



Ecological Teaching Innovation of Cross-Cultural Business Communication for Digital Natives

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Abstract

In order to better adapt to the development of the digital age, the business English teaching mode needs to be reformed. Based on the theory of educational ecology, this study proposes to establish an open ecological teaching system according to the characteristics of the contemporary college student group as digital natives, by creating a knowledge and skill enriched environment, using the co-evolution mechanism and attaching importance to ideological and political education. In this study, we collected questionnaires from students of cross-cultural business communication courses and analyzed the materials using SPSS and NVivo. Results suggest an association between this teaching mode and positive outcomes in cultural knowledge acquisition, teamwork skills and cultural confidence, with relevant statistical analysis indicating favorable trends. A positive correlation is observed between students' in-class engagement and teaching effectiveness. This study provides a reference for the reform of foreign language teaching, as well as the cultivation of compound, innovative and transcultural talents in the new era.

Subject Areas

Educational Psychology, Linguistics

Keywords

Educational Ecology, Digital Natives, Cross-Cultural Business Communication, Qualitative Analysis

1. Introduction

China's foreign-related business cooperation and exchanges are increasingly growing. However, business operators and managers from different cultural contexts

often encounter conflicts in cross-cultural business communication due to cultural differences [1]. Cross-cultural business communication (See Appendix) is occupying an increasingly important position in the curriculum system of foreign language majors in colleges and universities, and has significant practical significance for economic and social development.

Firstly, the teaching reform of cross-cultural business communication is driven by national policies. To promote the in-depth integration of information technology with education and teaching, the state has successively issued documents such as the Education Informatization 2.0 Plan and China Education Modernization 2035, vigorously advocating educational reform in the information age, striving to build a new model of educational services featuring “Internet + Education”, and further advancing undergraduate teaching reform in colleges and universities.

Furthermore, teaching reform is a necessity for the development of the cross-cultural business communication course itself. In the AI era, fundamental and extensive changes have taken place in educational methods. Instead of adopting the traditional textbook-based teaching model, greater emphasis is placed on the application of informatization. Informatization in the AI era is reshaping education and the educational ecology: for education, informatization has not only improved teaching efficiency but also promoted innovation in teaching methods and content, broken the traditional constraints of time and space, and made education more flexible and accessible; for teachers, information tools assist them in better managing the teaching process and improving teaching quality, but also require them to constantly update their skills and adapt to new technologies; for students, informatization makes learning resources more accessible, learning methods more diversified, and enhances their self-directed learning capabilities, while also increasing the challenges they face with information overload and digital dependence.

Overall, informatization has brought new opportunities and challenges to education, teachers, and students, prompting the education system to continuously evolve and adjust. Based on this, guided by the theory of educational ecology and considering the characteristics of the AI era, this study aims to promote the effective integration of “Internet+” with cross-cultural business communication teaching through the interactive influence between teachers, students, and information technology, thereby constructing a harmonious and efficient ecological classroom for cross-cultural business communication.

2. Innovation in the Concept of Blended Teaching for Cross-Cultural Business Communication Based on Educational Ecology

2.1. Overview of Research on Educational Ecology in the Context of Informatization Trend

Since the 20th century, the theory of Second Language Acquisition (SLA) has gradually shifted towards exploring language education from an ecological perspective. Lawrence Cremin put forward the concept of “educational ecology” in

his 1976 work *Public Education* [2]. Educational ecology is a discipline that studies the relationships between educational ecosystems and various ecological factors, with a focus on how these ecological factors affect learners and the educational ecosystem itself [3]. It regards education as an ecosystem interacting with elements of the natural, social, and normative ecological environments [4]. Moreover, teachers and students are crucial guarantees for maintaining the dynamic balance of teacher-student relationships and the stable development of classroom ecosystems [5].

In the context of informatization, experts and scholars in related fields have explored educational ecology from different perspectives, mainly including the following aspects:

Studies from the perspective of teaching environment

Hu conducted in-depth research on “emotion analysis” and pointed out that this method can alleviate the ecological imbalance in public foreign language classrooms under the “Internet+” context [6]. Yuan Lei *et al.* proposed constructing a technology-empowered, people-oriented smart education ecosystem framework through approaches such as upgrading educational infrastructure, improving policy guidance, and enhancing the quality and efficiency of the education system [7]. Wang explored in depth how to use cross-media and mobile Internet platforms to support English teaching, and developed an optimized model for college English teaching systems that integrates teaching content and interactive activities [8]. From the perspective of classroom ecology, Chen Jing *et al.* integrated information technology to build an online-offline integrated blended teaching model for academic English writing, emphasizing the interactive roles of teachers, students, and teaching materials in the curriculum ecosystem [9].

