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Research on Intelligent Construction of NLP-Assisted Teaching Resources for Ideological and Political Education in College English Courses

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Abstract: As a public foundation course combining instrumental and humanistic elements, the College English curriculum must not only fulfill its core mission of developing students' English language proficiency but also undertake the responsibility of ideological and political education through "value guidance". The quality of its ideological and political teaching resources directly impacts the effectiveness of moral education. Leveraging its powerful capabilities in text semantic understanding, sentiment analysis, and knowledge extraction, Natural Language Processing (NLP) technology provides a novel approach for intelligent construction of ideological and political teaching resources in College English education. Guided by the goal of "addressing the predicament of ideological and political (I&P) teaching resources in college English", this study explores the in-depth integration of Natural Language Processing (NLP) technology with I&P teaching resources. It clarifies the connotation and hierarchical needs of I&P teaching resources in college English, thereby constructing an NLP technology system for dual-dimensional mining of explicit and implicit I&P elements. The system enables the full lifecycle management of resources from generation to application, effectively supporting personalized learning and evaluation, and providing robust support for the integration of ideological and political education into college English courses.

Keywords: Natural language processing (NLP); College English; Ideological and political education resources

I. Introduction

In the current context of educational digital transformation, university English courses bear the dual mission of enhancing language proficiency and shaping values. However, the implementation of ideological and political education in these courses has long faced three core challenges: fragmented teaching resources, difficulties in identifying ideological and weak integration of technology with pedagogy. Currently, ideological education materials in university English courses largely rely on teachers manually selecting texts and case studies. This approach not only proves inefficient but also leads to incomplete identification of implicit ideological elements (such as cultural confidence embedded in English literature and patriotic sentiments in cross-cultural communication), mismatched difficulty levels with students' English proficiency, and subjective, arbitrary integration of ideological content and methods. The lack of systematic frameworks makes it difficult to evaluate educational effectiveness. Natural Language Processing (NLP) technology offers a new solution to these challenges. Leveraging its strengths in text classification, semantic understanding, and sentiment analysis, NLP can enable intelligent mining, categorization, and adaptation of ideological education resources, driving the transition from "human-dominated" to "technology-enabled" resource development. Against this backdrop, this study focuses on "overcoming the challenges in ideological and political education resources for college English" by exploring the deep integration of NLP technology with such resources. Through understanding the connotation and stratified needs of ideological and political education resources in college English, we aim to establish an NLP technology framework that enables dual-dimensional exploration of explicit and implicit ideological elements. This approach facilitates the transition of resources from creation to application, effectively supporting personalized learning and evaluation, thereby providing robust support for ideological and political education in college English courses.

II Literature Review

Internationally, a mature system has been established at both theoretical and technological levels for NLP-driven educational resource construction. The application of semantic annotation and knowledge graph technologies has effectively addressed the "semantic gap" in traditional resource organization. Through pre-trained models such as BERT, entity recognition, relation extraction, and multi-dimensional semantic tagging of textual resources are realized, transforming scattered digital resources into structured knowledge assets. In the field of intelligent retrieval, research has advanced from traditional keyword matching to precise retrieval driven by semantic vector space models. Combined with user profiling, personalized resource recommendation is achieved, providing efficient solutions for material selection and knowledge point correlation in language teaching.

Domestic scholars have focused on the practical application of core NLP technologies in the development of ideological and political (IP) resources, forming a multi-dimensional technical application system. In terms of IP element mining, studies adopt techniques such as text classification, keyword extraction, and sentiment analysis to accurately identify core IP elements—including patriotism, collectivism, and the community with a shared future for mankind—from materials like English textbooks, current political news, and cultural classics. This resolves the issues of "strong subjectivity and

