

# **An Interdisciplinary Analysis of Compulsory Senior High School English Textbooks Published by the People's Education Press (PEP)**

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**Abstract:** With the growing emphasis on interdisciplinary education in basic education, English textbooks increasingly reflect an integration of multiple disciplines. Previous studies suggest that English teaching should move beyond language proficiency to foster students' overall competence and knowledge transfer abilities. This study examines the compulsory senior high school English textbooks published by the People's Education Press, using content analysis from both quantitative and qualitative perspectives. Quantitative analysis covers 15 units and 64 texts from Book 1 to Book 3, evaluating disciplinary coverage, richness, balance, and diversity. Qualitative analysis focuses on three selected units to explore patterns of interdisciplinary integration. Results indicate a high level of interdisciplinary integration, with coverage rates of 93.75% at the unit level and 87.5% at the text level. A total of 10 subject areas (units) and 19 (texts) disciplinary categories are identified, showing strong contextual relevance. However, humanities disciplines dominate the distribution, while science and technology-related content remains limited. In addition, most texts demonstrate dual-discipline integration, whereas deeper multi-disciplinary integration is relatively rare. The study provides empirical evidence for optimizing textbook design and offers implications for implementing interdisciplinary English teaching practices.

**Keywords:** Senior High School English Textbooks; People's Education Press (PEP); Interdisciplinary Integration

## **1. Introduction**

### **1.1 Research Background**

With the deepening of interdisciplinary research and the growing trend of knowledge integration,

interdisciplinary education has received increasing attention. Studies suggest that language learning is closely connected with knowledge from social culture, science, and technology. Accordingly, English textbooks, as comprehensive knowledge carriers, have gradually moved beyond isolated linguistic knowledge and increasingly emphasize connections with real-life contexts and multiple disciplines, aiming to foster students' comprehensive competence and critical thinking. However, research on interdisciplinary dimensions of English textbooks remains limited, particularly systematic studies on PEP textbooks. Therefore, this study focuses on senior high school English textbooks published by the People's Education Press (PEP), systematically analyzing their interdisciplinary content and exploring their role in disciplinary integration and competency development.

### **1.2 Research Purpose**

This study investigates the interdisciplinary features of PEP senior high school English textbooks, focusing on textual materials and unit themes. Based on a four-dimensional framework—disciplinary coverage, richness, balance, and diversity—it conducts both qualitative and quantitative analyses of reading and listening-speaking texts. The study aims to: (1) systematically identify interdisciplinary content and its distribution patterns across units; (2) evaluate strengths and limitations in interdisciplinary representation and propose suggestions for textbook users and developers to improve the overall educational value of the textbooks.

### **1.3 Research Significance**

This study examines the types and characteristics of interdisciplinary content in PEP senior high school English textbooks, offering both theoretical and practical

contributions.

(1) Theoretical significance:

By constructing an analytical framework and conducting empirical analysis, this study enriches research perspectives on English textbook analysis and provides a reference model for integrating interdisciplinary concepts into language teaching materials.

(2) Practical significance:

The findings may help textbook designers select and organize materials more effectively, improving disciplinary integration and real-world relevance. They also provide English teachers with a clearer understanding of interdisciplinary elements in textbooks, supporting the design of integrated instructional activities and promoting the alignment of language learning with competency development.

## 2. Literature Review

### 2.1 Conceptual Definitions

#### 2.1.1 English textbooks

English textbooks can be defined in both a broad and narrow sense. In a broad sense, they refer to all instructional materials used by teachers and students inside and outside the classroom, including textbooks, workbooks, supplementary exercises, audio-visual materials, CDs, slides, and cards. In a narrow sense, English textbooks refer specifically to prescribed textbooks compiled in accordance with national curriculum standards for particular learner groups [1]. This study adopts the narrow definition and focuses on the 2019 People's Education Press (PEP) senior high school English compulsory textbooks.