Exploration of ecological teaching from the perspective of teachers

Afsheen Rezai *et al.* suggested that teachers should improve their digital literacy skills and promote the effective integration of technology into teaching practice [10]. Based on the theory of educational ecology, Huang Hui and Ouyang Chaoqun conducted surveys and qualitative interviews with college business English teachers, and advocated for reconstructing their living environment from three dimensions: psychological, normative, and social environments [11]. Li Junmei pointed out that information technology has reconstructed the educational ecological environment and reshaped its boundaries, making teachers the main body of technology-empowered education, and digital literacy has thus become a key factor in teachers’ professional development [12]. Under the background of new engineering, Hu Jiehui proposed that foreign language teachers should take the initiative to learn and adapt to the new situation of talent cultivation, enhance academic knowledge related to students’ majors and integrated knowledge, and integrate such expertise into classroom teaching [13]. Li Weiwei emphasized that teachers should improve their educational technology proficiency, strengthen dynamic management of digital classrooms, while maintaining disciplinary focus and firm belief in their professional positioning [14].

Exploration of ecological teaching from the perspective of students

Shao and Yin conducted a student-centered study on ecological teaching, noting that the core of building a college English ecological classroom lies in motivating students' participation [15]. They proposed that reducing students' emotional anxiety can be achieved by establishing cooperative peer relationships and creating a supportive classroom environment. Wu Min suggested that teachers should design and implement multi-dimensional interactive activities to build a new ecology of socialized interaction for students [16]. Bu Mengran analyzed problems in college English listening and speaking classrooms and pointed out the need to construct a benign ecological classroom for English listening and speaking [17].

Through literature research, it can be concluded that in the digital age, information technology, as a key link in the foreign language teaching ecological chain, is interconnected with other ecological factors. Its importance has been gradually recognized by experts at home and abroad, making it an indispensable part of the ecological reconstruction of foreign language teaching. Giving play to the complementary advantages of offline and online teaching to form an educational synergy is a necessary condition for meeting the knowledge acquisition needs of contemporary college students [18]. However, there are few empirical studies on the teaching reform of the "Understanding Contemporary China" textbook series for college students.

2.2. Teaching Requirements for the "Understanding Contemporary China" Textbook Series

Since the 18th National Congress of the Communist Party of China, General Secretary Xi Jinping has delivered many important speeches. He pointed out that participating in global governance requires a large number of talents who are familiar with the policies and principles of the Party and the country, understand China's national conditions, have a global vision, are proficient in foreign languages, thoroughly understand international rules, and are skilled in international negotiations. It is necessary to tell China's stories well, spread China's voices well, and present a real, multi-dimensional and comprehensive China. The new era calls for more foreign language talents urgently needed by the country to participate in global competition, serve the national strategic needs, introduce China's development and achievements to the world, and strive to enhance China's international discourse power and the influence of international communication.

In response to the new-era demand for foreign language talents, colleges and universities have introduced the "Understanding Contemporary China" textbook series into foreign language majors. Rooted in the multilingual editions of Xi Jinping, this series integrates the study of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era into foreign language skills in listening, speaking, reading, writing, and translation. It helps students observe and analyze contemporary China's development and achievements from a Chinese-theoretical perspective, and interpret the Chinese path and wisdom cross-culturally. Students can enhance their basic foreign language skills, critical thinking, cross-cultural

and international communication abilities during content learning. The series aims to cultivate patriotic, globally-visioned, and professionally proficient foreign language talents to meet national and contemporary needs.

2.3. Curriculum Design Concepts for Cross-Cultural Business Communication Based on Educational Ecology

Cross-cultural business communication is one of the few foreign language courses that integrates theoretical guidance with practice. Its main goal is to help college students master the rules of cross-cultural business communication activities, enhance their cultural awareness, and thereby improve their ability to engage in cross-cultural business communication with members of other countries. Drawing on the educational ecology theory proposed by Lawrence Cremin in the 1980s, this study focuses on three key teaching elements in response to the teaching requirements of cross-cultural business communication courses: the enrichment process of knowledge and ability flow, the co-evolution mechanism, and ideological and political education. These elements aim to cultivate students' sound cultural knowledge, personal skills, and individual qualities, respectively.

Creating the enrichment process of knowledge and ability flow to enrich cultural knowledge. In educational ecosystems, there exists an enrichment relationship of knowledge and ability flow (or information flow). The enrichment process of knowledge and ability flow is “characterized by alternating phases of expansion and contraction, extension and generalization—from thin to thick, then from thick back to thin” [19]. On the one hand, as digital natives, contemporary college students are highly skilled at searching for information online to solve problems [20]. From an educational ecology perspective, when students act as masters or even creators of knowledge, they can participate more deeply in teaching activities. This role transformation significantly enhances the enrichment of knowledge and ability flow. On the other hand, leveraging the trait of contemporary college students' willingness to share knowledge [21], we should strengthen student-student interaction. Through mutual learning, students can compensate for individual limitations in knowledge and acquire the profound cultural background knowledge necessary for cross-cultural business communication.