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low efficiency" in traditional IP resource mining. For instance, in the development of business English teaching resources, NLP-based translation and text analysis tools are used to extract cross-cultural communication cases related to the "Belt and Road" initiative, converting them into language training materials tailored to teaching needs. In the structured organization of resources, knowledge graph technology is widely applied to construct IP course resource systems. Researchers use NLP technologies to sort out the logical relationships between core IP concepts, cultural symbols, and typical cases, building a three-dimensional resource graph of "IP themes — language knowledge points — application scenarios" to enable associated retrieval and intelligent recommendation of resources. Additionally, in optimizing resource adaptability, studies align with the requirements of the College English Teaching Guidelines (2020 Edition), utilizing NLP to conduct hierarchical tagging of resources based on language difficulty and IP depth, thereby providing differentiated resource supply for students at different levels.

III NLP Technology Empowers the Development of Ideological and Political Education Resources in College English Courses

College English teaching combines multiple objectives such as language knowledge, intercultural communication, critical thinking, and self-directed learning. AI technology can provide strong support for achieving these teaching goals, primarily through natural language processing (NLP), machine learning, and data mining applications. These methods help build ideological and political education resources, provide personalized learning feedback, and deliver adaptive content based on learners 'learning situations, thereby empowering teachers' instruction. College English teachers operate within the space of digital resource integration and development. How to effectively utilize digital resources and apply NLP technology to empower the construction of ideological and political education resources, assisting teachers in integrating teaching and learning solutions from textbooks. By improving the alignment between instructional design and learning contexts, we can tell the story of China in English.

3.1 Overview of ideological and political connotation of college English course

The integration of ideological and political education into college English courses refers to the comprehensive set of materials and tools that can carry ideological and political education content and achieve the goal of ideological and political education during the teaching process. Its core lies in the organic unity of "the carrier of the English language" and "the connotation of ideological and political education." As an important branch of artificial intelligence, NLP technology has enabled the full-process empowerment of English teaching resources, covering "semantic understanding, ideological and political mining, intelligent generation, and personalized delivery." The GPT series models can generate teaching resources such as English dialogues and short texts with specific ideological and political themes based on teaching objectives. Emotional analysis technology can monitor students' emotional feedback in real-time during the English learning process and dynamically adjust the presentation methods of ideological and political resources. By extracting ideological and political elements from China cultural teaching through the NLPIR Chinese word segmentation system, the feasibility of information technology-assisted development of ideological and political resources has been verified. (Zhang Danyang 2022) Through behavioral analysis models, teaching interactions are optimized by integrating neural language processing (NLP) into ideological and political classes in vocational English education. (Wang Guanchen 2023) NLP technology has achieved a leap from the "grammatical level" to the "semantic level," providing technical possibilities for the precise identification and extraction of ideological and political elements.

Currently, most applications of NLP technology in constructing ideological and political education resources for college English teaching remain at a basic level. While focusing on the technical processes of building such resource libraries, they often overlook the compatibility between these resources and actual teaching scenarios. For instance, in oral English instruction, there is a lack of NLP-generated dialogue materials with ideological themes, making it difficult to integrate ideological education with speaking practice.

To address issues such as insufficient exploration of ideological and political elements and poor adaptability to specific contexts, the author proposes enhancing NLP-based semantic understanding and sentiment analysis capabilities to develop a model for identifying ideological and political elements in college English texts.

3.2 Insights from NLP Technology in Developing Teaching Resources for Ideological and Political Education in College English

Traditional English ideological and political education resource construction often relies on teachers manually screening and organizing materials, which is not only time-consuming and labor-intensive but also limited by teachers 'knowledge reserves and subjective judgments, making it difficult to achieve large-scale and precise resource construction. The application of NLP technology has completely transformed this model. Through machine learning algorithms, massive English texts (such as academic literature, foreign media reports, and classic works) can be automatically processed, enabling the rapid identification, classification, and extraction of ideological and political elements. For example, using Named Entity Recognition (NER) technology, relevant event information such as "China's poverty alleviation" and "Belt and Road Initiative" can be extracted from English news, automatically generating an ideological and political teaching case library. Based on topic models (such as LDA), English literary works can be classified thematically to uncover ideological and political connotations like "humanitarian spirit" and "fairness and justice." For students with weak English foundations, NLP technology can generate English listening materials containing simple ideological and political dialogues, helping students enhance their language skills while understanding ideological and political content. For international trade majors, the technology can filter English cases related to "international trade rules" and "integrity principles in cross-cultural communication," achieving deep integration of professional knowledge and ideological and