#### 2.1.2 Interdisciplinarity

The concept of "interdisciplinary" first emerged in the 1950s in New York, referring to research that integrates two or more disciplines [2]. Earlier, in 1926, Woodworth from Columbia University first used the term "interdisciplinary." Since then, the concept has developed without a unified definition. International scholars have proposed different classifications: Boix-Mansilla focused on disciplinary structures; Jantsch proposed a continuum including multidisciplinary, pluridisciplinarity, interdisciplinarity, and transdisciplinarity; Piaget also distinguished between multi-, inter-, and trans-disciplinary forms; Heckhausen further categorized

interdisciplinary work into six progressive types. In China, Liu Zhonglin provided an influential definition, identifying three meanings of "interdisciplinarity": (1) integration of theories or methods across disciplines; (2) a general term for interdisciplinary fields; and (3) a higher-level discipline studying interdisciplinary principles and methods [3].

In this study, "interdisciplinary analysis of English textbooks" refers to the integration of knowledge elements or learning activities from one or more other disciplines within English teaching materials. It includes both explicit disciplinary knowledge (e.g., physics, history, geography) and implicit interdisciplinary themes embedded in texts. The emphasis is not on mere juxtaposition of knowledge, but on meaningful integration that enables students to develop broader understanding and enhanced cognitive abilities through language learning.

### 2.2 Review of Interdisciplinary Research on English Textbooks

With the development of core competence-based education, English textbooks have shifted from knowledge transmission to competency development, and interdisciplinary perspectives have increasingly been incorporated into both textbook design and classroom practice. Recent studies have focused on disciplinary coverage, integration patterns, and instructional functions, providing theoretical and practical insights.

In China, content analysis has been the dominant approach. Chen & Wu examined interdisciplinary resources in PEP senior high school English textbooks and found strong humanistic and affective orientation but insufficient coverage of natural sciences and technology [4]. Shi & Cen further reported that although reading texts are thematically diverse, they are heavily concentrated in humanities and social sciences, with limited scientific representation [5]. Han compared multiple textbook versions and noted that while PEP textbooks emphasize value guidance and cultural development, their disciplinary breadth and integration depth remain limited, particularly in science and engineering domains [6].

From a theoretical perspective, Cai proposed the "sixth-generation college English textbook" framework, emphasizing task-based learning integrating academic discourse, pragmatic knowledge, and critical thinking [7]. Although

designed for higher education, it offers valuable implications for secondary English textbook design.

Internationally, research emphasizes the functional role of language in interdisciplinary contexts. Guendouzi & Ameziane argue that the key issue is not the amount of disciplinary content but the effectiveness of linking language, cognition, and subject knowledge [8]. Leedham & Cai highlight mismatches between textbook input and authentic academic writing practices, particularly in discourse organization [9]. Coxhead et al. also note the low classroom usability of textbook academic expressions, indicating limited authenticity in language tasks [10].

Overall, existing studies have established preliminary frameworks focusing on disciplinary coverage, knowledge integration, and language function. However, most remain at a macro level, lacking fine-grained textual analysis of disciplinary types, integration mechanisms, and functional roles within units. Therefore, a systematic analysis of PEP senior high school English textbooks is necessary to better understand their design logic and improve interdisciplinary textbook development.

### **2.3 Theoretical Foundations**

#### **(1) Theory of Multiple Intelligences**

Proposed by Gardner in 1983, the theory of multiple intelligences suggests that human intelligence includes linguistic, logical-mathematical, spatial, naturalistic, musical, and other dimensions. Education should support the development of diverse intelligences. In English learning, language serves not only as a communicative tool but also as a medium for integrating disciplinary knowledge. Incorporating interdisciplinary content in textbooks can activate multiple cognitive channels and promote the coordinated development of different intelligences. At the senior high school level, such integration broadens students' perspectives and enhances motivation, aligning with the goal of developing core language competence.

#### **(2) Content-Based Instruction (CBI)**

Content-Based Instruction emphasizes "learning language through content," integrating language learning with subject knowledge. It views language as a tool for understanding and expressing disciplinary knowledge rather than an isolated system of grammar and vocabulary.

CBI promotes thematic organization, authentic context, and task-based learning, emphasizing the integration of language, cognition, and thinking. For English textbooks, CBI enhances academic relevance and practical value, enabling students to develop interdisciplinary understanding and communicative competence simultaneously.