Applying the co-evolution mechanism to improve personal skills. In ecology, co-evolution refers to “the evolution of a trait in one species in response to a trait in another species, with the latter trait also evolving in response to the former” [22]. In the teaching process, teachers and students complement each other in different ecological niches. Meanwhile, contemporary college students are characterized by a propensity for collaboration and a desire for closer, more efficient peer relationships. First, teachers can leverage college students' collaborative nature to encourage student-student co-evolution, thereby fostering a positive and beneficial classroom ecology and developing students' cross-cultural business communication skills through interaction [23]. Second, teachers should guide students to learn through reflection and discussion, enabling them not only to master knowledge but also to understand how knowledge is generated, thus improving

their practical ability in cross-cultural business communication. Finally, through informatization, teachers and students can break the constraints of time and space in traditional classrooms. Both teacher-student and student-student relationships are extended into the flat online space, narrowing the distance between them.

Emphasizing ideological and political education to cultivate individual qualities. In the current volatile international environment, how to more effectively foster virtue through education and cultivate new-era foreign language talents with high ideological and moral integrity are critical issues for foreign language teachers. While developing students' professional knowledge and abilities, equal attention must be paid to shaping their individual qualities and ideological and political awareness. On one hand, by integrating cross-cultural business communication theories with educational ecology, we can deeply explore ideological and political elements in foreign language courses, subtly embedding ideological and political education into all aspects of teaching. This cultivates students' positive individual qualities and strengthens their cultural confidence in cross-cultural business communication. On the other hand, by keeping abreast of current affairs and integrating professional ethics into teaching, students can profoundly understand their social responsibilities as foreign language talents, internalize China's excellent traditional culture and advanced socialist value system, and develop unwavering moral beliefs, thus becoming new-era foreign language talents with high professional competence.

The teaching model concept of this study is shown in the following **Figure 1**.

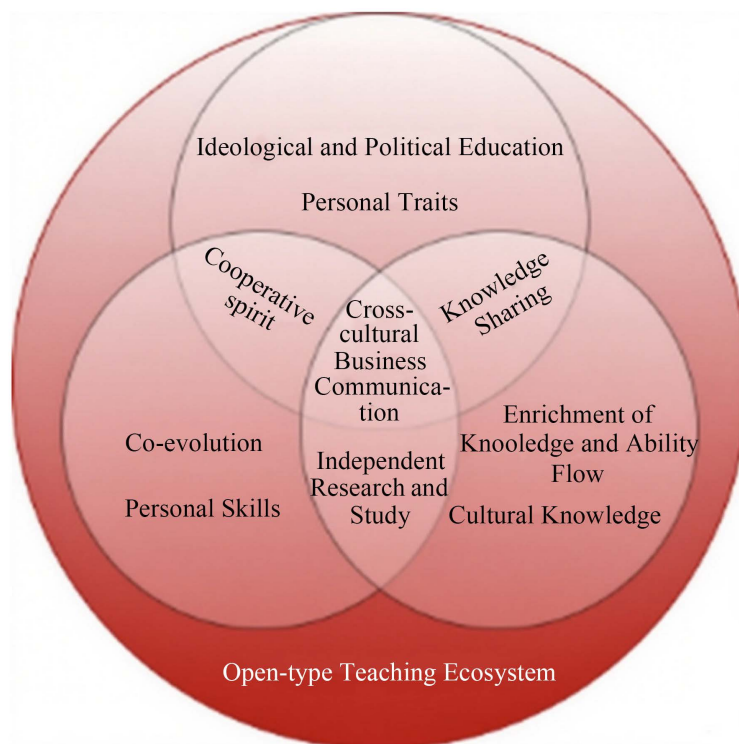


Figure 1. Design concept of the ecological blended teaching model for cross-cultural business communication.

3. Experimental Study

3.1. Teaching Requirements for the “Understanding Contemporary China” Textbook Series

This empirical study was conducted at H University, a comprehensive university. Under the guidance of the aforementioned teaching philosophy, Teacher A carried out the practice of ecological blended teaching in cross-cultural business communication. The experiment lasted for one semester, totaling 34 class hours. The subjects were 61 second-year students majoring in Business English, selected via cluster sampling (the entire class was included as the research object due to the integrity of the course enrollment and the need to maintain teaching continuity).

Regarding their academic foundation, these second-year students have completed some basic courses in their major, thus possessing a certain level of relevant knowledge reserve. In terms of foreign language proficiency, as second-year students, they have just taken the College English Test Band 4 (CET-4).

The specific teaching design of this ecological blended classroom includes four aspects: pre-class preview, in-class teaching, after-class training and expansion, and simulation practice. The questionnaire was distributed by Teacher B after the course, with an actual completion time of 6 - 8 minutes. A total of 61 questionnaires were collected; after excluding 2 with missing answers and 2 with identical answers, 57 valid questionnaires were obtained, resulting in an effective recovery rate of 93.4%.

