the entire survey procedure. Initially, a formal consent letter was drafted to obtain approval from the deans of the English department at the private university. A consent form was incorporated at the beginning of the questionnaire to uphold the confidentiality and anonymity of the participants. The individuals under investigation were provided with comprehensive information about the study's objectives and the tasks they were expected to perform. Participants were given the autonomy to decide whether to partake in or withdraw from the study at any stage. Furthermore, students were reassured that the data and discoveries would be exclusively used for research. Throughout the study, researchers ensured that participants thoroughly read and understood all instructions, study procedures, and the purpose of the survey before commencement. A voluntary participation approach was adopted to uphold the rights of the respondents. Throughout this period, the confidentiality of information and gathered data was treated with the utmost discretion. Moreover, the research center affiliated with the University of the Lyceum in the Philippines secured approval for ethical considerations.

3. Results and discussion

Table 2

Percentage Distribution of the Respondents' Profile

Sex	Frequency	Percentage %
Male	127	31.8
Female	273	68.3
Grade Level		
Freshman	159	39.8
Sophomore	241	60.3
Major		
Liberal Arts	212	53.0
Science	188	47.0
College Entrance Examination English Test Score		
0-89	92	23.0
90-150	308	77.0

Table 2 illustrates a comprehensive overview of the respondents' demographic characteristics in this study. The data reveals a notable predominance of female participants. The distribution by grade level shows that most respondents are sophomores. The table further delves into the respondents' academic majors, showcasing a relatively balanced distribution between liberal arts and science majors. Finally, the distribution of College

Entrance Examination English Test scores provides insights into most participants' English proficiency levels within the 90-150 range.

Table 3
Summary Table on Constructivist Learning Environment

Indicators	Weighted Mean	Verbal Interpretation	Rank
Goal Orientation	3.46	Agree	2
Constructivist Teaching	3.44	Agree	3.5
Learner Autonomy	3.42	Agree	5
Teacher-Student Interaction	3.55	Strongly Agree	1
Peer Effect	3.24	Agree	7
Student-student Cooperation	3.26	Agree	6
Curriculum Assessment	3.44	Agree	3.5
Composite Mean	3.42	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

In table 3, the overall positive composite mean of 3.42 underscores the successful integration of various constructivist elements in university English courses. These findings suggest a generally favorable perception of the constructivist learning environment among participants. The highest ranking of teacher-student interaction, with a weighted mean of 3.55, emphasizes the significance of effective communication and instructor support, securing the top rank within the "Strongly Agree" category. Following closely as the second highest item, goal orientation exhibits a weighted mean of 3.46. The third highest items are constructivist teaching and curriculum assessment with weighted means of 3.44, respectively, securing ranks within the "Agree" range. Research suggests that such interaction not only directly impacts students' learning outcomes but also affects them indirectly through the mediating factors of psychological atmosphere and learning engagement. The study underscores that teacher-student interaction is crucial in enhancing students' learning engagement by fostering a positive psychological atmosphere, ultimately influencing the overall learning outcomes (Sun et al., 2022). As the lowest-ranked item, the peer effect suggests potential areas for improvement in harnessing positive peer interactions while still being in the "Agree" category. Then, student-student cooperation ranks as the second lowest item, indicating potential areas for enhancement. Then, learner autonomy signals potential areas for improvement in promoting greater independence in learning among students. Although peer effect, student-student cooperation, and learner autonomy ranked as the lower ranking, respectively, indicate that the collaborative nature of the constructivist learning environment needs to be enhanced. It still secures ranks within the "Agree" range. A research investigation unveiled that the characteristics and frequency of peer interactions and the distinctive communication abilities of partners can impact the development of pertinent language skills (Washington-Nortey et al., 2022).