In summary, Multiple Intelligences Theory provides a cognitive basis for interdisciplinary design, while CBI offers methodological support for content integration. Together, they justify the rationality of interdisciplinary English textbook design and provide analytical perspectives for this study.

### **3. Research Design**

#### **3.1 Research Objects**

This study takes the compulsory senior high school English textbooks published by the People's Education Press (PEP) as its research object, focusing on the textual components of the textbooks. The selection is based on three considerations. First, PEP textbooks are widely used across China and thus highly representative. Second, research on the interdisciplinary dimensions of English textbooks, particularly at the senior high school level, remains limited. Third, senior high school students have developed relatively complete disciplinary knowledge systems, and textbooks serve as an important medium for understanding the world. Well-designed interdisciplinary English textbooks can broaden students' knowledge horizons and support their further academic and career development, thereby contributing to their overall competence. The 2019 PEP compulsory textbooks consist of three volumes, each containing five units. Each unit includes eight sections: Opening Page, Listening and Speaking, Reading and Thinking, Discovering Useful Structures, Listening and Talking, Reading for Writing, Assessing Your Progress, and Video Time. This study focuses on unit themes and textual materials, particularly the sections of Listening and Speaking, Reading and Thinking, Listening and Talking, and Reading for Writing.

#### **3.2 Research Questions**

This study analyzes PEP senior high school English textbooks from an interdisciplinary perspective, examining both unit themes and

textual content in order to identify strengths, limitations, and potential improvements, thereby providing references for further research and instructional practice. The research questions are:

- (1) What are the disciplinary coverage, richness, and balance of unit themes in PEP senior high school English textbooks?
- (2) What are the disciplinary coverage, richness, balance, and diversity of textual content in PEP senior high school English textbooks?

### 3.3 Research Methods

This study adopts content analysis, examining the 2019 PEP senior high school English compulsory textbooks from both qualitative and quantitative perspectives.

#### (1) Qualitative Analysis

The qualitative analysis focuses on three volumes (Compulsory Books 1–3), examining unit themes and textual content from Listening and Speaking, Reading and Thinking, Listening and Talking, and Reading for Writing. It identifies interdisciplinary knowledge embedded in the texts and explores its functional roles, integration patterns, and educational value.

To ensure representativeness, systematic sampling is applied. All 15 units (excluding the Welcome Unit) are numbered sequentially. With a sample size of three units, the sampling interval is calculated as  $K = 15/3 = 5$ . Starting from Unit 5, every fifth unit is selected, resulting in Units 5, 10, and 15 as the qualitative sample. This approach ensures balanced distribution across textbook progression and thematic representation.

#### (2) Quantitative Analysis

To ensure comprehensiveness, all 15 units from Compulsory Books 1–3 are included in the quantitative analysis. The study examines both unit themes and textual content across four dimensions: disciplinary coverage, richness, balance, and diversity.

At the unit level, disciplinary coverage, richness, and balance are analyzed. At the textual level, disciplinary coverage, richness, balance, and diversity are further examined. Through statistical analysis of these indicators, the overall structural characteristics of interdisciplinary content in the textbooks are systematically presented, providing empirical support for qualitative interpretation.

### 3.4 Research Procedures

Based on previous studies, this research constructs an analytical framework with unit themes and textual content as analytical units, and disciplinary coverage, richness, balance, and diversity as analytical dimensions. Disciplinary classification follows the Classification and Code of Chinese Disciplines (GB/T 13745—2009). For example, Unit 1 in Book 1 is coded as “R1U1.”

The study first conducts quantitative analysis of 15 units across three volumes to identify distribution patterns of interdisciplinary content. It then applies systematic sampling to select Units 5, 10, and 15 for qualitative analysis, examining interdisciplinary integration and educational implications within textual contexts. Finally, findings from both analyses are synthesized to evaluate strengths and limitations and to provide suggestions for textbook developers, teachers, and learners.