The questionnaire was a paper-based version using a 7-point Likert scale, ranging from “completely consistent” to “completely inconsistent”. An open-ended question was set at the end of the questionnaire, allowing students to comprehensively evaluate the teaching model and put forward suggestions.

When investigating students’ participation in English-related activities and supplementary feedback on the teaching model, the specific structure and satisfaction statistics of the questionnaire (including 12 Likert scale questions and 2 open-ended questions) are detailed in **Table A1**.

In this empirical study, the practical achievements of ecological teaching in cross-cultural business communication (e.g., simulated business dialogue videos) are visually documented. The specific video footage is presented in **Figure 2**.

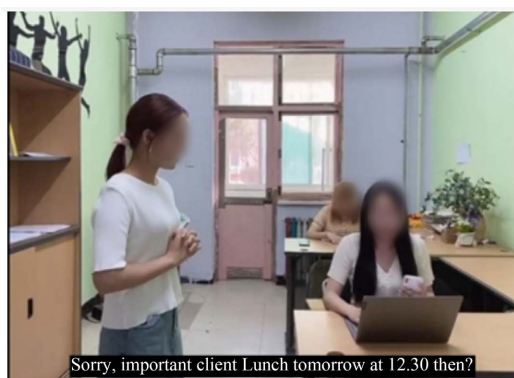


Figure 2. Video footage of ecological teaching achievements in cross-cultural business communication.

To systematically present the operational framework of the ecological blended teaching model, the integration of core elements (e.g., ecological teaching environment, methods, and evaluation) is illustrated in **Figure 3**.

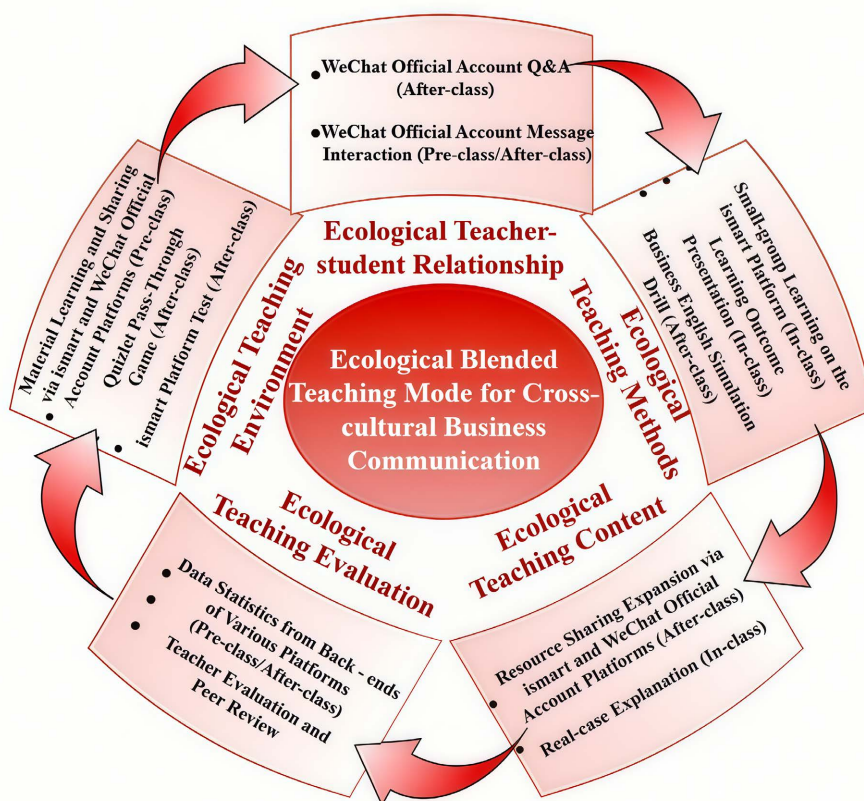


Figure 3. Ecological blended teaching model for cross-cultural business communication.

3.2. Experimental Data Processing

3.2.1. Reliability and Validity Test of the Questionnaire Scale

The questionnaire consists of three parts: evaluation of quality and ability, evaluation of teaching methods, and comprehensive teaching satisfaction. This study adopted Cronbach's α coefficient to test reliability. Generally, a coefficient greater than 0.7 indicates that the survey results are reliable. In this paper, the coded options and data were imported into SPSS 28.0 statistical software for variable reliability analysis.

The reliability statistics show that the Cronbach's α coefficients for the variables in the dimensions of "evaluation of quality and ability" and "evaluation of teaching methods" are 0.896 and 0.786, respectively. Since there is only one variable in the dimension of "comprehensive teaching satisfaction", no separate analysis was conducted for it. Meanwhile, the combined Cronbach's α coefficient for all scale variables is 0.911. All the above values are greater than 0.7, and the Cronbach's α coefficient increased after adding the variables of the third dimension. Therefore, the questionnaire has high reliability.