Table 4
Summary table on Learning Style Preference

Indicators	Weighted Mean	Verbal Interpretation	Rank
Visual Learning Style	3.32	Agree	2.5
Auditory Learning Style	3.32	Agree	2.5
Tactile Learning Style	3.34	Agree	1
Kinesthetic Learning Style	3.28	Agree	5
Group Learning Style	3.22	Agree	6
Individual Learning Style	3.29	Agree	4
Composite Mean	3.42	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 4 signifies the diverse learning style preferences among students. The overall composite mean is 3.42, falling within the "Agree" range, highlighting the importance of recognizing and accommodating these preferences in educational settings. The highest-ranked preference is tactile learning style, boasting a weighted mean of 3.34 and securing the top rank. The second rank was shared by visual and auditory learning styles, with identical weighted means of 3.32. A study showed that students' most preferred learning style is auditory on all three factors: gender, school level, and GPA, while there are specific differences regarding the second and third preferred learning styles. Identifying the preferred learning styles may help instructors differentiate the teaching process and positively impact obtaining and improving learning outcomes. (Mašić & Bećirović, 2020). Conversely, the lowest rank is group learning style, with a weighted mean of 3.22. Although ranking lower, it still signifies a positive perception of collaborative learning experiences, indicating that group interactions influence students' preferences while individual learning is valued. The second lowest rank is kinesthetic learning style, with a weighted mean of 3.28, which secures the fifth rank. While slightly lower in rank, it reinforces the positive connection between physical responses, movements, and English learning, emphasizing the significance of embodied experiences in language acquisition. The third lowest rank is individual learning style, with a weighted mean of 3.29. This highlights the importance of independent learning approaches for students, emphasizing the value of studying alone and working on assignments individually within the constructivist framework.

Table 5

Summary Table on English Language Ability

Indicators	Weighted Mean	Verbal Interpretation	Rank
English reading comprehension	3.30	Agree	1
English written expression	3.22	Agree	3
English listening comprehension	3.20	Agree	4
English oral expression	3.11	Agree	6
English pragmatic ability	3.24	Agree	2
English organizational competence	3.19	Agree	5
Composite Mean	3.21	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 5 provides a comprehensive overview of students' self-assessed English language abilities across various dimensions, offering valuable insights into their perceived strengths and areas for improvement. English reading comprehension received a weighted mean of 3.30 as the highest rank in English language ability. English pragmatic ability received a weighted mean of 3.24, securing the second-highest position in English language ability. This proficiency suggests a good understanding of using English in real-life, social situations. The research underscores the importance of pragmatic competence in language proficiency, emphasizing its pivotal role in achieving effective communication across various social contexts (Bardovi-Harlig, 2022). English written expression received a weighted mean of 3.22 and the third-highest rank.

Ranking the lowest in English language ability, English oral expression received a weighted mean of 3.11. This indicates a comparatively weaker proficiency in expressing ideas verbally in English. Aziz and Kashinathan's (2021) study brings attention to the internal and external challenges ESL students face in developing oral proficiency. The study underscores the necessity for specific speaking activities and instructional strategies to address these challenges. The second-lowest position in English language ability is attributed to English organizational competence, with a weighted mean of 3.19. This suggests a moderate proficiency in organizational skills related to language use. English listening comprehension received a weighted mean of 3.20, securing the third-lowest rank in English language ability.

Table 6

Relationship Between Constructivist Learning Environment and Learning Style Preference