#### 3.5 Analytical Framework

To systematically investigate interdisciplinary content in senior high school English textbooks, this study constructs an analytical framework based on unit themes and textual content, focusing on four dimensions: disciplinary coverage, richness, balance, and diversity.

This study adopts Stirling’s three-dimensional diversity framework, which consists of variety, balance, and disparity, and is widely used to evaluate the diversity of elements in complex systems [11]. Considering the practical requirements of textbook analysis, this study selects “variety” and “balance” as the core analytical dimensions. In addition, two supplementary indicators—disciplinary coverage and disciplinary diversity—are introduced to better capture the breadth, distribution, and integration of interdisciplinary content in textbooks, as shown in Table 1.

English is an open and flexible language; therefore, English textbooks may incorporate a wide range of interdisciplinary knowledge [12]. To ensure a more systematic analysis of interdisciplinary content in textbooks, this study adopts the coding approach proposed by Chen Baohua and classifies disciplinary content based on the Classification and Code of Chinese Disciplines [13]. As a nationally recognized standard for disciplinary classification, it organizes all disciplines into five major categories: humanities and social sciences, natural sciences, engineering and

technology, medical sciences, and agricultural sciences.

Based on this framework and considering the characteristics of senior high school English curriculum design and textbook development,

all knowledge elements in the textbooks are coded within these five disciplinary categories. This classification provides a reliable foundation for subsequent quantitative and qualitative analyses, as shown in Table 2.

**Table 1. Dimensions of Interdisciplinary Content Analysis**

Analytical Object	Disciplinary Coverage	Disciplinary Richness	Disciplinary Balance	Disciplinary Diversity
Unit Theme	Proportion of interdisciplinary thematic units in the total number of units	Number of different first-level disciplines involved in unit themes	Degree to which disciplinary themes are concentrated or evenly distributed	
Textual Content	Proportion of interdisciplinary texts in the total number of texts	Number of different first-level disciplines within each text	Whether the frequency of different disciplines in texts is balanced	Number of disciplines involved within a single unit's texts, reflecting the depth of integration

**Table 2. Classification of Interdisciplinary Disciplines**

Disciplinary Category	Disciplines
Humanities and Social Sciences	Culture and Ethnology; History; Sports and Health; Linguistics; Sociology; Economics; Journalism and Communication; Arts; Philosophy; Literature
Natural Sciences	Biology; Physics; Psychology; Environmental Science; Mathematics; Astronomy; Geography
Agricultural Sciences	Agronomy; Forestry
Medical Sciences	Medicine; Pharmacy
Engineering and Technology	Information Technology; Aerospace Science and Technology

In summary, the “analytical object × analytical dimension” bidimensional framework established in this study provides a clear analytical pathway and quantitative basis for the comparative analysis of interdisciplinary content in the PEP senior high school English compulsory textbooks.

## 4. Results and Discussion

### 4.1 Quantitative Analysis of Interdisciplinary Content in the Textbooks

#### 4.1.1 Interdisciplinary content in unit themes

The PEP senior high school English textbooks consist of 16 units across three volumes, including the Welcome Unit. Each unit is organized around a specific theme, some of which exhibit clear interdisciplinary characteristics. For example, R1U3 “Sport and Fitness” focuses on the theme of sports, which is classified under Physical Education and Health and further categorized within the Humanities and Social Sciences domain.

Based on a systematic analysis of all units, the interdisciplinary coverage rate of unit themes was calculated. In addition, the proportions of specific disciplines and disciplinary categories were statistically analyzed. The results are

presented in Table 3.

Among the 16 units in the PEP senior high school English textbooks, 15 units involve interdisciplinary themes, with only the Welcome Unit lacking such content. The interdisciplinary coverage rate at the unit theme level is 93.75%, indicating that the textbook places strong emphasis on integrating thematic content with other disciplines to broaden students’ cognitive scope.

In terms of disciplinary richness, the unit themes involve three disciplinary categories—humanities and social sciences, natural sciences, and engineering and technology—accounting for 60% of the five major disciplinary domains. At the first-level disciplinary level, a total of 12 disciplines are identified, including Culture and Ethnology, History, Sociology, Linguistics, Economics, Arts, Biology, Psychology, Sports and Health, and Geography. This suggests a certain degree of knowledge expansion in textbook design.