For validity analysis, SPSS 28.0 was used to conduct Exploratory Factor Analy-

sis (EFA), and the results are presented in **Table 1** and **Table 2**. According to **Table 2**, the KMO value of the scale is 0.830, which is greater than 0.6, and the significance level is less than 0.05, indicating that the data for the exploratory factor analysis of the questionnaire scale are valid. Based on the exploratory factor analysis, the factor loading parameters of all option variables in the questionnaire scale are greater than 0.5, making them valid variables. Therefore, the questionnaire scale is of high validity.

Table 1. Reliability analysis of questionnaire scale.

	Chronbach's α	Number of Items
Quality Ability Evaluation Dimension	0.896	6
Teaching Method Evaluation Dimension	0.786	5
Comprehensive Teaching Satisfaction Dimension		1
Overall	0.911	12

Table 2. Questionnaire scale validity analysis.

KMO: 0.830 Significance: 0.000		Factor Loading Parameter	
Variable Dimension	Variable	Component 1	Component 2
Quality and Ability Evaluation Dimension	Q1. Improvement of Independent Inquiry Ability	0.872	
	Q2. Improvement of Professional Knowledge Reserve	0.829	
	Q3. Improvement of Expression Ability	0.770	
	Q4. Improvement of Teamwork Ability	0.739	
	Q5. Improvement of Cultural Confidence	0.584	
	Q6. Mutual Learning Assistance among Classmates	0.716	
Teaching Method Evaluation Dimension	Q7. Teaching Content combined with Reality		0.645
	Q8. Helpfulness of Multimedia Resources		0.626
	Q9. Increased Time Spent Learning English		0.878
	Q10. More Attention to English Information		0.624
	Q11. Sufficient Multimedia Materials		0.617
Overall Dimension	Q12. Satisfaction with Teaching	0.555	0.653

3.2.2. Analysis of the Questionnaire Scale

The data analysis of the questionnaire scale in this study mainly involves two steps.

First, calculate and statistically analyze the questionnaire scale data. The questionnaire data were imported into Excel, where statistics were compiled, and the percentage of each option corresponding to each variable was calculated in sequence. The statistical results are shown in **Table 3**.

Second, test the correlation between variables in each dimension and teaching satisfaction to examine the degree of attention students pay to various teaching factors. This study uses the Pearson correlation coefficient method to test the strength of correlations, and the specific calculation results are presented in **Table 4**.

As shown in **Table 4**, among these 11 variables, three variables—“improvement of independent inquiry ability”, “professional knowledge reserve”, and “auxiliary role of multimedia resources”—exhibit a significant correlation with teaching satisfaction at the 0.01 level. Six variables show a significance level of correlation with teaching satisfaction less than 0.05, indicating a relatively significant correlation between these six variables and teaching satisfaction. Most variables are positively correlated with students’ teaching satisfaction.

Table 3. Statistical results of the questionnaire scale.

		Not Consistent	Slightly Inconsistent	Somewhat Inconsistent	Unable to Evaluate	Somewhat Consistent	Fairly Consistent	Completely Consistent
Quality and Ability Evaluation Dimension	Q1. Improvement of Independent Inquiry Ability	0.00%	0.00%	2.50%	2.50%	22.50%	30.00%	42.50%
	Q2. Improvement of Professional Knowledge Reserve	0.00%	0.00%	0.00%	0.00%	12.50%	35.00%	52.50%
	Q3. Improvement of Expression Ability	0.00%	0.00%	2.50%	5.00%	12.50%	22.50%	57.50%
	Q4. Improvement of Teamwork Ability	0.00%	2.50%	0.00%	12.50%	20.00%	15.00%	50.00%
	Q5. Improvement of Cultural Confidence	0.00%	0.00%	2.50%	5.00%	10.00%	32.50%	50.00%
	Q6. Mutual Learning Assistance among Classmates	0.00%	5.00%	5.00%	10.00%	15.00%	25.00%	40.00%
Teaching Method Evaluation Dimension	Q7. Teaching content combined with reality	0.00%	0.00%	0.00%	2.50%	7.50%	20.00%	70.00%
	Q8. Helpfulness of Multimedia Materials	0.00%	0.00%	2.50%	5.00%	12.50%	15.00%	65.00%
	Q9. Increased Time Spent Learning English	0.00%	0.00%	0.00%	10.00%	25.00%	32.50%	32.50%
	Q10. More Attention to English Information	0.00%	0.00%	7.50%	15.00%	22.50%	35.00%	20.00%
	Q11. Sufficient Multimedia Materials	0.00%	2.50%	2.50%	2.50%	17.50%	15.00%	60.00%
Overall Dimension	Q12. Satisfaction with Teaching	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	90.00%

Table 4. Pearson correlation analysis between questionnaire items and teaching satisfaction.