Goal Orientation	r-value	p-value	Interpretation
Visual Learning Style	.593**	0.000	Highly Significant
Auditory Learning Style	.529**	0.000	Highly Significant
Tactile Learning Style	.601**	0.000	Highly Significant
Kinesthetic Learning Style	.514**	0.000	Highly Significant
Group Learning Style	.505**	0.000	Highly Significant
Individual Learning Style	.486**	0.000	Highly Significant
Constructivist Teaching			
Visual Learning Style	.679**	0.000	Highly Significant
Auditory Learning Style	.611**	0.000	Highly Significant
Tactile Learning Style	.641**	0.000	Highly Significant
Kinesthetic Learning Style	.582**	0.000	Highly Significant
Group Learning Style	.590**	0.000	Highly Significant
Individual Learning Style	.575**	0.000	Highly Significant
Learner Autonomy			
Visual Learning Style	.668**	0.000	Highly Significant
Auditory Learning Style	.649**	0.000	Highly Significant
Tactile Learning Style	.644**	0.000	Highly Significant
Kinesthetic Learning Style	.609**	0.000	Highly Significant
Group Learning Style	.592**	0.000	Highly Significant
Individual Learning Style	.567**	0.000	Highly Significant
Teacher-Student Interaction			
Visual Learning Style	.605**	0.000	Highly Significant
Auditory Learning Style	.578**	0.000	Highly Significant
Tactile Learning Style	.581**	0.000	Highly Significant
Kinesthetic Learning Style	.522**	0.000	Highly Significant
Group Learning Style	.497**	0.000	Highly Significant
Individual Learning Style	.499**	0.000	Highly Significant
Peer Effect			
Visual Learning Style	.693**	0.000	Highly Significant
Auditory Learning Style	.567**	0.000	Highly Significant
Tactile Learning Style	.638**	0.000	Highly Significant
Kinesthetic Learning Style	.617**	0.000	Highly Significant
Group Learning Style	.655**	0.000	Highly Significant
Individual Learning Style	.597**	0.000	Highly Significant
Student-student Cooperation			
Visual Learning Style	.717**	0.000	Highly Significant
Auditory Learning Style	.639**	0.000	Highly Significant
Tactile Learning Style	.698**	0.000	Highly Significant
Kinesthetic Learning Style	.668**	0.000	Highly Significant
Group Learning Style	.690**	0.000	Highly Significant
Individual Learning Style	.611**	0.000	Highly Significant
Curriculum Assessment			
Visual Learning Style	.700**	0.000	Highly Significant
Auditory Learning Style	.658**	0.000	Highly Significant
Tactile Learning Style	.697**	0.000	Highly Significant
Kinesthetic Learning Style	.621**	0.000	Highly Significant
Group Learning Style	.548**	0.000	Highly Significant
Individual Learning Style	.618**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

This table illuminates a consistent and highly significant relationship between the constructivist learning

environment and various learning style preferences. The correlation coefficients (R-values) are consistently high and statistically significant (p-value < 0.01) across different dimensions, including goal orientation, constructivist teaching, learner autonomy, teacher-student interaction, peer effect, student-student cooperation, and curriculum assessment. For instance, the correlation between goal orientation and self-assessment scale for English reading comprehension is 0.508, indicating a significant positive relationship. These observations offer crucial insights for educators aiming to customize instructional methods better to suit students' diverse learning style preferences, promoting a more enriched and practical learning experience. Solvie and Kloek (2007) emphasize that understanding students' learning styles, which are how they prefer to grasp and process information, contributes to planning and scaffolding students' work within a constructivist learning environment. The research indicates that students generally favor a more constructivist learning environment than traditional methods, suggesting that teachers should incorporate the constructivist approach and refine their teaching strategies based on students' preferred learning environments to enhance overall academic performance (Ahmad et al., 2015).

Table 7

Relationship Between Constructivist Learning Environment and English Language Ability