In terms of disciplinary balance, although a relatively wide range of disciplines is covered, their distribution is uneven. Humanities and social sciences (e.g., Culture and Ethnology, History, Geography) appear with higher frequency, whereas science-, engineering-,

agriculture-, and medical-related disciplines are significantly underrepresented. In particular, disciplines such as Literature, Mathematics, Medicine, and Philosophy are not represented at

the unit theme level, indicating a clear disciplinary bias toward the humanities and social sciences.

**Table 3. Proportions and Distribution of Disciplinary Categories in Unit Themes of PEP Textbooks**

Disciplinary Category	Discipline	Frequency	Proportion
Humanities and Social Sciences 60.00%	Culture and Ethnology	2	13.33%
	History	2	13.33%
	Sports and Health	1	6.67%
	Linguistics	1	6.67%
	Sociology	1	6.67%
	Economics	1	6.67%
	Journalism and Communication	0	0.00%
	Arts	1	6.67%
	Philosophy	0	0.00%
	Literature	0	0.00%
Natural Science 26.67%	Biology	1	6.67%
	Physics	0	0.00%
	Psychology	1	6.67%
	Environmental Science	0	0.00%
	Mathematics	0	0.00%
	Astronomy	0	0.00%
	Geography	2	13.33%
Agricultural Sciences 0%	Agronomy	0	0.00%
	Forestry	0	0.00%
Medical Sciences 0%	Medicine	0	0.00%
	Pharmacy	0	0.00%
Engineering and Technology 13.33%	Information Technology	1	6.67%
	Aerospace Science and Technology	1	6.67%

4.1.2 Interdisciplinary content in textual materials

Each unit is organized around a central theme, and its textual components are closely aligned with that theme. This study focuses on reading and listening texts. For example, the “Reading for Writing” section in R1U2 involves not only historical knowledge but also geographical content; therefore, the text is coded as involving both History and Geography.

Based on a systematic analysis of all textual materials, the proportions of disciplinary categories and specific disciplines were calculated. The results are presented in Table 4. The PEP senior high school English textbooks contain 64 main texts, among which 56 are identified as interdisciplinary, yielding an interdisciplinary coverage rate of 87.5%. Only 8 texts show no explicit interdisciplinary connections. This indicates that the textbook design strongly emphasizes the integration of multiple disciplinary knowledge areas and highlights the relevance between language

learning and other fields, thereby supporting students in developing a more integrated knowledge structure and a broader understanding of the real world [14].

In terms of disciplinary richness, these 56 interdisciplinary texts involve 18 first-level disciplines across four major disciplinary domains: humanities and social sciences, natural sciences, engineering and technology, and agricultural sciences. Humanities and social sciences dominate, appearing 41 times (64.37%), with History, Culture and Ethnology, and Sociology being the most frequent, each occurring 12 times (13.79%). Natural sciences appear 15 times (22.99%), mainly concentrated in Geography (10 occurrences) and Psychology (4 occurrences). Engineering and technology accounts for 6 occurrences (9.20%), while agricultural sciences appear only once (1.15%), and medical sciences are entirely absent. This distribution suggests that although the textbook demonstrates relatively broad disciplinary coverage, the frequency of representation is

highly uneven, with a clear underrepresentation of science-, engineering-, agriculture-, and medical-related disciplines.

Further analysis of disciplinary balance reveals that a small number of humanities disciplines dominate the distribution, while more than half of the identified disciplines appear only once or twice. Some disciplines, such as Journalism and Communication, Information Technology, and Environmental Science, are mentioned only once. This pattern of “concentration in core disciplines and marginalization of others” undermines the overall balance and systematic nature of interdisciplinary representation, limiting the development of a comprehensive cognitive framework for students.

From the perspective of disciplinary diversity, among the 56 interdisciplinary texts, single-discipline texts account for 25 cases (44.64%), dual-discipline integration accounts for 29 cases (51.76%), while only 2 texts (3.57%) involve

integration of three disciplines. Overall, most texts demonstrate basic bi-disciplinary connections, indicating an initial level of interdisciplinary integration, whereas deep integration remains limited.

