
| RESEARCH ARTICLE

Designing a College English General Education Course on the SDGs within the CLIL 4Cs Framework

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| ABSTRACT

Against the backdrop of global sustainable development and the reform of college English general education in China, this paper explores the construction of a college English general education curriculum integrating the United Nations Sustainable Development Goals (SDGs) within the framework of Content and Language Integrated Learning (CLIL) and its 4Cs model. Through literature review and theoretical analysis, the study reveals a strong alignment between the four dimensions of the CLIL framework—Content, Communication, Culture, and Cognition—and the core competencies advocated by the SDGs, such as global citizenship, critical thinking, and intercultural understanding. Based on this, the paper proposes a systematic curriculum design scheme encompassing content development, teaching methodology, and assessment mechanisms. The curriculum aims to foster students' language proficiency and sustainable literacy through task-based learning, project-based learning, and intercultural collaboration in authentic contexts. Additionally, by integrating the concept of intercultural citizenship education, the curriculum enhances students' global responsibility and intercultural dialogue competence. This study provides both theoretical support and practical pathways for shifting college English education from a tool-oriented to a competency-based approach. Future research may further explore localized teaching cases and conduct cross-cultural comparative studies to validate the feasibility of the proposed curriculum model.

| KEYWORDS

CLIL; 4Cs framework; Sustainable Development Goals (SDGs); college English general education; intercultural citizenship.

| ARTICLE INFORMATION

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1. Introduction

1.1 Research Background

With the growing prevalence of globalization and the concept of sustainable development, Content and Language Integrated Learning (CLIL) and the United Nations Sustainable Development Goals (SDGs) have become prominent research focuses in the field of foreign language education. CLIL, as a teaching approach that organically integrates subject content and language instruction, is considered an effective path for cultivating students' dual competence in subject knowledge and language skills (Rojas, 2021; ĎÁSEK, 2012; Platzer & Mercer, 2022). At the same time, the SDGs—17 global development goals proposed by the United Nations in 2015, as an interdisciplinary authentic context, provide a bridge between classroom learning and the real world in foreign language education, contributing to the development of students' global awareness and sense of civic responsibility (Hatakeyama, 2020; Kavanagh & Kojima, 2023; Banegas & del Pozo Beamud, 2022).

In China, college English teaching is transforming "language skills training" to "liberal education," with an emphasis on developing students' intercultural communication, critical thinking, and social engagement abilities (Ma Yongliang et al., 2012; Yang Jianding et al., 2007; Zhu Yumei, 2006). Against this backdrop, designing college English general education courses that integrate the SDGs within the CLIL 4Cs framework aligns with global trends in foreign language education and responds to the demand in China's higher education for cultivating interdisciplinary talents.

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1.2 Definition of Core Concepts

1.2.1 CLIL and the 4Cs Framework

CLIL originated in the bilingual education practices of Europe in the 1990s, with its core principle centered on the integrated development of content knowledge and language skills, which promotes deep learning and communicative competence simultaneously. In 2007, Coyle proposed the 4Cs Framework, summarizing the core elements of CLIL as Content (subject knowledge), Communication (language skills), Culture (intercultural awareness), and Cognition (thinking skills), and emphasizing the need for balance and integration across these four dimensions (Coyle et al., 2010, as cited in Platzer & Mercer, 2022). Since then, scholars have expanded the 4Cs framework: Leão (2022) proposed *Intercultural Citizenship and Language Integrated Learning (ICLIL)*, incorporating *citizenship education* into the “Culture” dimension; Yamamoto & Nitta (2021), drawing on the context of foreign language education in Japan, highlighted the role of *Community* in the 4Cs, thereby forming a localized framework of “Content, Communication, Culture, and Community.”

This paper defines the CLIL 4Cs teaching framework as a system centered on Content (interdisciplinary knowledge related to the SDGs), Communication (English language skills), Culture (intercultural citizenship awareness), and Cognition (critical thinking and problem-solving abilities). Through a synergistic mechanism where content drives language learning and language supports content understanding, the framework aims to cultivate students’ “dual competence.” The college English general education course integrating the SDGs refers to a curriculum that adopts the SDGs as core content and employs the CLIL 4Cs framework as its pedagogical foundation. It aims to cultivate students’ ability to understand, discuss, and engage with the SDGs in English, combining linguistic, general education, and global dimensions.

1.2.2 SDGs and Foreign Language Education

Since their introduction in 2015, the Sustainable Development Goals (SDGs) have gradually been integrated into the field of education. The United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasizes that education is key to achieving the SDGs and advocates for fostering students’ awareness of sustainable development through Global Citizenship Education (GCE) (UNESCO, 2015). Within the context of foreign language education, the SDGs are viewed as authentic interdisciplinary content that offers meaningful, context-rich tasks to support language acquisition—such as discussions on topics like “Zero Hunger” and “Climate Change”—and promotes the integrated development of language skills and global awareness (Hatakeyama, 2020; Kavanagh & Kojima, 2023; Banegas & del Pozo Beamud, 2022).