political education. The NLP-powered model for ideological and political education in college English not only significantly improves resource construction efficiency but also avoids subjective biases in manual screening, ensuring the objectivity and accuracy of ideological and political elements to some extent. By analyzing students' learning data, intelligent delivery of ideological and political resources can be achieved. In addition, the NLP technology based on the dialogue system can also build an "intelligent ideological and political counseling robot", which can answer students' ideological and political confusion in real time through dialogue with them in English, and provide personalized ideological and political guidance.

IV NLP-Powered Intelligent Development of Teaching Resources for Ideological and Political Education in College English

NLP technology empowers the intelligent development of ideological and political education resources for college English teaching. This process encompasses multiple stages: initial screening of multi-source materials, in-depth exploration of ideological elements, intelligent generation of diverse resources, precise adaptation to teaching scenarios, and feedback-driven evaluation optimization. Each phase operates independently yet seamlessly integrates, forming a logical closed loop. The subsequent focus will be on the "full-process resource construction" framework. By leveraging dual-dimensional mining technology (explicit and implicit dimensions) to solidify the ideological core of resources, and utilizing intelligent matching technology to achieve precise adaptation between resources and teaching scenarios, we collectively establish a comprehensive implementation framework for NLP-enhanced intelligent construction of ideological and political education resources in college English teaching.

4.1 Multi-dimensional intelligent collection and analysis

From the perspective of resource forms, the teaching resources for ideological and political education in college English courses can be divided into textual resources (such as English news reports, selected literary works, academic papers, and dialogue scripts), audio resources (such as English speeches, documentary audio, and songs), video resources (such as English movie clips, interview videos, and animations), and interactive resources (such as English ideological and political theme debate competitions and role-playing scripts). From the perspective of ideological and political connotation, the resources can cover patriotism education (such as English materials introducing China's traditional culture and national development achievements), education on socialist core values (such as English texts reflecting "prosperity, democracy, civilization, and harmony" and "freedom, equality, justice, and rule of law"), professional ethics education (such as English industry norms and professional ethics cases related to majors), and cultural confidence education in cross-cultural communication (such as English materials comparing Chinese and Western cultural differences and highlighting the charm of China's culture). Compared to traditional English teaching resources, ideological and political education resources for English courses possess three distinctive attributes: First, "dual functionality" – they must fulfill both language teaching objectives (such as improving students 'reading, listening, and speaking skills) and carry political education responsibilities (like cultivating students' values and patriotic sentiments). Second, "relevance" – the ideological elements in these resources should be closely integrated with English content to avoid disconnect (for example, embedding the concept of "integrity and contract adherence" when explaining business negotiation techniques). Third, "appropriateness" – the difficulty level and content should align with students' English proficiency and cognitive characteristics, ensuring they not only grasp linguistic knowledge but also deeply comprehend the ideological implications.