For instance, R2U1 “Cultural Heritage” exhibits relatively high disciplinary diversity by integrating History, Geography, and Information Technology. It discusses historical context and cultural heritage preservation while also involving geographical descriptions and modern digital restoration technologies. This reflects both relevance to students’ lived experiences and alignment with contemporary knowledge integration trends.

Overall, although the textbook demonstrates relatively high interdisciplinary coverage and moderate disciplinary richness, its depth of integration and diversity remain limited, particularly in achieving higher-order multi-disciplinary synthesis.

**Table 4. Disciplinary Categories and Proportions of Textual Content in PEP Textbooks**

Disciplinary Category	Discipline	Frequency	Proportion
Humanities and Social Sciences 60.00%	Culture and Ethnology	12	13.79%
	History	12	13.79%
	Sports and Health	4	4.60%
	Linguistics	2	2.30%
	Sociology	12	13.79%
	Economics	2	2.30%
	Journalism and Communication	3	3.45%
	Arts	4	4.60%
	Philosophy	2	2.30%
Natural Sciences 26.67%	Literature	3	3.45%
	Biology	3	3.45%
	Physics	0	0.00%
	Psychology	4	4.60%
	Environmental Science	1	1.15%
	Mathematics	0	0.00%
	Astronomy	2	2.30%
Agricultural Sciences 0%	Geography	10	11.49%
	Agronomy	0	0.00%
Medical Sciences 0%	Forestry	1	1.15%
	Medicine	0	0.00%
Engineering and Technology 13.33%	Pharmacy	0	0.00%
	Information Technology	6	6.90%
	Aerospace Science and Technology	4	4.60%

**4.2 Qualitative Analysis of Interdisciplinary Content in the Textbooks**

To further examine the interdisciplinary nature of the textbooks, this study adopts a systematic sampling method to select samples from 15 interdisciplinary units across the three volumes.

Specifically, all units are first numbered from 1 to 15. With a sample size of three units, the sampling interval is calculated as  $K = 15/3 = 5$ . Starting from Unit 5, every fifth unit is selected, resulting in R1U5, R2U5, and R3U5 as the qualitative analysis samples. The selected units are analyzed in terms of both unit themes and

textual content.

(1) Compulsory Book 1 Unit 5 — Languages Around the World

This unit focuses on the theme “Languages Around the World,” with Linguistics identified as the primary interdisciplinary domain at the unit level.

In the “Listening and Speaking” section, the textbook introduces global language distribution, motivations for learning foreign languages, and the official languages of the United Nations. This content not only involves linguistic knowledge regarding language use and distribution but also highlights the sociocultural function of languages in global governance.

The “Reading and Thinking” section, *The Chinese Writing System: Connecting the Past and the Present*, traces the historical evolution of Chinese characters from pictographic symbols to a modern writing system. It integrates historical perspectives (dynastic changes and institutional development) and cultural studies (calligraphy and cultural identity), demonstrating a strong humanistic interdisciplinary orientation.

The “Listening and Talking” section presents variations in English usage, such as differences between “semester” and “subway” in British and American English. This reflects internal variation within linguistics, emphasizing the influence of region and cultural background on language use.

The “Reading for Writing” section simulates forum-based interaction about difficulties in English learning, focusing on language skills and learning strategies. It does not explicitly involve other disciplinary knowledge and therefore is not coded as interdisciplinary content.

Overall, this unit integrates linguistics, history, and cultural studies, highlighting the relationship between language diversity and cultural identity, and fostering students’ global perspective and intercultural awareness.

(2) Compulsory Book 2 Unit 5 — Music

This unit centers on the theme “Music,” with Arts identified as the main disciplinary domain.

In the “Listening and Speaking” section, students discuss their preferences for different music genres such as country music, hip-hop, and classical music, expressing emotional responses such as being moved or feeling calm. This reflects both musical knowledge and

emotional experience.

The “Reading and Thinking” section, *The Virtual Choir*, introduces Eric Whitacre’s virtual choir project, demonstrating the integration of information technology and music. It highlights how digital technologies enable global musical collaboration and cultural communication.

