

## Cultivating Linguistic Talents From an Interdisciplinary Perspective: Advantages and Challenges

XIAO Han<sup>[a],\*</sup>

<sup>[a]</sup>School of Foreign Studies, Zhaoqing University, Guangdong, China.  
\*Corresponding author.

Received 4 November 2024; accepted 10 December 2024  
Published online 26 December 2024

### Abstract

This paper explores the complex task of cultivating linguistic talents within an interdisciplinary framework. It argues that linguistic education benefits greatly from incorporating insights and methodologies from other disciplines, such as psychology, sociology, cognitive science, and technology. The paper first discusses the advantages of such an interdisciplinary approach, highlighting its potential to enhance linguistic competence, broaden students' perspectives, and foster creativity and innovation. Subsequently, it acknowledges the challenges associated with implementing interdisciplinary linguistic education, including curriculum design, teacher training, and assessment methods. The paper concludes by suggesting strategies to overcome these challenges and advocating for a more holistic and integrated approach to linguistic education.

**Key words:** Linguistic talents; Interdisciplinary education; Advantages; Challenges; Curriculum design; Teacher training

Xiao, H. (2024). Cultivating Linguistic Talents From an Interdisciplinary Perspective: Advantages and Challenges. *Higher Education of Social Science*, 27(2), 69-79. Available from: URL: <http://www.cscanada.net/index.php/hess/article/view/13658>  
DOI: <http://dx.doi.org/10.3968/13658>

### INTRODUCTION

During his inspection at Tsinghua University, General Secretary Xi Jinping emphasized, "We should leverage the 'catalyst' of interdisciplinary integration, strengthen

the cultivation capabilities of basic disciplines, break down barriers between disciplines and majors, adjust and upgrade the existing system of disciplines and majors, aim at the frontiers and key areas of science and technology, promote the development of new engineering, new medical sciences, new agricultural sciences, and new liberal arts, and accelerate the cultivation of talents in urgent need." With the development of society and the advancement of science, disciplines have gradually shifted from initial integration to differentiation, with each discipline achieving more in-depth research and development. However, this has also led to the emergence of the issue of "seeing the trees but not the forest." Therefore, the academic community has begun to advocate for and explore interdisciplinary integration.

On the other hand, the advent of digital technologies such as artificial intelligence has brought unprecedented impacts on the discipline of foreign language and literature. Wang (2023) put that in the context of the new era, the expansion of foreign language disciplines in terms of their connotation and denotation, ranging from linguistics, literature, and translation studies to comparative literature, cross-cultural and country-specific/regional studies, aligns with the needs of their development. Single disciplines have become increasingly unable to cope with the challenges we face. Issues such as how to turn these challenges into opportunities, how to apply artificial intelligence technology and computational methods to linguistic theory and practice, and how to develop scientific research innovation from the perspective of new liberal arts have become urgent topics for discussion and resolution in the field of foreign linguistics today. As a discipline in higher education that bears the responsibility of talent cultivation, foreign language and literature disciplines are faced with the significant task and challenge of the times: how to cultivate interdisciplinary and compound talents. Against this backdrop, language research institutions have assessed the situation and acted

accordingly. Starting from two years ago, they have made beneficial attempts in interdisciplinary talent cultivation by successively launching undergraduate training programs with interdisciplinary characteristics, which have achieved certain results.

Linguistic competence is a crucial skill in today's globalized world, where effective communication across cultures and contexts is increasingly important. Interdisciplinary studies require a consciousness of self-reflection, examining how the inherent attributes of one's own discipline may influence the understanding and resolution of problems in the process of problem-solving (Nikitina 2005; Lattuca *et al.* 2012). Traditional linguistic education has focused primarily on language skills and grammar rules, but recent research suggests that a more holistic and interdisciplinary approach can significantly enhance students' linguistic abilities. It is necessary for foreign language disciplines to gradually integrate into cutting-edge fields such as artificial intelligence, big data, and regional and national studies in the context of the new liberal arts, explore the establishment of new subject directions and new majors, build interdisciplinary, micro-professional, and dual-professional programs, optimize the curriculum system, build a cross-disciplinary and transdisciplinary knowledge system, stimulate the vitality and potential of independent innovation, and promote the digital and informational development of foreign language disciplines (Wang & Zhou 2024). This paper delves into the advantages and challenges of cultivating linguistic talents from an interdisciplinary perspective.

---

## 1. ADVANTAGES OF INTERDISCIPLINARY LINGUISTIC EDUCATION

---

### 1.1 Enhanced Linguistic Competence

Enhanced Linguistic Competence involves not only mastering the linguistic rules and structures but also applying them effectively in various contexts, including academic, social, and professional settings, which is crucial for communication, collaboration, and cultural understanding. An interdisciplinary approach enhances this competence by providing a broader perspective and deeper understanding of language. Interdisciplinary linguistic education combines insights from linguistics, education, psychology, sociology, and other related fields to create a comprehensive and holistic approach to language learning. In other words, an interdisciplinary approach allows for the integration of various linguistic theories and methodologies, leading to a more comprehensive understanding of language. By exposing students to a wide range of linguistic perspectives, educators can foster a deeper appreciation for the nuances of language and improve students' ability to communicate effectively in diverse contexts. It equips students with a

deeper understanding of language, its structure, and its role in society, enabling them to communicate effectively and critically in a globalized world. By integrating insights from various disciplines, interdisciplinary linguistic education fosters a more holistic and nuanced understanding of language, preparing students for the challenges and opportunities of the 21st century.