	Quality and Ability Evaluation Dimension	Improvement of Independent Inquiry Ability	Improvement of Professional Knowledge Reserve	Improvement of Expression Ability	Improvement of Teamwork Ability	Improvement of Cultural Confidence	Mutual Learning Assistance among Classmates
	Pearson Correlation	0.533**	0.429**	0.334*	0.316*	0.329*	0.390*
	Significance (two-tailed)	0.000	0.006	0.035	0.047	0.038	0.013
High Satisfaction with Teaching	Teaching Method Evaluation Dimension	Teaching Content combined with Reality	Helpfulness of Multimedia Resources	Increased Time Spent Learning English	More Attention to English Information	Sufficient Multimedia Materials	
	Pearson Correlation	0.373*	0.434**	0.043	0.197	0.400*	
	Significance (two-tailed)	0.018	0.005	0.794	0.222	0.011	

Note: **denotes a statistically significant correlation at the 0.01 level (two-tailed), meaning the probability of the observed correlation being due to random error is $\leq 1\%$; *denotes a statistically significant correlation at the 0.05 level (two-tailed), indicating the probability of random error is $\leq 5\%$.

3.2.3. Data Analysis of Open-Ended Questions in the Questionnaire

In this part of the study, NVivo 12 software was used to process the original text data. There are two main coding methods commonly used in NVivo: one is to determine coding nodes based on the research theme and form a research framework; the other is to first code the literature information, then integrate nodes from the bottom up, which is generally completed through three rounds of coding in accordance with the grounded theory—open coding, axial coding, and selective coding [24].

This study adopts a combined coding method. During sorting and analysis, continuous interaction with the data was conducted from the bottom up to complete the first and second-level coding, namely open coding and axial coding. Selective coding was performed based on Johnson *et al.*'s "Theory of Cross-Cultural Business Communication Competence". The specific coding results are shown in **Table 5**.

Table 5. NVivo coding data analysis of questionnaire corpus.

Tertiary Coding	Secondary Coding	Primary Coding
A Cultural Knowledge (51)	A1 Knowledge Acquisition (9)	A11 Deepened knowledge acquisition (8)
		A12 Insufficiently deep knowledge acquisition (1)
	A2 Course Content (15)	A21 Comprehensive course content (11)
		A22 More content can be added (1)
		A23 Practical content (3)

Continued

	A31 Useful pre-class and post-class sessions (2)
	A32 Moderate homework load (2)
A3 Teaching Arrangement (7)	A33 Insufficient homework feedback (1)
	A34 Useful post-class review (1)
	A35 Suggestions for reviewing PPT after class (1)
	A41 Multimodality is interesting and enhances learning interest (9)
	A42 iSmart platform needs further optimization (6)
A4 Multimodal Teaching Methods (20)	A43 More multimodal content can be added (3)
	A44 Multimodality helps learning and understanding (1)
	A45 WeChat Official Account can add Chinese (1)
	B11 Integration of theory and practice (9)
B1 Practical Ability (12)	B12 More practical activities can be added (2)
	B13 More practice after class (1)
	B21 Enhanced oral English (7)
B Personal Skills (30)	B22 More opportunities for personal presentation (4)
	B23 More interactive presentation activities (3)
B2 Expression Ability (18)	B24 Need for optimization in personal presentation sessions (2)
	B25 Unobvious improvement in oral English (1)
	B26 Enhanced personal expression ability (1)
	B31 Strengthened team awareness (2)
B3 Teamwork (4)	B32 Enhanced interaction among classmates (2)
	C11 Improved learning motivation (5)
C1 Learning Motivation (7)	C12 Need to enhance students' motivation (2)
	C21 Improved cultural confidence (1)
C Personal Traits (15)	C22 Cultivated cultural confidence (1)
C2 Cultural Confidence (2)	C31 Insufficient proximity between teachers and students (1)
	C32 Good teacher-student interaction (1)
C3 Teacher-Student Interaction (2)	

4. Results and Discussion

Analysis of survey data indicates that the teaching mode is related to positive changes in students' cross-cultural business communication competence, perception of educational concept practice, and classroom learning experience. Statistical findings show favorable trends in relevant aspects, along with a positive association between in-class engagement and teaching effectiveness. Most students approve of the teaching mode.

4.1. Enrichment of Knowledge and Ability Flow Promotes Cultural Knowledge Learning, While Off-Class Links Still Need Improvement

This teaching model has the highest recognition in the dimension of cultural knowledge teaching, with multimodal teaching being particularly favored.

Firstly, as shown in **Table 4**, students believe that the course content and learning resources are rich and highly practical, and they have a good acceptance of resources such as WeChat Official Accounts and the iSmart cloud platform. Meanwhile, in the quality and ability evaluation dimension, Q2 investigates professional knowledge reserve: 100% of students believe that their professional knowledge level has been improved through the course.