The “Listening and Talking” section is set in the context of a school music festival, featuring performers from different cultural backgrounds, reflecting intercultural musical exchange and the social function of music.

The “Reading for Writing” section discusses the role of music in healing illness and psychological trauma, incorporating elements of psychology and emphasizing music’s therapeutic function.

Overall, this unit presents a progressive structure from individual experience to social participation, integrating arts, psychology, and information technology, and enhancing students’ emotional engagement and social awareness.

(3) Compulsory Book 3 Unit 5 — The Value of Money

This unit focuses on “The Value of Money,” with Economics identified as the central interdisciplinary theme.

In the “Listening and Speaking” section, a story about a cleaner returning a large sum of money despite her daughter’s illness highlights themes of honesty, fairness, and social responsibility, reflecting sociological concerns.

The “Reading and Thinking” section, an excerpt from *The Million Pound Bank Note*, is a literary text that explores how money influences social perception and interpersonal relationships, reflecting literary and sociological dimensions.

The “Listening and Talking” section extends the drama through role-play activities, allowing students to analyze concepts such as wealth, credit, and social status from both linguistic and economic perspectives.

The “Reading for Writing” section requires students to write about the relationship between money and happiness, encouraging the integration of economic thinking with literary expression.

Overall, this unit integrates literature, sociology, and economics to explore the relationship between money, morality, and social value, promoting students’ critical thinking and interdisciplinary literacy.

### 4.3 Discussion

#### 4.3.1 Analysis at the unit theme level

Among the 16 unit themes in the PEP senior high school English textbooks, 15 exhibit interdisciplinary characteristics, yielding a coverage rate of 93.75%. This indicates that the textbook design is highly aligned with the curriculum goal of core competencies, particularly the integration of knowledge construction and comprehensive abilities. For instance, Unit 2 “Travelling Around” incorporates geographical knowledge, while Unit 3 “Sports and Fitness” integrates concepts from sports science and psychology. These themes are closely connected to real-life contexts and social situations, effectively broadening students’ cognitive boundaries and topical scope.

In terms of disciplinary richness, the 16 units involve 10 first-level disciplines across humanities and social sciences, natural sciences, and engineering and technology. Disciplines such as history, geography, and sociology appear frequently, indicating a strong emphasis on humanities-related content. However, disciplines such as physics, chemistry, and philosophy are not represented in unit themes, suggesting certain gaps in interdisciplinary integration.

Regarding disciplinary balance, humanities and social sciences dominate the distribution, with repeated emphasis on culture, history, and social phenomena. In contrast, natural sciences and engineering-related themes are sparsely distributed, indicating an imbalance that may constrain the development of students’ scientific literacy.

#### 4.3.2 Analysis at the textual level

The textbooks contain 64 texts in total, of which 56 are identified as interdisciplinary, resulting in a coverage rate of 87.5%. This demonstrates that the textbook places strong emphasis on integrating disciplinary knowledge with language learning in text selection. For example, in R2U5 “Listening and Talking,” interactions between students and a reporter present different music genres such as country, hip-hop, and classical music, reflecting both musical perspectives and sociocultural meaning, thereby enhancing contextual authenticity in language learning.

In terms of disciplinary richness, the 56 interdisciplinary texts involve 18 first-level

disciplines, exceeding the 10 disciplines identified at the unit level. These include literature, history, geography, information technology, biology, environmental science, and engineering management, demonstrating relatively broad coverage and strong relevance to contemporary life. However, disciplines such as medicine, philosophy, and law are absent, indicating incomplete coverage of major knowledge domains.

From the perspective of disciplinary balance, history (12 occurrences), geography (10 occurrences), and sociology (8 occurrences) are the most frequently represented disciplines, accounting for more than half of the total frequency. In contrast, natural science-related disciplines such as physics, information technology, agriculture, and environmental science appear only sporadically, often once or twice. This suggests that although the textbook achieves broader “coverage in scope,” it remains heavily humanities-oriented in terms of distribution intensity, with limited integration of scientific content.