Students learn to analyze and evaluate language use in various contexts, questioning assumptions and exploring alternative explanations. This critical thinking is essential for enhanced linguistic competence, as it enables students to make informed judgments about language use and adapt their communication strategies accordingly. What's more, interdisciplinary linguistic education often includes a focus on cross-cultural communication. By studying languages in their sociocultural contexts, students develop an understanding of how language reflects and influences cultural practices, social identities, and power relations. This understanding is crucial for effective communication in a globalized world, where cultural differences can lead to misunderstandings and conflicts. It often emphasizes practical applications of linguistic knowledge. This can include language teaching, translation and interpreting, linguistic research, and communication in professional settings. By engaging in these practical activities, students develop their linguistic competence through hands-on experience, refining their skills and strategies for effective communication. This approach fosters enhanced linguistic competence by enabling students to compare and contrast different language systems, deepening their understanding of language structure and function. Multilingualism also provides students with a broader perspective on language use and communication strategies, enhancing their ability to adapt to different linguistic environments. In an interdisciplinary context, technology can play a significant role in fostering enhanced linguistic competence. Tools such as language learning software, online dictionaries, and machine translation can provide students with access to a wealth of linguistic resources. Additionally, technology can facilitate communication and collaboration across distances, enabling students to engage in language practice with native speakers and other learners from around the world.

### 1.2 Broadened Perspectives

Interdisciplinary education encourages students to think critically and creatively by drawing connections between language and other fields such as psychology, sociology, and cognitive science. This exposure to diverse disciplines helps students develop a more nuanced understanding of language and its role in society, thereby broadening their perspectives and enhancing their ability to analyze and interpret linguistic phenomena.

In traditional language education, students primarily focus on acquiring knowledge pertaining directly to the

language itself, encompassing vocabulary, grammar, phonetics, and the like. Conversely, interdisciplinary language education integrates language learning within diverse disciplines such as science, history, and art. For instance, when studying the English language, by reading English-language documents on the history of ancient Egypt, students not only enhance their English reading proficiency but also gain profound insights into ancient Egyptian civilization, encompassing the reign of pharaohs, the construction of pyramids, and other related content. This fusion of disciplinary knowledge exposes students to a broader spectrum of intellectual pursuits, transcending the confines of a solitary linguistic knowledge domain. Interdisciplinary language education fosters a multifaceted perspective among students. Taking an interdisciplinary project on environmental protection as an example, students may be required to utilize biological knowledge to understand ecosystems, chemical knowledge to analyze pollutants, and simultaneously employ language skills to draft reports, create promotional posters, and articulate the significance of environmental conservation. Throughout this process, students integrate knowledge from different disciplines into a cohesive whole, achieving a more comprehensive and profound understanding of the subject matter, thereby broadening their intellectual horizons and recognizing the interconnectedness and interplay among various disciplines. Distinct disciplines entail differing modes of thinking. In the sciences, emphasis is placed on empirical research and logical reasoning; whereas in the arts, creativity and emotional expression are prioritized. Interdisciplinary language education enables students to engage with and synthesize these diverse ways of thinking. For example, when learning to articulate mathematical models using language (an intersection of language and mathematics), students must merge logical mathematical thinking with expressive linguistic thinking. They must grasp mathematical concepts accurately while articulating them clearly and comprehensively in language, thereby fostering their ability to solve problems by flexibly applying multiple modes of thinking and broadening their cognitive horizons.

Language serves as the bearer of culture. When language learning is integrated with various disciplines, students are exposed to a rich and diverse array of cultural backgrounds. For instance, in studying foreign literary works, which involves the intersection of language and literature, students gain insights into the values, social customs, religious beliefs, and other aspects of different countries and nations reflected in these works. For example, by reading the English translation of the Japanese literary classic "The Tale of Genji," students can learn about numerous cultural elements of ancient Japanese court culture, such as etiquette, attire, and marital customs, as well as how these cultural elements are expressed in an English context, thereby broadening their cognitive scope of diverse cultures. Interdisciplinary language education

provides students with practical opportunities for cross-cultural communication. In interdisciplinary international collaborative projects or simulated scenarios, students need to communicate and collaborate with individuals from different cultural backgrounds. For instance, in an interdisciplinary research project on global climate change, students may exchange data and share perspectives with international peers. They need to understand the thinking patterns and communication habits within the other culture to facilitate better collaboration. Through such practical experiences in cross-cultural communication, students can adopt a more objective perspective towards the differences and commonalities among different cultures, thereby expanding their cultural horizons and enhancing their cultural inclusivity.

