

Research on the Ecological Mechanism Construction and Sustainable Development of College English Teaching

Yang Mingyang

Southwest Jiaotong University Hope College, Jintang County, Chengdu City, Sichuan Province, China.

*Email: swjuhc-ed@qq.com

Abstract

Under the backdrop of the new era, university English teaching faces multiple challenges, including the transformation of teaching mechanisms, breakthroughs in quality bottlenecks, the redefinition of assessment standards, and the adjustment of developmental directions. Traditional linear approaches are insufficient to address these emerging issues. This paper, as a conceptual and theoretical study, adopts an ecological perspective to explore sustainable pathways for reform. Drawing upon ecological theories, it analyzes the ecological connotations of university English teaching and proposes a five-dimensional practice framework encompassing teacher development, textbook system construction, curriculum design, classroom ecology, and learning evaluation. The findings suggest that integrating these dimensions into a holistic ecological mechanism can enhance students' English competence, promote cross-cultural literacy, and support the high-quality and sustainable development of university English instruction.

Keywords

College English Teaching, Ecology, Mechanism's Construction, Sustainable Development

Introduction

As a foundational public course in higher education, college English plays a critical role in cultivating language competencies and fostering international talents. In the context of globalization and increasing linguistic complexity, traditional linear teaching approaches have proven inadequate to meet the growing demands posed by diverse stakeholders, varied evaluation systems, and multifaceted learning environments. Key challenges include reforming instructional mechanisms, enhancing quality, and aligning pedagogical practices with personal, societal, and national objectives. Although existing research has addressed ecological elements such as digital platforms, materials, and classroom interactions, the absence of scalable transformation mechanisms has limited practical outcomes (Huang, 2016). Anchored in ecological principles, this study advocates for an integrated practice mechanism encompassing teacher development,

Submission: 26 August 2025; **Acceptance:** 1 November 2025; **Available online:** November 2025



Copyright: © 2025. All the authors listed in this paper. The distribution, reproduction, and any other usage of the content of this paper is permitted, with credit given to all the author(s) and copyright owner(s) in accordance to common academic practice. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license, as stated in the web [site: https://creativecommons.org/licenses/by/4.0/](https://creativecommons.org/licenses/by/4.0/)

textbook reform, classroom innovation, curriculum design, and learning assessment to promote a sustainable, systemic model for college English education.

The transformation of teachers' educational concepts and behaviors is crucial to shaping the ecological environment of college English teaching. Enhancing teachers' competencies—such as lifelong learning, teaching and research skills, and innovations are essential for ecological transformation. Teachers must update their knowledge, expand international perspectives, and ensure the relevance of content to promote instructional internationalization while integrating traditional Chinese culture to avoid cultural marginalization.

The construction of the ecological mechanism for college English teaching is grounded in three interrelated theoretical perspectives: ecology, educational ecology, and the ecology of foreign language teaching. First, ecology, as the science of interrelationships between organisms and their environments, emphasizes dynamic systems characterized by energy flow, material circulation, information exchange, self-regulation, and sustainability (Li & Yuan, 1988). Its insights into systemic balance and sustainable development provide a fundamental lens for understanding teaching as a living and adaptive ecosystem. Second, educational ecology integrates ecological thinking into the study of education, conceptualizing the educational environment as a “human education environment” (Cremin, 1976). This approach redefines education beyond knowledge transmission, highlighting its role in fostering personal growth, harmony, and self-realization within a systematic and sustainable framework. Third, the ecology of foreign language teaching builds upon both ecological and educational perspectives, emphasizing the interaction between learners and their environments, the dynamic construction of knowledge, differentiated and personalized learning paths, intercultural communication, and systemic teaching models (Xu, 2016). Collectively, these theoretical foundations provide a comprehensive framework for rethinking college English teaching as an ecological system—interactive, dynamic, and oriented toward sustainable development.

Modern educational technologies and new media should be fundamental teaching tools, expanding learning channels beyond traditional constraints. Teachers are encouraged to merge teaching with research, reflect on practices, and innovate continuously to elevate teaching quality (Wu, 2017). Exploring textbooks from multiple angles, updating content, and timely adjusting strategies help sustain innovation and combat professional fatigue. In response to students varied academic backgrounds, differentiated, goal-oriented instruction is necessary. Continuous innovation enables teachers to break traditional models and construct distinctive practices, contributing to personal growth and professional value. Building a dynamic, high-quality teaching team is key to instructional improvement.