Goal Orientation	r-value	p-value	Interpretation
English reading comprehension	.508**	0.000	Highly Significant
English written expression	.466**	0.000	Highly Significant
English listening comprehension	.465**	0.000	Highly Significant
English oral expression	.381**	0.000	Highly Significant
English pragmatic ability	.461**	0.000	Highly Significant
English organizational competence	.427**	0.000	Highly Significant
Constructivist Teaching			
English reading comprehension	.581**	0.000	Highly Significant
English written expression	.536**	0.000	Highly Significant
English listening comprehension	.508**	0.000	Highly Significant
English oral expression	.439**	0.000	Highly Significant
English pragmatic ability	.510**	0.000	Highly Significant
English organizational competence	.514**	0.000	Highly Significant
Learner Autonomy			
English reading comprehension	.573**	0.000	Highly Significant
English written expression	.545**	0.000	Highly Significant
English listening comprehension	.515**	0.000	Highly Significant
English oral expression	.497**	0.000	Highly Significant
English pragmatic ability	.547**	0.000	Highly Significant
English organizational competence	.529**	0.000	Highly Significant
Teacher-Student Interaction			
English reading comprehension	.505**	0.000	Highly Significant
English written expression	.425**	0.000	Highly Significant
English listening comprehension	.426**	0.000	Highly Significant
English oral expression	.350**	0.000	Highly Significant
English pragmatic ability	.462**	0.000	Highly Significant
English organizational competence	.400**	0.000	Highly Significant
Peer Effect			
English reading comprehension	.583**	0.000	Highly Significant
English written expression	.607**	0.000	Highly Significant
English listening comprehension	.618**	0.000	Highly Significant
English oral expression	.588**	0.000	Highly Significant
English pragmatic ability	.516**	0.000	Highly Significant
English organizational competence	.539**	0.000	Highly Significant
Student-student Cooperation			
English reading comprehension	.629**	0.000	Highly Significant
English written expression	.665**	0.000	Highly Significant
English listening comprehension	.656**	0.000	Highly Significant

English oral expression	.636**	0.000	Highly Significant
English pragmatic ability	.596**	0.000	Highly Significant
English organizational competence	.609**	0.000	Highly Significant
Curriculum Assessment			
English reading comprehension	.562**	0.000	Highly Significant
English written expression	.484**	0.000	Highly Significant
English listening comprehension	.502**	0.000	Highly Significant
English oral expression	.383**	0.000	Highly Significant
English pragmatic ability	.493**	0.000	Highly Significant
English organizational competence	.453**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

These robust correlations underscore the vital role of a constructivist learning environment in shaping students' English language abilities. The positive associations suggest that when students perceive their learning environment as goal-oriented, interactive, and collaborative, their proficiency in reading comprehension, written expression, listening comprehension, oral expression, pragmatic ability, and organizational competence improves. The findings highlight the role of the constructivist learning environment in shaping students' English language proficiency across various dimensions.

This implies that educational practices promoting a constructivist approach, such as learner-centered teaching, collaborative activities, and curriculum assessments aligned with constructivist principles, are conducive to enhancing students' overall English language skills. Educators and institutions can use these insights to optimize teaching methodologies and further support students' language development journey. The insights derived from this analysis can guide educators in tailoring instructional strategies to optimize language learning outcomes within constructivist settings (Zhang, 2023).

Table 8

Relationship Between Learning Style Preference and English Language Ability

Visual Learning Style	r-value	p-value	Interpretation
English reading comprehension	.768**	0.000	Highly Significant
English written expression	.711**	0.000	Highly Significant
English listening comprehension	.725**	0.000	Highly Significant
English oral expression	.636**	0.000	Highly Significant
English pragmatic ability	.684**	0.000	Highly Significant
English organizational competence	.665**	0.000	Highly Significant
Auditory Learning Style			
English reading comprehension	.716**	0.000	Highly Significant
English written expression	.696**	0.000	Highly Significant
English listening comprehension	.622**	0.000	Highly Significant
English oral expression	.604**	0.000	Highly Significant
English pragmatic ability	.662**	0.000	Highly Significant
English organizational competence	.631**	0.000	Highly Significant
Tactile Learning Style			
English reading comprehension	.745**	0.000	Highly Significant
English written expression	.659**	0.000	Highly Significant
English listening comprehension	.704**	0.000	Highly Significant
English oral expression	.621**	0.000	Highly Significant
English pragmatic ability	.675**	0.000	Highly Significant
English organizational competence	.634**	0.000	Highly Significant