4.2 Dynamic optimization of resource and technology models

By leveraging NLP technology to analyze resource difficulty, a difficulty assessment index system is constructed through lexical difficulty (word frequency statistics + CEFR level matching) → sentence complexity (average sentence length + syntactic tree depth) → discourse logic (cohesion analysis), categorizing resources into basic level (suitable for freshmen), intermediate level (suitable for sophomores), and advanced level (suitable for juniors and above). Meanwhile, resources are optimized for different cognitive characteristics of students with varying English proficiency levels. Basic-level resources simplify long and complex sentences and add annotations for ideological and political vocabulary; advanced-level resources retain complex sentence structures and incorporate in-depth ideological and political case studies (such as the English in-depth report on "China's high-speed rail technology going global"). English ideological and political teaching resources possess the characteristic of "keeping pace with the times." NLP technology can automatically capture the latest content from mainstream English media at home and abroad (such as The New York Times, The Guardian, and China International Television's English channel) in real time, promptly identifying ideological and political elements related to major national decisions and social hot topics, and rapidly updating the teaching resource database. For example, when "carbon neutrality" becomes a global hot topic, NLP technology can automatically filter reports about "China's carbon neutrality commitment" and "green development concepts" from English media to generate teaching materials for ideological and political education. During major international events (such as the Olympics), the technology can extract English texts related to athletes' fighting spirit and national image, integrating patriotic education content. By developing a technical framework for analyzing ideological and political elements, we implement dual-dimensional labeling on preprocessed materials: ① Thematic annotations (e.g., "National Reform Achievements", "Intangible Cultural Heritage", "Technological Innovation"); ② Instructional modules (e.g., "Reading Materials", "Situational Dialogues", "Writing Samples"). Based on these labels, resources are categorized into four core domains: Listening, Speaking, Reading, and Writing. Secondary subcategories are further refined according to political themes (e.g., "Reading Materials-Technological Innovation", "Oral Dialogues-Cultural Confidence"). This dynamic resource update mechanism ensures

that English ideological education materials remain in sync with contemporary developments, thereby enhancing the relevance and effectiveness of political education.

4.3 Multimodal interactive design and implementation process for classroom teaching

Interaction serves as a vital component in the learning process, a key method for building participatory learning, and a crucial element for enhancing teaching effectiveness. Leveraging the resource-enhancing characteristics of NLP technology, we have designed interactive teaching activities: ① "Ideological Element Spotting" activity: During reading classes, students identify ideological elements in texts, with teachers providing feedback through NLP-generated "ideological element annotations"; ② "Dialogue Expansion" activity: In oral classes, students expand on NLP-generated dialogues by incorporating ideological content, such as transitioning from "China's space program" to "youth responsibility." Teachers use the teaching platform's "voice-to-text + semantic analysis" feature to provide real-time feedback on expression accuracy and ideological depth; ③ "Writing Correction" activity: After students submit essays on ideological themes, the NLP model automatically generates "language error corrections (e.g., grammar, vocabulary) + ideological content evaluations (e.g., case relevance)," enabling personalized guidance from teachers.

Taking the theme of "Love and Responsibility" in Unit 5 of the New Future Integrated Tutorial as an example, the course explores youth growth around "China's future education," presenting the concept of "homeland and family integration" to guide students in understanding the dialectical relationship between "small familial love" and "great patriotic love," and fostering the values of "educational dedication to the nation and youth responsibility." The language objectives of the text are to master core ideological and political vocabulary such as "dedicate," "responsibility," and "contribute," while enhancing oral English expression and critical writing skills. The ideological and political objectives are to deepen the understanding of patriotic sentiment and clarify the responsibilities of contemporary youth in fields such as education and public welfare.

1.Before class: Technical research to lay a solid foundation for ideological and political education and language

The teacher utilized ChatGPT to create a bilingual ideological education package for the 'Mulan Story,' with the prompt: 'Extract the ideological connotations of Hua Mulan's story (family love, national responsibility) and generate 3 discussion questions in English, paired with Chinese translations for intermediate English learners. 'The tool automatically produced: Core ideological points:' Filial piety as the foundation of patriotism '(filial piety as the foundation of patriotism) and' Youth should take responsibility for the country '(youth should shoulder family and national responsibilities); Discussion questions: How does Mulan's 'filial piety' (obeying her father) evolve into 'patriotism' (serving the country)? Students preview materials through the U Campus platform, annotate challenging vocabulary, and the system automatically identifies high-frequency difficulties (e.g., "filial piety" and "patriotism"), enabling teachers to prepare lessons accordingly. The assignment involves collecting case studies on "responsibilities of contemporary youth": students utilize the bilingual section of "Study Strong Nation" and Google Scholar to research, then use Canva AI to convert cases (such as volunteer teacher Zhang Guimei and university graduate village officials) into one-page English text-and-image cards (with auto-generated bilingual titles and key sentences), which are uploaded to the U Campus group space.