Secondly, an analysis of **Table 4** reveals that in the quality and ability evaluation dimension, “improvement of independent inquiry ability” has the strongest correlation with teaching satisfaction, followed by “improvement of professional knowledge reserve” and “mutual learning assistance among classmates”. This indicates that through the course, students have begun to value and gradually develop awareness of independent learning and research, and the characteristics of knowledge sharing have been further developed. In the teaching method evaluation dimension, “multimedia resources are helpful” has the strongest correlation with teaching satisfaction, showing that students are attracted by multimodal teaching resources and have a good acceptance of them.

Finally, data in **Table 5** shows that A21 (comprehensive course content), A41 (multimodal methods are interesting and enhance learning interest), and A11 (deepened mastery of knowledge) are the nodes with the highest number of codes in the cultural knowledge dimension. It is evident that students are most impressed by the comprehensiveness of the course content, and most students can master the knowledge efficiently. All codes under node C4 (student-student interaction) are positive feedback, further confirming that this teaching model strengthens students’ knowledge sharing ability. The consistency of conclusions from the three sets of data effectively proves that the multimodal teaching under this teaching reform model generally aligns with the interests of contemporary college students and their learning characteristics as “digital natives”. Students create meaningful learning activities through collaborative interaction, providing themselves with rich language experiences [25]; the abundant affordances in the environment further stimulate learners’ initiative to participate in learning, forming a positive cycle [26]. The ecological learning environment fully taps students’ characteristics of independent learning, research, and knowledge sharing, exerting a positive impact on their knowledge absorption.

In terms of cultural knowledge teaching, there is still much room for improvement in the off-class links of the blended teaching classroom. Observing **Table 5**, it can be found that there are more suggestive codes under nodes A3 (teaching arrangement) and A4 (multimodal teaching methods). This phenomenon indicates that the interaction between teachers and students after class needs to be

strengthened, and it also reflects that students recognize the necessity of after-class practice. From the perspective of educational ecology, the role of teachers is dynamic, multidimensional, and networked [27]. The ecological niche of teachers can be adjusted at any time to ensure the overall ecological balance under the condition of stable teaching structure and individual development. This study holds that the teaching reform practice only has three class hours per week, covering both knowledge teaching and practical links, with a large amount of content and tight arrangement. In addition, the number of students is large, making it difficult for teachers to provide one-on-one feedback on each student's after-class practice. As a result, the after-class practice link fails to achieve optimal effectiveness. In terms of multimodal teaching methods, the code A42 (iSmart cloud platform needs further optimization) has the largest number of integrated texts. By reviewing the original texts in this part, it is found that students mainly feedback on the inconvenience of software operation in the system's automatic scoring and follow-up reading links. This indicates that while students value multimodal resources, it also reflects that there is still a long way to go in the construction of multimodal platforms and the cultivation of teachers' information literacy.

4.2. Co-Evolution Optimizes Practical Skills, and Team Presentations Need to Be Increased

The individual skills dimension in cross-cultural business communication covers multiple abilities such as basic language skills, expression level, and communicative practice. Combining the display of students' achievements and the feedback from questionnaire data, it is found that the teaching model under the concept of co-evolution can effectively improve students' relevant individual skills in cross-cultural business communication.

According to **Table 3**, **Table 5**, and the original questionnaire data, it can be seen that the group practice and presentation sessions are highly favored by students. Students stated that "practical ability has been greatly improved" and "the teacher also provides some examples to help us integrate theory with practice"; at the same time, they also expressed positive demands for such teaching activities, proposing "more practical scenarios can be added" and "hoping that teachers can assign more situational dialogue exercises for practice". Under the ecological teaching model, students' collaborative spirit has been explored, encouraging them to actively compete and drive each other's learning. In addition, students have shown recognition of and demand for presentation opportunities. This study believes that self-presentation is an important factor in enhancing students' sense of gain. Presentation opportunities will strengthen students' ecological niche and mobilize their subjective initiative; at the same time, during the presentation process, students observe and learn from each other, and the peer effect activates learning motivation [28].

Further analysis of the materials reveals that students' teamwork ability and awareness have improved relatively slowly. According to **Table 3**, 85% of students believe that their teamwork ability has been developed; data in **Table 4** shows that

in the quality and ability evaluation dimension, the option “improvement of teamwork ability” has the weakest correlation with comprehensive teaching satisfaction, reflecting that students pay insufficient attention to skills at this level. Combining **Table 5** and the original survey data, it is found that only two students explicitly mentioned “teamwork awareness/ability” in the questionnaire. Most students’ learning cognition is limited, focusing on knowledge-based skills, and there is still room for improvement in their attention to teamwork. Based on the above research results, this study believes that there are two reasons for this phenomenon: first, the large number of students in the class and the large number of groups make it impossible for teachers to ensure comprehensive interaction with each group, failing to timely deepen students’ sense of cooperation; second, due to limited class time, not every group member can get the opportunity to present on stage, so some groups or students are less motivated and have limited participation in team activities; while the cultivation of teamwork ability depends on group classroom activities, leading to uneven progress in students’ teamwork ability. In addition, several students put forward suggestions related to the operation of multimodal presentation platforms (such as the low volume of equipment during speeches). The rapid development of teaching environment resources has continuously expanded the ecological niche of foreign language teachers, and technology integration skills are the basic technical guarantee for foreign language teachers to promote the integration of online and offline teaching [29]. This phenomenon further reflects the profound impact of teachers’ information literacy and the improvement of information-based teaching platforms on students’ learning experience.