### 1.3 Fostering Creativity and Innovation

An interdisciplinary approach to linguistic education encourages students to explore new ideas and develop innovative solutions to linguistic problems. By allowing students to draw inspiration from a wide range of disciplines, educators can nurture their creativity and foster a culture of innovation within linguistic education. When students encounter diverse disciplinary content and intellectual collisions in interdisciplinary language learning, it more readily stimulates innovative thinking. For instance, in a course that integrates language learning with technological innovation, students might read English-language materials on the latest scientific and technological advancements and then attempt to represent these advancements through novel linguistic forms, such as science fiction novels or scripts for popular science animations. This interdisciplinary fusion prompts students to step outside the framework of traditional thinking, consider issues from fresh perspectives, and generate new ideas, thereby broadening their intellectual horizons and laying a solid foundation for future learning and innovative activities.

Interdisciplinary language education integrates language with multiple academic domains, such as language and science, language and art, language and history, among others. When knowledge from different disciplines converges during the language learning process, it results in intellectual collisions. For example, in a learning project that combines language and physics, while students are learning to describe physical phenomena and principles (such as Newton's laws of motion) in English, they may draw parallels to descriptions of motion and force in literary works. This correlation between different disciplinary knowledge prompts students to break away from conventional thinking patterns and consider motion-related concepts from both the logical perspective of physics and the imaginative perspective of literature, thereby stimulating innovative thinking. As interdisciplinary language learning progresses, students accumulate knowledge

across multiple disciplines and link them through the common thread of language, constructing a complex knowledge network. For instance, when learning about biodiversity, students may integrate knowledge from geography concerning ecological environments, as well as rhetorical devices from language studies, to compose creative popular science articles. They can utilize metaphors, personification, and other techniques to vividly describe the relationships between organisms and their environments, akin to likening the rainforest to the “lungs of the Earth.” This knowledge network enables students to freely associate between different points of knowledge, generating novel ideas and perspectives.

Interdisciplinary language education often employs project-based learning approaches. For instance, in a cross-disciplinary project on “The Past, Present, and Future of Cities,” students are required to comprehensively apply knowledge from various disciplines such as history, sociology, architecture, and language. They may need to research the historical evolution of cities (history), analyze the current social structures and functions of cities (sociology), design future architectural blueprints for cities (architecture), and use language to write project reports and prepare presentation speeches. Throughout this process, students confront complex tasks and numerous options, necessitating creative resource integration and the formulation of unique insights and solutions. For example, when designing future city architectures, students might incorporate ideas from science fiction, imagining a building capable of moving through the air and clearly articulating its functions and advantages through language. Role-playing and simulated scenarios are also effective methods in interdisciplinary language education for enhancing creative thinking. In a simulated international business negotiation scenario, for instance, students play the roles of businessmen from different countries, conducting negotiations in a foreign language while taking into account factors such as the cultures (cultural studies), economies (economics), and laws (legal studies) of different nations. In this scenario, students must creatively address various unforeseen situations during the negotiation, such as misunderstandings arising from cultural differences and conflicts of economic interests. They need to exercise their imaginations and propose innovative negotiation strategies and solutions, such as devising a cooperation plan that integrates cultural characteristics from both parties to achieve a win-win outcome.

---

## 2. CHALLENGES OF INTERDISCIPLINARY LINGUISTIC EDUCATION

---

### 2.1 Curriculum Design

Designing an interdisciplinary curriculum that effectively integrates various disciplines while maintaining a coherent

focus on linguistic education is a challenging task. Educators must carefully select topics and methodologies that complement each other and align with the overall goals of linguistic education.

English language education professionals typically possess extensive knowledge in the fields of literary studies and linguistics, yet interdisciplinary education necessitates their integration of knowledge from other disciplines such as history, science, and mathematics. For instance, when designing a course on “English and World History,” instructors must possess a profound understanding of historical knowledge spanning from ancient civilizations to modern international relations, which represents a substantial intellectual leap for English language educators. While they may be adept at navigating the structure and usage of the English language, they must invest considerable time in learning and organizing the detailed progression of world history, the contexts, and impacts of significant events. In the process of course design, teachers must strike a balance between the depth of English language knowledge and knowledge from other disciplines. Taking the course “English and Computer Science” as an example, it is essential not only for students to master the specialized English vocabulary related to computer programming but also to delve into the fundamental principles of programming languages while ensuring improvements in their English skills. Teachers find it challenging to determine the appropriate level of depth in introducing computer science knowledge to avoid overwhelming students with overly complex computer concepts or failing to provide sufficient depth in computer science explanations, thereby hindering students’ understanding of the applications of relevant English terminology. English language educators need to identify effective fusion points between English and the content of other disciplines. For instance, when designing a course on “English and Art,” it is crucial to consider how to integrate art appreciation with English language expression. Should the integration be achieved by asking students to describe artworks in English or by analyzing English literature on artistic movements? How to design activities that enhance students’ English listening, speaking, reading, and writing abilities while they are learning about art is a question that teachers must continually ponder in the course design process.