Regarding disciplinary diversity, 29 texts (51.76%) involve two disciplines, 25 texts (44.64%) involve a single discipline, and only 2 texts (3.57%) integrate three disciplines. For example, R3U4 “Space: The Final Frontier” integrates aerospace science, history, and astronomy, demonstrating a relatively high level of interdisciplinary synthesis. However, most texts still follow a juxtaposition model of disciplinary presentation rather than an integrated “language–discipline–thinking” framework, indicating limited depth in interdisciplinary instructional design.

## 5. Conclusion and Implications

### 5.1 Research Findings

This study examines the interdisciplinary content of the PEP senior high school English textbooks from two perspectives—unit themes and textual materials—based on four dimensions: disciplinary coverage, richness, balance, and diversity. The main findings are as follows.

#### 5.1.1 Unit theme level

Among the 16 units, 15 involve interdisciplinary content, yielding a coverage rate of 93.75%, which indicates a strong awareness of disciplinary integration in the textbook design. The unit themes cover 10 first-

level disciplines across five disciplinary categories, demonstrating relatively rich disciplinary variety. However, in terms of balance, humanities and social sciences (e.g., Culture and Ethnology, History, Sociology) appear more frequently, while natural sciences and engineering-related disciplines are less represented, indicating an imbalance and the absence of comprehensive disciplinary coverage.

#### 5.1.2 Textual content level

Out of 64 texts, 56 are identified as interdisciplinary, with a coverage rate of 87.5%, showing that the textbook places strong emphasis on integrating language learning with disciplinary knowledge. These texts involve 18 first-level disciplines, reflecting high disciplinary richness and broad coverage.

However, in terms of balance, disciplines such as Literature, History, and Geography are significantly more prominent than engineering, agricultural, and medical sciences, resulting in a humanities-oriented structural imbalance. In addition, only 3.57% of the texts involve three disciplines, while most texts are limited to single- or dual-discipline integration, indicating insufficient depth of interdisciplinary synthesis. The qualitative analysis further reveals that sections such as “Listening and Speaking” and “Reading and Thinking” tend to integrate interdisciplinary content with real-life contexts, reflecting an initial attempt at combining task-based learning with disciplinary integration. However, the overall integration remains at an exploratory stage, with limited depth and systematic coherence.

## 5.2 Implications and Prospects

### 5.2.1 Pedagogical implications

Based on the findings, three sets of implications are proposed for textbook writers, teachers, and students.

(1) Textbook writers: enhancing disciplinary coverage and integration depth

Textbook developers should further broaden disciplinary coverage, particularly in natural sciences and engineering fields, to improve overall balance and comprehensiveness. Meanwhile, greater emphasis should be placed on deep integration among disciplines, promoting an organic combination of language, subject knowledge, and thinking skills.

(2) Teachers: strengthening textbook interpretation and instructional innovation

Teachers should fully explore the interdisciplinary potential of textbooks and design extension tasks based on disciplinary contexts. For example, in texts involving literature, history, or technology, teachers can guide students to conduct interdisciplinary research, project-based learning, or collaborative inquiry, thereby enhancing both language proficiency and cross-disciplinary thinking.

(3) Students: developing knowledge transfer awareness and interdisciplinary thinking

Students should actively develop awareness of connections between language and subject knowledge, transferring English learning outcomes to the understanding and expression of history, science, and culture. They should also cultivate open-minded and critical perspectives through multi-contextual learning, thereby improving their integrated understanding of the world.

### 5.2.2 Research prospects

This study focuses on the interdisciplinary content of PEP senior high school English textbooks; however, several limitations remain. First, the scope is limited to compulsory textbooks, and future studies could expand to elective compulsory textbooks and other textbook versions to enhance generalizability. Second, the analysis mainly focuses on disciplinary categories and distribution patterns; future research could further examine the depth and modes of interdisciplinary integration. Finally, it is recommended that future studies incorporate classroom-based empirical data, such as lesson recordings and student outputs, to evaluate the actual pedagogical effectiveness of interdisciplinary content and promote stronger integration between theory and practice.

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