In class: Technical interaction to deepen the integration of ideological and political education and language

Phase 1: Textual Analysis — NLP Semantic Analysis for Ideological Education

Focusing on the paragraph "Education rejuvenates the country" in Text A, students employ the online BERT tool to analyze sentence semantics. For example, in the annotation "Teachers in rural areas contribute to poverty alleviation," they identify the agent ("teachers") and patient ("poverty alleviation") in "contribute to," uncovering the implicit ideological-political connotation of "education-based poverty alleviation." Working in groups, they use the U Campus annotation feature to circle expressions related to "small love" (e.g., "care for families") and "great love" (e.g., "serve the nation") in the text. The tool automatically tracks the frequency of annotations by each group, generating a "heat map of ideological-political elements," which teachers then explain in detail to highlight their connections.

Phase 2: Multimodal Practice-Visualizing Ideological and Political Expression

Implementation process:

Group Task: Form groups of 4 members to create an English multimodal work on the theme of "Contemporary Youth's' Great Love 'Practice" through any of the following formats: Group A (Text-and-Image Poster): Use Canva AI to generate an initial draft from the prompt "English poster about college students volunteering in rural education, with Chinese elements (e.g., red lanterns) and keywords: responsibility, education for all", then refine and supplement. Group B (Scenario Dialogue): Simulate a conversation between "volunteer teachers and rural students", using iFlytek Hearing to transcribe the dialogue into English, correct grammar errors, and perform role-playing. Group C (Micro-video Script): Use CapCut AI to create a storyboard for an "Education Poverty Alleviation" themed short video with English narration (the tool provides automatic subtitle generation). Presentation: Each group will showcase their work via U Campus projection, while other groups use the platform's "bullet screen interaction" feature to provide English feedback such as "Your example of volunteer teaching demonstrates profound social responsibility".

After class: Technical extension and consolidation of ideological and political practice

Personalized Writing Assignment: Students will use ChatGPT to generate an English essay outline on the theme of 'Patriotic Sentiment' (input prompt: 'Outline for an essay on' Youth Responsibility in Modern China 'with 3 arguments, combined with examples of rural educators'). After incorporating classroom case studies, students will complete a 300-word essay. The U Campus Intelligent Grading System provides dual-dimensional feedback ('Language + Ideological and Political Implication'), such as 'Your essay effectively connects personal growth with national development, but could include more specific examples of college students' contributions. 'In the' Voice of China 'section of U Campus, students

will share' Stories of Great Love Around Us' in English, with AI tools automatically translating them into Chinese for interaction between Chinese and international students, thereby deepening cultural confidence and cross-cultural expression skills.
The multimodal creative task allows students to deepen their recognition of "education revitalizes the nation" and "youth responsibility" through "telling China's stories in English", achieving resonance between language acquisition and value shaping. The cross-cultural communication segment helps students spread China's values through English, enhancing cultural confidence and international discourse power.

V. Multi-dimensional evaluation index system

Construct a three-dimensional evaluation index of "student ability + ideological and political literacy + technical application": ① Student English ability indicators (such as reading accuracy, speaking fluency, and writing grammar accuracy) are automatically calculated through NLP model analysis of student assignments and speech transcriptions; ② Student ideological and political literacy indicators (such as ethnic identity, social responsibility, and cultural confidence) are analyzed through NLP sentiment analysis and topic modeling to interpret ideological and political expressions in student essays and classroom responses (e.g., "whether the emotional tendency when mentioning 'China achievements' is positive" and "whether 'youth responsibility' can be illustrated with case studies"); ③ Technical application indicators (such as ideological and political element relevance, teaching adaptability, and student satisfaction) are assessed through NLP analysis of teacher-student evaluation texts (e.g., "the frequency of student feedback mentioning 'resource cases are close to life' " and "the proportion of teacher evaluations stating 'resources help integrate ideological and political education' ").