Interdisciplinary education diversifies the objectives of instruction. Beyond the traditional cultivation of English language skills, such as enhancing students’ abilities in listening, speaking, reading, and writing English, it also incorporates the imparting of knowledge from other disciplines and the nurturing of interdisciplinary thinking skills. Taking the course “English and Environmental Science” as an example, instructional objectives may encompass enabling students to compose environmental science reports in English, comprehend English academic literature on global environmental issues, and apply

interdisciplinary thinking to analyze environmental problems and propose solutions. English language educators need to re-envision their instructional objectives, making them more systematic and comprehensive, while also considering the interrelationships and priorities among these objectives. To achieve these diversified instructional objectives, teachers must employ a variety of teaching methods. Traditional English teaching methods, such as grammar instruction, text analysis, and role-playing, may fall short of meeting the demands of interdisciplinary courses. In interdisciplinary courses, teachers may need to introduce methods such as project-based learning, experimental teaching, and field studies. For instance, in the course “English and Archaeology,” teachers may organize field trips to archaeological sites for students to record archaeological discoveries and interview archaeologists in English. This poses a challenge for English language educators, who need to learn and master these new teaching methods and make appropriate selections and applications based on course content and student characteristics.

It necessitates the integration of a diverse array of teaching resources, encompassing textbooks from various disciplines, academic journals, multimedia materials, online courses, and more. For English language educators, sifting through the vast quantity of resources to select those suitable for interdisciplinary courses is a formidable task. For instance, when designing a course on “English and Astronomy,” teachers must choose materials from numerous astronomy textbooks and popular science readings that are appropriately challenging, use standard English, and can be seamlessly integrated into English language instruction. Additionally, they must consider the timeliness and accuracy of the resources to ensure they reflect the latest research findings in the discipline. Often, the selected teaching resources cannot be directly utilized in interdisciplinary courses and require adaptation by the teacher. For example, the English used in some science textbooks may be overly specialized or complex, necessitating language simplification and content restructuring to align with students’ English proficiency and learning needs. Furthermore, teachers must integrate resources from different disciplines to ensure logical consistency, which demands strong resource integration skills and innovative thinking. Currently, there is a scarcity of teaching resources specifically designed for interdisciplinary English education on the market, and the supporting facilities are inadequate. For example, when designing a course on “English and Medicine,” it may be difficult to find textbooks and teaching aids that combine both medical knowledge instruction and English language training. Teachers may find themselves needing to create their own teaching slides, write case studies, and collect physical or simulated teaching aids, undoubtedly increasing the workload and complexity of course design.

## 2.2 Teacher Training

Teachers play a crucial role in implementing interdisciplinary linguistic education. However, many teachers may lack the expertise or training necessary to teach an interdisciplinary curriculum effectively. Therefore, there is a need for ongoing teacher training and professional development programs that focus on interdisciplinary teaching strategies and methodologies.

In the context of interdisciplinary education, English language educators need to acquire knowledge in other disciplines, and this acquisition should not be superficial. For instance, when engaging in “English-Physics” interdisciplinary teaching, teachers must not only comprehend fundamental physical concepts such as Newton’s laws of motion and electromagnetic induction, but also grasp the experimental methods, mathematical models, and the thinking patterns underlying these concepts. For teachers who have long focused on English language knowledge and skills, this requires a significant investment of time and effort to broaden their intellectual horizons while also delving into the depths of knowledge. The knowledge systems of different disciplines are vast, and it is challenging for teachers to master sufficient interdisciplinary knowledge in a short period. Taking “English-Biology” interdisciplinary teaching as an example, biology spans multiple fields, ranging from microscopic cellular biology and molecular biology to macroscopic ecology and evolutionary biology. English language educators face immense learning pressures as they strive to gain exposure in these various areas and effectively integrate them into English language instruction.

Each discipline is continually evolving, with new research findings, theories, and technologies emerging on a regular basis. In the context of interdisciplinary education, English language educators must stay abreast of the cutting-edge developments in other disciplines to ensure the timeliness and scientific rigor of their interdisciplinary courses. For instance, in the “English-Computer Science” interdisciplinary field, computer technology is advancing rapidly, with constant breakthroughs in areas such as artificial intelligence and big data. Teachers need to keep pace with these frontier knowledge areas and learn related new terminology, algorithms, and more, in order to accurately convey this information to students during instruction. Compared to the field of English language studies, the updating of frontier knowledge in other disciplines may follow different rhythms and methodologies. English language educators need to adapt to these changes and establish new mechanisms for knowledge updating. For example, in some STEM disciplines, research findings rely more heavily on experimental data and mathematical models. Teachers need to learn to understand and update their knowledge from these perspectives, which differs greatly

from the way knowledge is updated in English language studies through the interpretation of literary works and the study of language theories.

Traditional English language teaching methods may no longer be fully applicable in the context of interdisciplinary education. English language educators need to acquire and master new methodologies suited to interdisciplinary teaching. For instance, in project-based interdisciplinary teaching, teachers must learn to design interdisciplinary project themes, such as “Producing an English-language documentary on climate change,” guiding students to integrate knowledge from multiple disciplines, including English and environmental science, throughout the project implementation process. This requires teachers to possess new teaching skills such as project management and team collaboration guidance. Interdisciplinary teaching demands that teachers be able to flexibly combine multiple teaching methods to meet the needs of different disciplinary content and instructional objectives. For example, in “English-Chemistry” interdisciplinary teaching, teachers may need to employ the demonstration method when explaining chemical experiment procedures, allowing students to document the experimental process in English; and use the discussion method when analyzing chemical principles, guiding students to communicate their understanding of chemical concepts in English. This flexible switching and innovative application of teaching methods pose a significant challenge to teachers’ instructional skills.