1.2.3 College English General Education

The development of college English general education in China has gone through three distinct stages: (1) The “language as a tool” phase during the 1980s and 1990s, which emphasized reading and translation skills; (2) The “pragmatism” phase after 2000, which focused on listening, speaking, and workplace English; (3) The “comprehensive competency” phase since 2010, which emphasizes intercultural communication, critical thinking, and social engagement (Wang Limei et al., 2007; Zhu Yumei, 2006; Ma Yongliang et al., 2012).

The *College English Teaching Requirements (2017 Edition)* clearly states that college English should aim to develop students’ English language proficiency, intercultural communicative competence, and comprehensive cultural literacy, thus laying a policy foundation for the curriculum reform that aligns with the goals of general education.

2. Literature Review

2.1 Contributions of Existing Research

Existing research has made significant theoretical contributions by thoroughly exploring both the integrative advantages and the necessity of localization within the CLIL 4Cs framework. Grounded in constructivist theory (Piaget, 1970), scholars have confirmed that the 4Cs framework transcends the traditional divide between content and language, fostering the coordinated development of content, communication, culture, and cognition. For instance, Rojas (2021) designed a geography CLIL course that simultaneously enhanced students’ subject knowledge and English proficiency, while Platzer & Mercer (2022) developed an “integrated pedagogy” where SDG-related tasks fostered growth across all four dimensions.

In terms of localization, Shao (2023) redefined the cultural dimension in the Chinese context by incorporating themes such as ecological civilization, and Yamamoto & Nitta (2021) expanded the “community” dimension in Japan by embedding local practices like waste-sorting education, aligning with the situated learning theory (Lave & Wenger, 1991), which emphasizes the importance of cultural grounding.

The SDGs, serving as an interdisciplinary platform, have been widely recognized for facilitating language-content integration, thus offering substantial practical value to language education. For example, Hatakeyama’s (2020) “ACT Course” improved students’ oral proficiency through the discussion of gender equality issues. Banegas et al. (2022) proposed a “three-step

approach" (selecting a goal → designing tasks → evaluating dual competencies), offering a practical framework based on task-based language teaching theory (Nunan, 2004), which highlights the importance of authentic contexts in internalizing language.

Another key contribution lies in the innovation of technology-driven models. Yang Jianding et al. (2007) found that online autonomous learning promoted learner autonomy, while Zhu Yumei (2006) implemented a "thematic website + flipped classroom" model to deliver personalized resources, aligning with autonomous learning theory (Dickinson, 1995).

Finally, the exploration of assessment systems has advanced diverse forms of practice. For example, Sun Donghui (2006) integrated formative, summative, and diagnostic assessment methods, while Zhang Shaoquan et al. (2007) introduced learner portfolios, enriching the landscape of college English education evaluation.

2.2 Limitations of Existing Research

Despite the valuable contributions, current research still exhibits several notable limitations. First, the integration of CLIL's 4Cs framework with the SDGs often demonstrates fragmented alignment across dimensions. Most studies focus primarily on the combination of Content and Communication (e.g., Rojas, 2021), while often overlooking the Cultural dimension (global citizenship awareness) and the Cognitive dimension (critical thinking), both of which are essential to supporting the deeper goals of the SDGs—such as sustainability and problem-solving. This omission weakens the theoretical synergy of the 4Cs framework (Platzer & Mercer, 2022). Second, course design strategies remain fragmented, with existing research primarily focused on isolated instructional activities (such as Hatakeyama's classroom discussions). There is a lack of a comprehensive framework that encompasses clear goal setting, content sequencing, instructional models, and assessment mechanisms, which undermines the replicability and sustainability of such courses (Kavanagh & Kojima, 2023). Finally, there is a marked absence of intercultural citizenship education, as current studies tend to overemphasize language proficiency and disciplinary knowledge (Ma Yongliang et al., 2012; Yang Jianding et al., 2007), neglecting the integration of global responsibility and intercultural dialogue as central learning goals. Even Leão's (2022) ICLIL model has not been extended into the context of higher education, leaving the educational goal of cultivating "global citizens" suspended.

Taken together, these limitations underscore a structural deficiency in existing research regarding theoretical depth, integrated course design, and value-based dimensions.

3. Methodology

By employing theoretical analysis, this study reviews the CLIL 4Cs framework, SDG integration pathways, and college English general education models, in order to formulate core research questions and develop a coherent curriculum design framework.

3.1 Research Questions

This study aims to explore the construction of college English general education courses centered on the SDGs from the perspective of integrating the CLIL 4Cs framework with the SDGs. The main research questions are formulated as follows:

Primary research question: How can college English general education courses be systematically designed around the Sustainable Development Goals (SDGs) within the framework of CLIL's 4Cs (Content, Communication, Cognition, and Culture)?