5.1 Language ability dimension: evaluate the accuracy of English application under the theme of ideological and political education

Language proficiency serves as the fundamental objective of college English education. By integrating listening, speaking, reading, and writing modules with classroom scenarios like text analysis and multimodal creation, the program emphasizes evaluating students 'mastery and application of English vocabulary and sentence structures related to "patriotic sentiment and social responsibility." In oral expression, focus is placed on pronunciation fluency, content completeness, and sentence complexity. Teachers' listening evaluations assess whether students can naturally use core ideological terms like "dedicate to" and "contribute to." Content completeness requires analyzing whether students can fully articulate the connection between "small love and great love" through examples like Hua Mulan's military service for her father and educator Zhang Guimei's volunteer teaching, avoiding mere recitation of materials without personal interpretation. Sentence complexity is measured by analyzing compound sentence proportions using ChatGPT's grammar tool, such as determining whether students can construct dialectical expressions like "While filial piety is important, serving the country matters more."
In text comprehension and creative writing, the focus is on ideological vocabulary recognition. This process evaluates students 'ability to accurately understand terms like "filial piety" and "patriotism" by analyzing U Campus annotation records and BERT semantic tagging results. Text logic analysis assesses students' capacity to identify causal relationships in the "Education rejuvenates the country" paragraph through classroom assignments (text logic diagrams) and teacher feedback. Multimodal writing evaluates linguistic standardization and thematic relevance: Linguistic standardization is checked via Grammarly reports and U Campus intelligent scoring systems to verify vocabulary accuracy (e.g., proper usage of "dedicate oneself to education"). Thematic relevance is determined through teacher evaluations of posters, dialogue scripts, and essays to ensure alignment with the "responsibilities of contemporary youth" theme.

5.2 Political and ideological literacy dimension: the depth of value cognition and emotional identification

Ideological and political literacy is the core objective of ideological and political education in courses. This dimension focuses on "patriotic sentiment, sense of responsibility, and cultural confidence," evaluating students 'value cognition levels by analyzing ideological and political elements in their language expression and creative works, avoiding the disconnect between "ideological education and language." At the level of understanding patriotic sentiment, evaluations are conducted from two aspects: connotation comprehension and case association. Connotation comprehension assesses whether students can accurately articulate "filial piety as the foundation of patriotism" through classroom discussions, AI-generated text transcription, and teacher analysis. For example, it examines the logic of Hua Mulan's "replacing her father in the army → serving the country," rather than simplistically equating "patriotism" with "obedience." Case association evaluates whether students can connect ancient Hua Mulan with contemporary examples like volunteer teachers and university village officials, demonstrating the "inheritance of patriotic sentiment," rather than viewing cases from different eras in isolation. At the level of sense of responsibility, attention is paid to cognitive awareness and behavioral tendencies. Cognitive awareness is assessed through keyword extraction from post-class writing (such as the frequency of terms like "volunteer teaching" and "poverty alleviation") to determine whether students can list specific responsibilities of youth in fields like education and public welfare, rather than making vague statements like "we must be responsible." Behavioral tendencies are evaluated through analysis of comments in the "Voice of China" section of U Campus, assessing whether students have the initiative to "spread China's volunteer teaching stories in English." At the level of cultural confidence, evaluate through cross-cultural communication: by combining students 'English expressions in interactions with Chinese and foreign students, determine whether it is possible to convey China's values to international audiences with "love and

responsibility" as the starting point (such as explaining the "homologous structure of family and country" concept), while respecting multiculturalism and avoiding one-sided cultural expression.