Currently, there is a relative scarcity of training programs specifically tailored for interdisciplinary education for English language educators. Most existing teacher training programs focus on enhancing teaching skills or updating disciplinary knowledge within a single subject area. For instance, in the teacher training market, training in English language teaching methodologies and English literature research is relatively common, yet training programs specifically designed for interdisciplinary teaching, such as “English-Mathematics” or “English-Art,” are limited.

The dearth of training resources is also evident in the lack of suitable textbooks, case studies, and online learning materials. Teachers often encounter difficulties when seeking resources that can assist them in acquiring interdisciplinary knowledge and teaching skills. For example, it can be challenging to find a textbook that systematically introduces effective instructional integration of English and geology, which leaves teachers without effective references during the training process. English language educators typically have heavy teaching loads and find it difficult to dedicate substantial time to training. Interdisciplinary teacher training may require extended periods of time for systematically learning other disciplinary knowledge and teaching skills, but teachers’ work schedules often cannot accommodate this demand.

For example, a university English teacher may need to teach multiple English courses simultaneously and engage in research activities, making it difficult to find contiguous time to participate in interdisciplinary training that may last for weeks or months. Training costs also constitute a significant factor. Some high-quality interdisciplinary teacher training programs may require teachers to bear substantial expenses or necessitate substantial investments from their schools. This poses an economic burden for many schools and individual teachers, limiting their opportunities to participate in such training.

### 2.3 Assessment Methods

Traditional assessment methods, such as standardized tests and quizzes, may not be well-suited to evaluating the outcomes of interdisciplinary linguistic education. Educators must develop new assessment methods that can accurately measure students’ linguistic competence, critical thinking skills, and ability to apply interdisciplinary knowledge in real-world contexts.

Teaching assessment needs to consider students’ mastery of multiple disciplinary knowledge. For English language educators, beyond evaluating students’ English knowledge (such as vocabulary, grammar, reading, and writing), it is also necessary to measure their understanding and application of knowledge in other disciplines. For instance, in an “English-History” interdisciplinary course, teachers must not only check whether students can accurately describe historical events in English but also assess their comprehension of historical contexts, cause-and-effect relationships, and other aspects of historical knowledge. This implies that assessment indicators must cover both language and history domains, adding complexity to indicator design.

The degree of integration of knowledge across different disciplines is also an important aspect of assessment. Teachers need to determine whether students can effectively combine English with knowledge from other disciplines, rather than simply gather knowledge. Taking the “English-Mathematics” interdisciplinary course as an example, teachers should assess whether students can clearly explain mathematical formulas and solve mathematical problems in English, as well as whether they can utilize mathematical thinking to understand the logical structure in English texts, such as when analyzing data and charts in English scientific literature.

It emphasizes the cultivation of students’ interdisciplinary thinking abilities, which further complicates the design of assessment indicators. Teachers need to evaluate students’ comprehensive thinking, analogical thinking, systematic thinking, and other interdisciplinary thinking abilities. For example, in an “English-Art” interdisciplinary course, teachers should examine whether students can draw analogies between the style, color, and other aspects of artworks and the writing

styles and rhetorical devices in English literary works, or whether they can analyze the interrelationships between art and English language and culture using systematic thinking. These thinking abilities are relatively abstract and difficult to accurately assess through traditional examination formats.

Each discipline possesses its unique assessment methodologies, and English language educators must integrate assessment techniques from various disciplines in interdisciplinary teaching assessments. For instance, in English language studies, oral proficiency assessments often involve dialogues and presentations; whereas, in scientific disciplines, experimental manipulations and laboratory reports constitute significant assessment components. In an “English-Chemistry” interdisciplinary course, teachers must devise assessment methods that not only evaluate students’ chemical experimental skills but also examine their ability to document and explain experimental procedures in English. This necessitates teachers’ familiarity with the assessment standards of the chemical discipline while incorporating English proficiency assessments, thereby posing greater demands on their assessment capabilities.

Interdisciplinary project-based learning represents a vital teaching approach in interdisciplinary education, necessitating corresponding assessment methodologies. Teachers need to assess students’ abilities in teamwork, problem-solving, knowledge integration, and other facets within projects. Taking the “English-Environmental Science” interdisciplinary project “Designing a Campus Environmental Protection Plan” as an example, teachers should conduct comprehensive assessments through observing students’ roles in project teams, the scientific and feasibility of their plans (including the application of environmental science knowledge), and the effectiveness of presenting their plans in English. This holistic, process-oriented assessment approach differs significantly from the traditional examination-focused assessment methods in English courses.