Sub-questions: (1) How can the four dimensions of the CLIL 4Cs framework—Content, Communication, Culture, and Cognition—be theoretically integrated with the core goals of the SDGs, such as global citizenship and sustainable development?

(2) How should the content system (e.g., SDG theme selection and interdisciplinary integration), teaching model (e.g., integrated CLIL 4Cs pedagogy), and assessment mechanisms (e.g., diversified evaluation systems) be designed in college English SDG-oriented general education courses? (3) What are the pathways and effects of integrating intercultural citizenship awareness—such as global responsibility and intercultural dialogue—into college English SDG-based general education courses?

3.2 Overall Framework Construction

This study centers on a deep theoretical exploration of the alignment between the CLIL 4Cs framework and the UN Sustainable Development Goals (SDGs), which forms the basis for critical reasoning and framework development.

First, in terms of the Content dimension, grounded in constructivist learning theory (Piaget, 1970), this study argues that the SDGs, by nature, serve as an inherently interdisciplinary vehicle, providing a context for meaningful knowledge construction that transcends traditional language instruction in college English courses. Students do not learn isolated language points; rather, they construct disciplinary knowledge and develop language comprehension simultaneously while engaging with real-world global issues.

Second, regarding the Communication dimension, grounded in task-based language teaching theory, this study provides an in-depth analysis of how SDG themes organically give rise to meaningful, context-embedded language tasks. These tasks—such as group discussions, advocacy letter writing, and project presentations—prompt students to use the target language under authentic communicative needs. This process effectively enhances their oral fluency, academic writing skills, mastery of subject-specific vocabulary, and discourse organization, enabling a deep integration of language acquisition and content comprehension.

Third, concerning the Culture dimension, this study moves beyond the traditional transmission of “cultural knowledge” by incorporating Leão’s (2022) concept of Intercultural Citizenship and Language Integrated Learning (ICLIL) to achieve a critical and reflective elevation of the curriculum framework. It argues that the global nature of the SDGs provides a valuable opportunity to cultivate students’ intercultural citizenship awareness. Through structured comparative analysis tasks and intercultural dialogues, students are guided to understand cultural diversity, reflect on their own cultural positions, and develop a sense of global responsibility and intercultural empathy—thus transforming “culture” from static cognition into dynamic global citizen action.

Finally, in the Cognition dimension, this study incorporates Cognitive Load Theory (Sweller, 1988) to demonstrate the unique value of complex SDG issues in developing higher-order thinking skills (Platzer & Mercer, 2022). It further argues that managing cognitive load requires the use of carefully designed scaffolding strategies—such as providing a core vocabulary bank, using mind maps to outline the structure of complex issues, and implementing a phased approach from case analysis to policy evaluation and solution design (Ren Shuyi, 2007; Xu Wen, 2007). These measures help students progressively cultivate critical thinking, systems-based analytical skills, innovative thinking, and complex problem-solving abilities, ensuring that cognitive development objectives are closely linked to the SDGs’ emphasis on transformative action.

Based on this robust theoretical foundation, the second core of the framework focuses on a systematic perspective that addresses the fragmentation in existing research by proposing a multi-dimensional integration path covering content system design, instructional model selection, and assessment mechanism construction.

Content system design is the cornerstone of curriculum development. This study advocates for the selection of core themes from the 17 SDGs—such as “Quality Education”, “Climate Action”, and “Reduced Inequalities”—based on students’ disciplinary backgrounds, interests, and localized needs, while also further emphasizing breaking down disciplinary boundaries to achieve deep interdisciplinary integration. The selection of instructional models should fully embody the integrative essence of the CLIL 4Cs framework. Drawing on Platzer & Mercer’s (2022) “Integrated 4Cs Pedagogy,” this study emphasizes designing highly interactive, task-driven instructional activities. Assessment mechanism construction is a critical component in ensuring the achievement of course objectives and reflects the broader goal of cultivating diverse competencies in general education. Based on Multiple Intelligences Theory, this study advocates for the development of a diversified assessment system that goes beyond traditional language tests, offering a more holistic evaluation of student learning and development.

4. Findings

Based on a systematic review of existing literature and theoretical analysis, this study proposes a college English general education curriculum framework centered on the CLIL 4Cs model and deeply integrated with the United Nations Sustainable Development Goals (SDGs). The research findings are embodied in the organic integration of three core constructs.