Ultimately, improving teachers' ecological literacy is a continuous process requiring the integration of new educational theories and technologies to support their professional development and sustain the growth of the educational ecosystem (Wang, 2012).

Teaching materials are crucial to the flow of matter, energy, and information in the educational ecosystem. Currently, college English textbooks are mainly divided into general and academic types, but the ecological system of these materials remains incomplete. There is a lack of vertical alignment with earlier education stages and insufficient integration with other academic disciplines.

To strengthen the teaching material ecosystem, a value-oriented approach emphasizing moral education is essential. Textbooks are not only knowledge carriers but also convey national culture and social progress. Their content influences students' values and national development. Therefore, college English textbooks should align with moral cultivation goals (Lide Shuren), embedding core socialist values and creatively incorporating traditional Chinese culture to enhance students' ability to express Chinese narratives in English and build cultural confidence (Wu and Li, 2019).

Textbooks must also support talent cultivation by adapting to societal and educational changes. Vertically, they should provide coherent, stage-specific learning objectives across academic years; horizontally, interdisciplinary integration should be emphasized, enabling English to function as a tool for acquiring subject knowledge (Liu & Zhang, 2018). On a micro level, textbook structure should support logical content progression, match student development stages, and promote practicality and innovation. Exercises should encourage critical thinking and personalized learning rather than rote answers.

The government of teaching materials must be improved. A standardized system for textbook selection, approval, and evaluation should be implemented to ensure quality and sustainability. Collaboration between educational authorities and academic departments is vital to optimizing the role of textbooks in high-quality college English education.

As a core element of foreign language education, the college English curriculum encompasses instructional planning, content development, and teaching activities. An ecologically-informed curriculum system should respond to societal demands, support individualized student development, and reflect regional and institutional characteristics.

Curriculum design must emphasize progressive structure, tiered instruction, and differentiated development based on institutional strengths (Zou and Chen, 2016). Progressiveness requires logical content arrangement across semesters, aligned with curricular structure and internal coherence. According to the Guidelines for College English Teaching (2022), the curriculum may be organized into General English, English for Specific Purposes (ESP), and Intercultural Communication. This flexible tripartite model allows institutions to tailor curricula, increasing ESP for applied science programs or focusing on intercultural communication in internationally oriented institutions.

Tiered instruction accommodates varying proficiency levels and avoids fixed labeling by aligning teaching materials with students' capabilities. Institutions should also develop school-based curricula that integrate English with domain-specific knowledge, such as agriculture, medicine, or energy, enhancing practical relevance and professional affiliation. Advanced courses like English academic reading support disciplinary research skills and reinforce English as a functional tool.

An open, flexible curriculum structure—comprising core, restricted, and free electives—broadens student choice and academic development (Xiang, 2016). Practice-oriented courses, such as academic lectures, translation workshops, and speech contests, should be credit-bearing to promote real-world application of language skills. This integration of theory and practice fosters meaningful learning and improves language acquisition outcomes.

The college English classroom functions as an ecological system integrating teachers, students, and instructional technologies, with teaching serving as a transformative core (Wang, 2013). Establishing ecologically informed models is vital for pedagogical reform and innovative teaching (Yue & Liu, 2014). Key strategies include project-based learning, critical thinking cultivation, and boundary extension. Project-based instruction emphasizes experiential, problem-solving tasks—from issue identification to reflective feedback—fostering autonomy and engagement. Teachers guide collaboration, while students present outcomes through varied formats.

Simultaneously, critical thinking is promoted via inquiry-driven questions and discussions that encourage multiple perspectives. Digital platforms such as MOOCs and WeChat extend learning beyond class time, enabling autonomous and contextual engagement (Wang, 2016). This ecological model centers on inquiry, global awareness, and applied learning, enhancing the quality and effectiveness of English education.

In college English education, the construction of scientifically sound and pedagogically effective assessment mechanisms has long been a critical area of concern. Traditional reliance on summative evaluation fails to capture the complexity of student learning and competence development. As such, reform efforts increasingly advocate for ecologically informed assessment systems that emphasize diversity, process-orientation, and pedagogical utility (Heritage, 2010).