It emphasizes the dynamic development of students’ knowledge and abilities, necessitating a continuous process of teaching assessment. English language educators cannot solely rely on final examinations to assess students but must conduct dynamic assessments throughout the teaching process. For instance, in an “English-Computer Science” interdisciplinary course, students may perform well in learning English terminology related to programming languages but encounter difficulties when actually writing programs and annotating code in English. Teachers need to promptly identify these changes and adjust their teaching and assessment strategies. This dynamic and continuous assessment approach requires teachers to invest more time and effort and poses challenges to their observational and analytical abilities.

### 3. STRATEGIES TO OVERCOME CHALLENGES

#### 3.1 Collaborative Curriculum Development

Educators can overcome the challenge of curriculum design by collaborating with colleagues from different disciplines to develop an interdisciplinary curriculum that is both coherent and engaging. This collaboration can help ensure that the curriculum addresses the needs and interests of students while aligning with the overall goals of linguistic education.

English language educators collaborate with teachers from other disciplines, such as history, science, mathematics, and others, to form curriculum design teams. Driven by problem-solving, it is intended to promote the innovative integration of interdisciplinary courses featuring “Foreign Language + X” to meet the needs of interdisciplinary competency development for foreign language majors (Huang & Peng 2024). For instance, in designing the “English and World History” course, English teachers work hand-in-hand with history teachers. Leveraging their expertise, history teachers establish the framework and focus of historical content within the course, encompassing significant historical periods and events, from the origins of ancient civilizations to the evolution of modern international relations. English teachers, in turn, plan how to integrate English language learning based on students’ proficiency levels and language learning objectives, such as determining the difficulty levels of historical document reading materials, designing tasks for writing historical essays or delivering speeches on historical events in English. Through this collaborative effort, the knowledge systems of both disciplines can be fully integrated, mitigating issues of content imbalance or unnatural knowledge fusion that may arise from a single-discipline perspective. Together, they develop clear, diverse, and interconnected course objectives. Taking the “English and Computer Science” course as an example, course objectives should not only encompass enhancing students’ vocabulary in computer science-related English, their ability to read and understand English literature in computer science, but also include mastering fundamental computer knowledge objectives such as basic programming concepts and algorithm principles. Furthermore, these objectives should encompass interdisciplinary ability targets, such as cultivating students’ capacity to solve practical computer problems using English and utilizing computer technology to aid English language learning and research. Based on these objectives, a detailed syllabus is formulated, with a reasonable arrangement of the sequence and pacing of teaching content. For instance, in the early stages of the course, foundational computer knowledge and basic English vocabulary can be introduced, gradually transitioning to complex programming projects and the

writing of project documentation in English, enabling students to achieve simultaneous enhancement of their English language and computer knowledge and skills through a progressive learning process.

Klein (1991) argues that “interdisciplinarity” aims to integrate the knowledge systems and thinking modes of two or more disciplines from a comprehensive and three-dimensional perspective, in order to obtain richer and more complete meanings, explanations, or outcomes than the original disciplinary content, and to solve problems that are difficult to address within a single discipline. Interdisciplinary curriculum teams collaborate on the selection and compilation of teaching materials and resources. For the “English and Biology” course, the team can curate materials that not only possess specialized biological knowledge but also have value for English language learning. This involves selecting classic English biology textbooks and adapting their overly specialized and complex sections while retaining core biological concepts and principles. Additionally, supplementary English language learning aids such as vocabulary annotations, grammar explanations, and reading comprehension exercises are included. Furthermore, English popular science articles and abstracts of academic papers in the field of biology can be collected as supplementary reading materials to expose students to authentic and diverse linguistic contexts while broadening their horizons in biological knowledge. Multimedia and online resources are fully explored and integrated. In the “English and Art” course, online resources from art exhibitions, such as virtual museum tours and artist websites, are utilized to allow students to view artworks and engage in English discussions and analyses. Teachers can also create multimedia presentations that integrate art images, videos, and English narrations to vividly showcase the backgrounds, stylistic features, and other aspects of artworks, guiding students to describe their feelings and understandings in English. Simultaneously, online learning activities are conducted using web platforms, such as creating dedicated course learning communities where students can share insights on art and English learning, upload English introductions of their own artistic creations, thereby fostering communication and collaboration among students.

Designing Interdisciplinary Project-Based Learning Tasks and Organizing Group Activities: Taking the “English and Environmental Science” Course as an Example

A project task titled “Campus Environmental Sustainability Plan Design” is assigned as part of the “English and Environmental Science” course. Students are divided into groups, with each group comprising students majoring in both English and Environmental Science (if the class consists solely of English majors, students will be required to undertake tasks related to both English

learning and environmental science research within the project).

During the project implementation, students must apply environmental science knowledge to conduct campus environmental problem research and propose solutions. They will then draft project reports and create project presentation PPTs in English, followed by English-language speeches. In group activities, students can learn from each other, complementing each other’s strengths and weaknesses. English majors can gain deeper insights into environmental science knowledge through collaboration with environmental science majors, while simultaneously enhancing their ability to use English in practical applications. Conversely, environmental science majors can improve their English expression and communication skills. Together, they achieve interdisciplinary knowledge and skill enhancement.

To ensure the effectiveness of the group activities, the following steps can be implemented:

**Group Formation and Role Assignment:** Students are divided into mixed-major groups, with clear roles assigned to each member to ensure collaboration and effective communication. Roles may include research coordinator, data collector, report writer, PPT designer, and presentation speaker.