Kinesthetic Learning Style			
English reading comprehension	.731**	0.000	Highly Significant
English written expression	.693**	0.000	Highly Significant
English listening comprehension	.697**	0.000	Highly Significant
English oral expression	.635**	0.000	Highly Significant
English pragmatic ability	.666**	0.000	Highly Significant
English organizational competence	.629**	0.000	Highly Significant
Group Learning Style			
English reading comprehension	.614**	0.000	Highly Significant
English written expression	.644**	0.000	Highly Significant
English listening comprehension	.651**	0.000	Highly Significant
English oral expression	.630**	0.000	Highly Significant
English pragmatic ability	.606**	0.000	Highly Significant
English organizational competence	.585**	0.000	Highly Significant
Individual Learning Style			
English reading comprehension	.733**	0.000	Highly Significant
English written expression	.713**	0.000	Highly Significant
English listening comprehension	.652**	0.000	Highly Significant
English oral expression	.606**	0.000	Highly Significant
English pragmatic ability	.636**	0.000	Highly Significant
English organizational competence	.599**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 8 illuminates highly significant correlations (p-value < 0.01) across various learning styles and dimensions of English language skills. Visual learning style exhibits strong positive correlations with self-assessment scales for English reading comprehension (r = 0.768), written expression (r = 0.711), listening comprehension (r = 0.725), oral expression (r = 0.636), pragmatic ability (r = 0.684), and organizational competence (r = 0.665). Similar patterns are observed for auditory, tactile, kinesthetic, group, and individual learning styles, with consistently high and significant correlations across different aspects of English language proficiency. Studies suggest that learners' preferred learning styles significantly impact language acquisition. For instance, visual learners may benefit from graphic aids and charts, while auditory learners may excel in language-rich discussions and listening activities (Coffield et al., 2004). Adapting instructional methods to align with these preferences enhances engagement and facilitates language development.

In conclusion, the robust correlations between learning style preferences and English language ability suggest that students perform exceptionally well in areas that align with their preferred learning styles. For instance, individuals with a strong inclination towards visual learning exhibit higher proficiency in reading, writing, listening, speaking, pragmatic, and organizational competence. This implies that educators and institutions can enhance language learning outcomes by incorporating teaching methods and materials that cater to diverse learning styles. Recognizing and accommodating these preferences may contribute to a more effective and personalized approach to English language education, fostering a supportive and engaging learning environment for students. Educators can leverage these insights to tailor instructional strategies that align with students' preferred learning styles, optimizing language learning outcomes in diverse educational settings.

Table 9

Proposed Language Learning Program to Enhance the Constructivist Learning Environment, Learning Style Preference, and Language Ability of Chinese College EFL Learners

Key Result Area	Objectives	Activities	Success Indicator	Persons Involved
Constructivist Learning Environment: - Peer Effect Enhancement To strengthen the Peer Effect in Constructivist Learning Environment, fostering collaborative interactions among students to enhance their overall learning experience.	a. Enhance students' collaborative skills through structured activities and exercises. b. Integrate and implement structured peer learning activities, such as group projects and discussions, into the curriculum. c. Harness technology to facilitate collaborative learning experiences, promoting digital literacy and effective online collaboration.	a. Collaborative Skills Workshop: Conduct workshops focused on effective communication, teamwork, and problem-solving skills to enhance students' ability to work collaboratively. b. Structured Peer Learning Modules: Integrate group projects, peer-reviewed assignments, and interactive discussions into the curriculum to provide structured peer learning opportunities. c. Digital Collaboration Bootcamp: Provide training sessions on digital collaboration tools, emphasizing their use in enhancing collaborative learning experiences.	a. 90% students demonstrate awareness and practical application of different collaborative skills in post-workshop assessments and activities. b. Attain an average satisfaction rating of at least 8 out of 10 for group projects as reported by participating students. c. Attain a 90% success rate in students showcasing awareness and applying various digital collaboration tools for English language learning during post-bootcamp evaluations and activities.	a. Language Instructors b. Peer Mentors c. Technology Specialists d. Curriculum Assessment Team e. Students
Learning Style Preference: - Group Learning Style Improvement To strengthen the Group Learning Style preference in Learning Style Preference among students, emphasizing collaborative and group-based learning activities.	a. Enhance students' skills in collaborative learning b. Cultivate effective communication and teamwork skills within group settings. b. Improve students' ability to work harmoniously in a	a. Effective Group Communication Sessions: Facilitate sessions to improve students' communication and teamwork skills within group learning contexts. b. Interpersonal Skills Development Program: Implement	a. 90% of students exhibit improved communication and teamwork skills within group settings. b. 90% of students can show enhancement in their ability to work harmoniously within a group, as assessed through surveys and peer evaluations. c. 90% positive feedback rate from students regarding satisfaction with instructional strategies tailored to group learning preferences.	a. Language Instructors b.Communication Coaches c. Curriculum Assessment Team d. Students