A formative, process-integrated evaluation model offers dynamic feedback, aligning learning outcomes with instructional goals. Strategies such as computer-assisted assessments, task-based evaluations, and self-directed learning assessments promote active learner participation and establish a bidirectional feedback loop between teaching and learning.

Digital learning portfolios—modeled after the European Language Portfolio and aligned with China's English Proficiency Scale (2018)—embody this ecological approach (Little, 2009). These portfolios comprise three parts: (1) Learning Passport, which tracks proficiency benchmarks and evaluation outcomes; (2) Learning Biography, which details learning trajectories, reflections, and self-assessments; and (3) Learning Dossier, which curates high-quality evidence of learning (Dalziel and Han, 2016). These tools enhance learner autonomy and foster motivation and self-regulation.

Teachers are urged to employ digital technologies and data visualization tools to capture multidimensional learner development, including language use, intercultural competence, attitudes, and engagement, thereby refining evaluation accuracy and immediacy.

The value of formative assessment lies in promoting metacognitive awareness, motivating learners, and cultivating confidence (Faez, 2011). It encourages students to reflect on progress and self-direct their learning journeys, in contrast to the reductive, test-oriented culture. As a mechanism of educational reform, formative evaluation supports innovation and the holistic development of learners (Jin, 2013).

Methodology

This study adopts a conceptual research approach, drawing primarily on literature analysis, theoretical integration, and interdisciplinary synthesis. Literature analysis was employed to review existing research on ecology, educational ecology, and foreign language teaching ecology, thereby identifying key principles relevant to college English education. Theoretical integration was then applied to combine these principles into a coherent framework, highlighting their applicability to the construction of an ecological mechanism for college English teaching. Furthermore, interdisciplinary insights from linguistics, pedagogy, and ecology were synthesized to enrich the conceptual model and ensure its systematic and practical orientation. Rather than relying on empirical data, this study positions itself as a theoretical exploration, aiming to clarify the ecological dimensions of college English teaching and to propose a structured mechanism for its sustainable development.

Results and Discussion

This study proposes the construction of an ecologically oriented practice mechanism for college English teaching, articulated across five interrelated dimensions: teacher development, textbook system optimization, curriculum design, classroom ecology, and learning evaluation. The analysis suggests that ecologicalization offers a systematic and sustainable pathway for aligning college English instruction with the evolving objectives of talent cultivation in higher education.

Enhancement of Teachers' Ecological Literacy

Teacher professional growth constitutes the cornerstone of ecological reform. Continuous engagement in intercultural pedagogy, technological integration, and research-informed practices can foster ecological literacy, enabling teachers to balance cultural awareness, critical thinking, and digital competence. Such capacity building equips educators to cultivate students' intercultural sensitivity and adaptability in increasingly globalized learning contexts (Xu, 2016).

Optimization of Textbook Ecological Systems

Ecological principles call for textbooks that integrate contextualization, localization, and interdisciplinarity. The incorporation of Chinese cultural elements and discipline-specific English not only strengthens linguistic competence but also promotes cultural confidence. Empirical studies demonstrate that culturally responsive teaching materials significantly enhance learner engagement and contextual relevance (Wu, 2017).

Curricular Ecological Reform

A progressive curricular structure—"General English–ESP–Intercultural Communication"—supports a holistic and developmental learning trajectory. Differentiated instruction and institution-specific courses counteract the limitations of uniform curricula, thereby accommodating learner diversity and institutional strengths. Such reform resonates with the ecological principle of diversity, fostering adaptability and sustaining learner motivation (Cremin, 1976).

Formation of Ecological Classrooms

Ecological classrooms are characterized by interaction, autonomy, and authenticity. The adoption of project-based learning, critical thinking tasks, and multimodal communication fosters active knowledge construction in real-world contexts. Research indicates that classroom authenticity substantially enhances communicative competence, learner engagement, and the transfer of skills beyond the classroom (Little, 2009).

Implementation of an Ecological Evaluation System

Evaluation, within an ecological framework, emphasizes formative processes, ongoing feedback, and reflective practice. Instruments such as digital portfolios and reflective reports—aligned with the China Standards of English Language Ability—enable personalized learning trajectories and continuous improvement. Formative assessment, as Heritage (2010) emphasizes, deepens learning by generating actionable insights into student progress.