**Project Planning and Research:** Groups develop detailed project plans, including timelines, research methodologies, and data collection methods. They conduct campus environmental problem research using environmental science knowledge and gather relevant data.

**Solution Proposal and Report Writing:** Based on their research findings, groups propose sustainable campus environmental solutions and draft project reports in English. The reports should include a clear problem statement, research methodology, data analysis, solution proposal, and potential implementation plan.

**PPT Creation and Presentation Preparation:** Groups design project presentation PPTs that visually represent their research findings, solution proposals, and implementation plans. They also prepare English-language speeches to effectively communicate their project outcomes.

**Presentation and Feedback:** Groups present their projects in class, with other students and teachers providing constructive feedback. This feedback helps groups refine their projects and improve their English communication skills.

**Reflection and Improvement:** After the presentation, groups reflect on their project experiences, identifying areas for improvement and sharing lessons learned. They also discuss how they can apply their interdisciplinary knowledge and skills to future projects.

Through this interdisciplinary project-based learning task, students can enhance their critical thinking, problem-



solving, and communication skills while deepening their understanding of both English and environmental science. Furthermore, curriculum design should be targeted and focused on enhancing students' various essential abilities to achieve a harmonious balance among national strategic needs, social market demands, and individual development requirements (Qiao & Shen 2020).

### 3.2 Ongoing Teacher Training and Professional Development

A high-quality teaching staff is the guarantee of educational success (Huang & Peng 2024). To address the challenge of teacher training, educational institutions can offer ongoing professional development programs that focus on interdisciplinary teaching strategies and methodologies. These programs can provide teachers with the skills and knowledge necessary to implement an interdisciplinary curriculum effectively.

It is significant to provide systematic training programs in other disciplines for English language teachers. For instance, to cater to the interdisciplinary teaching needs of "English and Economics," organize foundational courses in economics that encompass core knowledge domains such as supply and demand in microeconomics and national economic accounting in macroeconomics. During the training, invite economics experts to deliver clear and concise explanations, incorporating real-world cases to aid English language teachers in understanding economic concepts and principles. Additionally, provide relevant English-language economics textbooks, academic papers, and other resources to familiarize teachers with the idiomatic expressions in the field of economics while learning specialized knowledge, thereby enabling them to better guide students in their teaching. Conduct specialized workshops on interdisciplinary teaching methods. For example, introduce the application of project-based learning in the interdisciplinary curriculum of "English and Computer Science." The trainers should elaborate on how to design project themes, such as developing a simple English learning software project, including aspects like project goal setting, task decomposition, and team formation. Furthermore, demonstrate how to foster the coordinated development of students' English language skills and computer programming abilities during project implementation, such as through writing software requirement specifications in English, annotating code in English, and facilitating communication among team members in English. Teachers can also participate in simulated interdisciplinary teaching scenarios to personally experience and practice new teaching methods, followed by reflection and discussion to continually optimize teaching strategies.

Faculty and teaching resources across different disciplines within the university can be integrated. In higher education institutions, organize interdisciplinary teaching teams comprising English language teachers

and key teachers from other disciplines. Conduct regular teaching seminars, such as weekly interdisciplinary teaching forums, where teachers can share their disciplinary teaching experiences, latest research findings, and reflections on interdisciplinary teaching challenges and considerations. Simultaneously, establish an intra-campus interdisciplinary teaching resource library to collect high-quality course materials, teaching cases, experimental designs, and other resources from various disciplines, facilitating English language teachers' access and reference, and providing abundant material support for interdisciplinary teaching.

It is meaningful to establish cooperative relationships with external professional training institutions, other universities, or educational institutions. For example, select English language teachers to participate in interdisciplinary education teacher training programs hosted by renowned educational training institutions, which often gather experts from different regions and fields, providing broader perspectives and more cutting-edge teaching philosophies. Additionally, engage in teacher exchange programs with other universities, allowing English language teachers to observe and learn from universities with rich interdisciplinary teaching experiences, participate in their interdisciplinary course teaching practices, and simultaneously host visiting teachers to share our university's explorations and achievements in interdisciplinary teaching of English. Through this bidirectional exchange, teachers' professional skills can be enhanced.

### 3.3 Innovative Assessment Methods

Educators can overcome the challenge of assessment by developing innovative methods that can accurately measure students' linguistic competence and interdisciplinary knowledge. These methods may include project-based assessments, peer evaluations, and real-world applications of linguistic skills.

An assessment panel comprising English language teachers and teachers from other disciplines is formed. Taking the "English and Computer Science" course as an example, when evaluating students' English documentation for programming projects, English teachers are responsible for assessing linguistic aspects such as language normativity, grammatical correctness, and clarity of expression, while computer science teachers evaluate the accuracy and completeness of the programming ideas, algorithmic logic, and functional module descriptions in the documentation. Through joint assessment by interdisciplinary teachers, a comprehensive and objective reflection of students' abilities in interdisciplinary knowledge integration and application can be achieved, avoiding the partiality of assessments conducted solely by teachers from a single discipline. In interdisciplinary courses such as "English and Art," students are arranged to conduct self-assessment and peer-assessment activities.