4.3. Ideological and Political Education Cultivates Cultural Confidence, and Teacher-Student Interaction Urgently Needs to Be Strengthened

The study found that this teaching model has a positive impact on cultivating students’ cultural confidence. According to **Table 3**, 92% of students stated that they can enhance their cultural confidence through this course; combining **Table 5** and questionnaire data, it is found that the course can stimulate students’ interest in culture and deepen their understanding of Chinese and Western cultures.

In terms of independent learning and research, the research results show that students’ independent inquiry ability has improved, but their learning initiative remains insufficient. Data in **Table 3** shows that students feel their independent inquiry ability has improved; however, their subjective initiative in learning is still insufficient. Data in **Table 4** confirms this view: the weak correlation between Q9 and Q10 proves that students have not yet understood the significance of independent learning and research or obtained strong spontaneous learning motivation. According to the relevant codes in **Table 5**, students proposed that they hope teachers “can enable all students to participate” and “can conduct small-class teaching to increase interaction with students”.

Comprehensive analysis of the data in each table, this study believes that this

phenomenon is caused by the following reasons: first, the arrangement of pre-class preview and in-class tests has objectively increased the learning time, and the independent learning and research tasks in the classroom have effectively improved students' independent inquiry ability in the process of completing tasks; second, students still passively solve problems to achieve task goals, and there is still room to develop their ability to identify problems and their desire for knowledge.

5. Conclusion

Based on educational ecology theory and starting from the characteristics of contemporary college students as “digital natives”, this study explores the teaching reform of cross-cultural business communication, proposes an ecological blended teaching concept for the course, and conducts empirical analysis. The aim is to further deepen and promote the teaching reform of foreign language majors in colleges and universities, thereby providing references for cultivating compound foreign language innovative talents in the new era. Analysis of empirical data leads to the following suggestions: first, optimize teaching content and extracurricular links while cultivating teachers' technology integration skills, ensuring that teaching content and platforms align with digital natives' characteristics and operational habits; second, strengthen the cultivation of teamwork and expression abilities to enhance cooperation skills and learning autonomy, as the study shows these are positively correlated with students' presentation opportunities and group activity participation; third, improve ideological and political education and cultural literacy, giving full play to teachers' guiding role in teaching, with controlling class size helping to increase teacher-student interaction, enhance ideological and political teaching effects, and maintain the balance of the educational ecosystem. However, this study has several limitations. The sample, drawn from a single university via cluster sampling, may restrict the generalizability of findings; data primarily relying on self-reported questionnaires could introduce response bias; and the absence of a control group may limit causal inference about the teaching mode's effectiveness. Future research can address these by expanding to multiple institutions, incorporating objective assessment tools, adopting a control group design to strengthen validity, enlarging the sample size, and conducting long-term in-depth studies in similar institutions.

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Conflicts of Interest

The authors declare no conflicts of interest.

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Appendix

A structured questionnaire was administered for the course “Cross-cultural Business Communication,” consisting of 14 items. Among them, 12 were Likert-scale questions, covering dimensions such as teaching content, skill development, resource utilization, and overall satisfaction. The remaining 2 were open-ended questions, which probed into participation in English-related activities and additional comments.

Questionnaire

Course Name: Cross-cultural Business Communication

Instructions:

1. Please tick the option you agree with.
2. Please provide true feedback and criticism to help us improve future teaching programs.

Table A1. Questionnaire and satisfaction statistics.

No.	Evaluation Items	Strongly disagree - Strongly agree						
		1	2	3	4	5	6	7
1	The teaching content is helpful for improving business English expression ability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	The teaching content is helpful for enhancing professional knowledge reserve.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	The teaching makes me more willing to conduct team cooperation/improves my cooperation ability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	The teaching makes me more willing to conduct independent inquiry/improves my independent inquiry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	I have enhanced my cultural awareness and cultural confidence through the course.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	The teaching is closely combined with reality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I usually communicate and share knowledge related to the class with classmates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I usually pay more attention to related English information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	The quantity of multimedia materials provided by the official account/ismart is sufficient.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	The multimedia materials provided by the official account/ismart are helpful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	The time I spend learning English every day has increased.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I am satisfied with the teaching of this course.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Did you participate in any English-related competitions or practical activities this semester?

14. Other opinions or thoughts on this course.

Thanks for your cooperation!