Taken together, these five dimensions underscore the interactive and mutually reinforcing dynamics among teacher capacity, textbook construction, curricular adaptability, classroom engagement, and formative evaluation. The proposed ecological practice mechanism provides a systematic and operable framework for reconfiguring college English teaching. By embedding ecological principles into the design and implementation of English instruction, this study contributes to the theoretical enrichment of educational ecology and advances practical strategies for the sustainable development of higher education.

Conclusion

This study has examined the construction of an ecological practice mechanism for college English teaching through five key dimensions: teacher development, textbook system optimization, curriculum reform, classroom ecology, and learning evaluation. The proposed framework underscores the dynamic and interdependent nature of these components, offering a systematic approach to enhancing both the quality and sustainability of English education in higher education. By drawing on ecological theories and integrating them into language pedagogy, the study contributes to the theoretical advancement of educational ecology while providing practical insights for instructional reform. Ultimately, the ecological perspective highlights the importance of balance, interaction, and adaptability, guiding college English teaching toward a more holistic and sustainable model of development.

Acknowledgements

I sincerely acknowledge and thank all the grant and fund providers for their generous support. Special thanks to Southwest Jiaotong University Hope College for their continued assistance and encouragement. Your support has been integral to the successful completion of this work.

References

- Cremin, L. A. (1976). *Public education*. New York, NY: Basic Books.
<https://doi.org/10.1086/443322>
- Dalziel, F., Davies, G., and Han, A. (2016). Using the ELP as a basis for self- and peer-assessment when selecting “best” work in modern language degree programmes. *Language Learning in Higher Education*, 6(2), 397–417. <https://doi.org/10.1515/cercles-2016-0020>
- Faez, F., Majhanovich, S., Taylor, S., Smith, M., Crowley, K., and Rourke, L. (2011). The power of “Can Do” statements: Teachers’ perceptions of CEFR-informed instruction in French as a second language classrooms in Ontario. *Canadian Journal of Applied Linguistics*, 14(2), 1–19. <https://doi.org/10.3138/cmlr.52.2.179>
- Heritage, M. (2010). *Formative assessment: Making it happen in the classroom*. Thousand Oaks, CA: Corwin. <https://doi.org/10.4135/9781452219493.n5>
- Huang, G. W. (2016). The ecological orientation of foreign language teaching and research. *Chinese Foreign Languages*, 13(5), 9–12.
- Jin, Y. (2013). The construction of college English course evaluation system. *Shandong Foreign Language Teaching*, 34(5), 57–63.
- Li, J. Z., and Yuan, C. (1988). On the ecological transformation of modern science. *Academic Monthly*, 20(7), 46–54.
- Little, D. (2009). The European Language Portfolio: Where pedagogy and assessment meet. Paper presented at the 8th International Seminar on the European Language Portfolio, Graz, Austria. <https://doi.org/10.1515/9789888052547-010>
- Liu, X. Z., & Zhang, Z. (2018). Theoretical construction of integrated textbook development from the perspective of educational governance. *Educational Research*, 39(6), 141–149.
- Wang, S. R. (2012). Building a teaching team in the construction of college English curriculum system. *Foreign Language World*, 153(4), 5–11.
- Wang, S. R. (2016). Interpretation of key points in *College English Teaching Guidelines*. *Foreign Language World*, 177(3), 2–10.
- Wang, X. J. (2013). Enhancing the effectiveness of college English classroom teaching from the perspective of ecolinguistics. *Journal of Beijing Jiaotong University (Social Sciences Edition)*, 12(2), 125–131.
- Wu, L. B. (2017). Teacher development under the learning paradigm: Theoretical model and organizational construction. *Educational Research*, 38(4), 109–117.
- Wu, X. O., & Li, X. (2019). Creative transformation of excellent traditional Chinese culture in primary and secondary school textbook development. *Educational Research*, 40(8), 51–58.
- Xiang, P. Y. (2016). On the construction of college English curriculum system. *Chinese Foreign Languages*, 13(1), 5–10.
- Xu, S. J. (2016). *Research on the construction of ecological teaching model of college English*. Beijing, China: Science Press.
- Yue, W., & Liu, G. H. (2014). Toward ecological classrooms: On holistic reform of classroom teaching. *Educational Research*, 35(8), 99–107.
- Zou, X. Y., & Chen, J. L. (2016). Research on ecological construction of college English curriculum based on two types of needs. *Foreign Language Teaching*, 37(3), 54–60.