For instance, after completing a project of presenting an artwork in English, students first evaluate their own performance, analyzing aspects such as the accuracy and fluency of their English expression, the depth of their understanding of the artwork, and presentation skills, and then write a self-assessment report. Subsequently, students are organized to evaluate each other, pointing out peers' strengths and weaknesses from different perspectives, such as one student's rich and vivid vocabulary in describing the artwork's color use, while another student's clearer logic in expressing the creation background of the work. This approach not only prompts students to reflect more deeply on their learning process but also cultivates their critical thinking and teamwork spirit.

A cross-disciplinary learning portfolio is established for students, spanning the entire course of study. In the interdisciplinary course "English and Literature," the portfolio may include students' reading notes, English essays on literary works appreciation, class discussion records, and group project outcomes. Teachers regularly inspect and evaluate the portfolio, providing timely feedback and guidance to students. Through this process-oriented evaluation method, students' learning trajectories can be documented in detail, reflecting their progress and growth at different learning stages, and encouraging students to actively participate in various activities throughout the learning process, rather than solely focusing on final exam scores.

Innovative designs are implemented in the summative assessment of final exams. Taking the "English and Psychology" course as an example, besides traditional question types such as English reading comprehension (selecting English literature in psychology) and writing (e.g., elucidating a psychological phenomenon and its impact in English), case analysis questions can be added, requiring students to analyze a real psychological case using both English and psychological knowledge, completing tasks from case background introduction, problem analysis, to solution proposal in English. Alternatively, experimental design questions can be set, asking students to design a simple psychological experiment and write the experiment's purpose, hypothesis, methods, and expected results in English. Such final exam designs can comprehensively assess students' interdisciplinary knowledge and skills accumulated throughout the semester, organically combining process-oriented learning outcomes with summative exams.

The assessment functions of online learning platforms such as Moodle and Canvas are leveraged. In the "English and Business" course, teachers can post business English case analysis assignments on the platform. After students submit their assignments online, the platform can automatically conduct preliminary grammar and spelling checks. Teachers can utilize the platform to

set grading criteria, assigning scores separately for aspects such as business knowledge application, English expression, and logical structure, and then conduct online grading and evaluation. The platform can also record data such as students' assignment submission times and number of revisions, providing a basis for teachers to comprehensively understand students' learning attitudes and processes. Meanwhile, students can view their grades and teachers' comments on the platform, facilitating self-reflection and learning improvement.

Intelligent assessment software, such as those capable of providing intelligent scoring and feedback on English speaking and writing, is utilized. In the "English and Tourism" course, students' English tour guide script creation and speaking practice can be initially assessed using intelligent assessment software. The software can analyze indicators such as vocabulary diversity, grammatical accuracy, and text coherence in students' English writing and provide corresponding improvement suggestions. For speaking, the software can evaluate pronunciation, fluency, intonation, and other aspects. Teachers then combine the software's assessment results with their professional judgment to provide more precise evaluations to students, improving assessment efficiency and quality while providing students with more timely and detailed learning feedback.

---

## CONCLUSION

Peng (2023) points out that interdisciplinary studies are important areas that serve national development. Cultivating linguistic talents from an interdisciplinary perspective offers numerous advantages, including enhanced linguistic competence, broadened perspectives, and fostered creativity and innovation. However, implementing such an approach also presents challenges, such as curriculum design, teacher training, and assessment methods. By adopting strategies such as collaborative curriculum development, ongoing teacher training, and innovative assessment methods, educators can overcome these challenges and foster a more holistic and integrated approach to linguistic education. Ultimately, an interdisciplinary approach to linguistic education has the potential to transform the field and prepare students for the complex linguistic challenges of the 21st century.

---

## REFERENCES

- Huang, H., & Peng, Y. (2024). Constructing an interdisciplinary competency model for foreign language majors in the context of new liberal arts. *Foreign Language World*, (2), 54-62.
- Klein, J. T. (1991). Interdisciplinarity: History, theory and practice. *Poetics Today*, 13(3), 1681-1682.

- Lattuca, L. R., Knight, D. & Bergom, I. (2012). *Developing a measure of interdisciplinary competence for engineers*. San Antonio, Texas: ASE Annual Conference & Exposition.
- Nikitina, S. (2005). Pathways of interdisciplinary cognition. *Cognition and Instruction*, 23(3), 389-425.
- Peng, Q. L. (2023). Foreign languages as a discipline: Upholding fundamental principles and breaking new ground. *Foreign Language Learning Theory and Practice*, (1), 9-17+8.
- Qiao, M. W., & Shen, Q. (2020). Foreign languages planning for talents of global governance in the new era. *Foreign Languages in China*, (6), 13–19.
- Wang, K. F. (2023). The transformation and development of foreign language disciplines in the era of AI. *Technology Enhanced Foreign Languages*, (6), 3-7+105.
- Wang, X. M., & Zhou, M. C. (2024). The mechanism of new quality productivity empowering the high-quality development of foreign language disciplines from the perspective of activity theory. *Foreign Language Education*, 45(6), 54-59.