At the level of theoretical integration, the CLIL 4Cs framework and the core goals of the SDGs demonstrate a deep intrinsic compatibility. The interdisciplinary nature of the SDGs—for example, “Zero Hunger” combining knowledge from agriculture and sociology—provides authentic and rich content for the “Content” dimension. Through a constructivist learning process, students simultaneously develop subject knowledge and language competence within meaningful contexts. The real-world issues embedded in the SDGs—such as “Climate Action” and “Gender Equality”—create task-based language practice scenarios for the “Communication” dimension. These contexts drive students to engage in discussions, debates, and advocacy writing in English, significantly enhancing their fluency and ability to express complex ideas.

The global nature of the SDGs enriches the “Culture” dimension by embedding intercultural perspectives. Through comparing sustainable development strategies across countries—such as China’s ecological civilization initiative and Europe’s carbon reduction policies—the curriculum integrates the concept of Intercultural Citizenship and Language Integrated Learning (ICLIL), fostering students’ sense of global responsibility and intercultural communicative competence.

The complexity of SDG-related issues—such as the trade-offs inherent in sustainable development—activates the “Cognition” dimension by requiring students to apply critical thinking to analyze underlying contradictions and design viable solutions. Teachers can support this process by providing cognitive scaffolds, such as vocabulary banks and mind maps, to reduce

cognitive load and promote the development of higher-order thinking skills. These four dimensions function synergistically, forming a closed theoretical loop between the CLIL framework's "dual competence" approach and the SDGs' goal of global citizenship education.

In terms of curriculum development strategies, this study proposes a systematic "Content–Instruction–Assessment" model. The content design adheres to the principles of thematic relevance and interdisciplinary integration, selecting specific SDG goals based on students' academic backgrounds (e.g., "Clean Energy" for science and engineering majors, "Quality Education" for humanities majors). A tree-structured approach is adopted to organize the content: core SDG themes (e.g., "Sustainable Cities") serve as the trunk, extending into interdisciplinary branches such as environmental science, economics, and sociology, and further connecting to localized case studies as leaves (e.g., community waste-sorting initiatives). The instructional model adopts the "Integrated CLIL 4Cs Pedagogy," incorporating interactive activities such as project-based learning (PBL) and intercultural collaborative tasks. For example, students may conduct group research on regional food security issues and produce bilingual advocacy proposals, fostering a synergistic cycle in which content drives language development and language deepens content understanding. In this process, the teacher's role shifts from knowledge transmitter to task designer and cognitive facilitator. The assessment framework adopts a diversified and dynamic system that integrates formative and summative evaluation. Formative assessment includes tools such as learning portfolios to track progress on SDG-related projects and peer evaluation of group contributions, while summative assessment involves policy analysis reports and intercultural presentations based on SDG topics. Clear rubrics are developed to assess the dual competencies—language accuracy and content feasibility—as well as global citizenship literacy, including intercultural empathy and ethical reasoning. Timely feedback is provided to optimize learning trajectories.

In cultivating intercultural citizenship, the course integrates this dimension through a three-tiered approach. At the cognitive level, culturally comparative SDG case studies—such as differing interpretations of "climate justice" between developed and developing countries—are selected to guide students in deconstructing cultural assumptions and understanding the context-dependent nature of SDG implementation. At the behavioral level, students engage in virtual intercultural collaboration projects, such as co-developing "Zero Hunger" initiatives with international university partners via online symposiums, enhancing their skills in cultural negotiation and adaptation. At the affective level, tasks such as role-plays (e.g., Model United Nations SDG debates) and reflective journals are employed to cultivate students' sense of global ethics and responsibility.

The expected outcomes include significant improvements in students' sense of global responsibility, intercultural communication self-efficacy, and complex problem-solving abilities. These outcomes are theoretically grounded in the ICLIL framework, which internalizes citizenship education through a transformation of cultural cognition. Ultimately, the curriculum system—through its theoretical coherence, practical feasibility, and cultural depth—responds to the contemporary transformation of university English education towards the cultivation of global competence.

5. Conclusion

This study, through a comprehensive literature review and theoretical analysis, explores the construction of college English general education courses on the SDGs within the CLIL 4Cs framework. The findings reveal a high degree of compatibility between the core objectives of the CLIL 4Cs framework and those of the SDGs. By integrating the four dimensions—Content, Communication, Culture, and Cognition—the framework can effectively support the implementation of the SDGs.

Meanwhile, by optimizing the content structure, instructional model, and assessment mechanisms, college English general education courses on the SDGs can facilitate the integrated development of language proficiency and interdisciplinary knowledge, while also fostering students' global citizenship awareness and sustainable development competence. In addition, through the comparison of SDG practices across countries, the organization of international exchange activities, and the design of intercultural tasks, intercultural citizenship awareness can be effectively embedded into the curriculum, thereby enhancing students' intercultural dialogue competence.

Future research may further explore specific instructional cases of integrating the CLIL 4Cs framework with the SDGs and analyze their effectiveness across different educational contexts. Moreover, cross-cultural comparative studies could be conducted to identify teaching models best suited to diverse cultural settings.

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