	group, fostering interpersonal skills and mutual understanding. c. Tailor instructional strategies to accommodate and enhance group learning preferences.	a program aimed at developing interpersonal skills, emphasizing cooperation and mutual respect within groups. c. Customized Group Learning Modules: Design and implement learning modules that specifically cater to group learning preferences, incorporating interactive group activities into the curriculum. Success Indicators:		
English Language Ability: - English oral expression To strengthen English oral expression skills in English Language Ability, targeting the improvement of self-assessed abilities in speaking and communication.	a. Improve students' English oral expression skills through targeted activities and exercises. b. Cultivate confidence in verbal communication by providing opportunities for students to express themselves in English. c. Encourage interactive speaking practices, such as group discussions and presentations, to enhance fluency and articulation.	a. Oral Communication Workshops: Conduct workshops focusing on improving oral communication skills, including pronunciation, intonation, and fluency. b. Confidence Building Sessions: Organize sessions aimed at building students' confidence in expressing themselves verbally. This may involve public speaking exercises and role-playing. c. Interactive Speaking Sessions: Implement regular interactive speaking sessions, such as group discussions, debates, and presentations, to	a. 90% of students can demonstrate an increase in self-assessment scores related to oral expression skills. b. 90% of students can exhibit improved confidence levels in verbal communication. c. 90% of students can display improved proficiency and fluency during interactive speaking activities.	a. Language Instructors b.Communication Coaches c. Curriculum Assessment Team d. Students

		provide students with practical opportunities to apply their oral communication skills.		

4. Conclusion and recommendation

In conclusion, the respondents' demographic profile reveals a higher percentage of females than males, sophomores dominate the grade distribution, Liberal Arts slightly outweighs Science, and most students scored between 90 and 150 on the College Entrance Examination English Test. The constructivist learning environment revealed a positive student perception trend, with teacher-student interaction ranking highest and peer effect ranking lowest among the indicators. The learning style preferences highlighted a balanced distribution among the visual, auditory, tactile, kinesthetic, group, and individual learning styles; learners' tendency towards the tactile learning style and the Group Learning Style was rated as the lowest rank. English language ability portrayed a positive self-assessment among learners, with students' strengths identified in reading comprehension and pragmatic ability and the lowest indicator ranking in oral expression. Examining differences based on profiles, such as sex, grade level, major, and college entrance examination English test scores, revealed mostly non-significant variations; however, specific attention may be warranted for certain subgroups, aligning interventions with their unique needs. The test of relationship demonstrated a positive correlation among constructivist learning environment, learning style preferences, and language ability of Chinese college EFL learners. The proposed language learning program aims to strengthen the peer effect in the constructivist learning environment, the group learning style preference in learning style preference, and English oral expression skills in English Language Ability.

University authorities may allocate resources to enhance the constructivist learning environment, acknowledge diverse learning style preferences, and improve the language ability of EFL learners. English Language teachers may use different teaching methods that suit various learning styles and offer specific support and workshops to improve students' oral expression skills. College EFL learners may actively partake in collaborative learning experiences, recognizing the favorable connection between a constructivist learning environment, learning style preferences, and language learning outcomes. The School of Foreign Languages may consistently evaluate and adjust the curriculum to incorporate tailoring teaching methods, promoting gender-inclusive teaching, providing targeted language interventions, and offering personalized learning opportunities. The future researcher may explore how the constructivist learning environment and learning style preferences interact, leading to more precise pedagogical practices. The language learning program may implement robust activities to enhance the peer effect in the constructivist learning environment, the group learning style preference in learning style preference, and English oral expression skills in English Language Ability.

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