5.3 Technology application dimension: assess the proficiency and adaptability of technology tools

Technology application serves as the cornerstone of classroom empowerment. This dimension evaluates students 'ability to utilize NLP and multimodal tools for English learning and ideological expression, rather than relying solely on technology while neglecting educational objectives. For tool proficiency, assessments include classroom operation records and AI tool logs: when generating ideological materials with ChatGPT, students should accurately input prompts (e.g., "Extract ideological connotations of Hua Mulan's story") to avoid content deviations caused by vague prompts; when creating graphic posters with Canva AI, they should independently adjust templates and supplement cases instead of using default templates; when using iFlytek Hearing, they should promptly proofread and modify transcribed text. For technical adaptability, evaluations involve teacher observations and peer group assessments: in multimodal creation tasks, students should select appropriate tools (iFlytek Hearing for speech transcription, iMovie AI for video storyboarding) based on specific requirements (e.g., oral dialogues, micro-video scripts) rather than blindly using tools; during intelligent evaluation, they should autonomously correct language errors by integrating Grammarly and U Campus assessment results instead of ignoring technical feedback. In terms of efficiency enhancement, we conduct comparative analysis of learning duration and student self-assessment evaluations. For instance, we examine whether NLP tools have significantly reduced the time required for identifying ideological and political elements compared to manual analysis. We also assess whether students perceive technological tools as alleviating English expression anxiety (e.g., real-time speech transcription aids in organizing oral thinking) and improving learning efficiency. The evaluation results are categorized for intelligent optimization: ① Feedback to the "Technology" phase: If evaluations indicate "low accuracy in identifying implicit ideological elements," we optimize the training corpus for semantic role labeling models by adding annotated cases of implicit ideological content. If "grammar error detection in writing corrections shows frequent omissions," we update grammar rule libraries. ② Feedback to the "Resources" phase: If evaluations reveal "insufficient 'innovation and technology' themed resources," we supplement relevant English materials through NLP technology to generate new resources. If "advanced-level resources are too challenging," we optimize them using NLP text simplification techniques (e.g., replacing complex vocabulary, splitting long sentences). ③ Feedback to the "Teaching" phase: If evaluations indicate "insufficient ideological expansion in oral interactions," we adjust teaching activity designs by increasing the number of NLP-generated ideological expansion topics, ensuring continuous iteration and improvement of ideological education effectiveness across all teaching phases.

VI Results and Conclusion

This study takes NLP technology as the core empowerment tool, forming an effective mechanism of "resource services teaching, evaluation feedback optimization" through scenario-based resource application and multi-dimensional intelligent evaluation, addressing the industry pain points of "the disconnect between ideological and political education and teaching" and "evaluation without data support." It breaks through the dilemma of "fragmented resources, superficial integration, and vague evaluation" in traditional university English ideological and political education, providing a systematic solution for the deep integration of ideological and political education and English teaching. It achieves the precise mining of ideological and political elements in both "explicit and implicit" forms. In practice, the implementation of this approach not only enhances the effectiveness of ideological and political education in university English teaching, allowing students to subtly strengthen their national identity, social responsibility, and cultural confidence while improving their English proficiency, but also provides a reference model for interdisciplinary integrated teaching under the background of educational digital transformation. On one hand, it establishes a collaborative research framework of "computer science + linguistics + pedagogy," offering a replicable cooperation model for interdisciplinary educational research; on the other hand, its "data-driven, dynamic iteration" design logic adapts to the dynamic changes in ideological and political education needs and the rapid development of NLP technology, ensuring that teaching resources and models remain advanced and adaptable. Looking ahead, with the iteration of cross-modal NLP technology, resource construction will further upgrade to "deep personalization, real-time interaction, and cross-cultural adaptation," leveraging cross-language semantic understanding to facilitate the international dissemination of China's stories. However, it must always be clear that NLP is an auxiliary tool rather than the core objective — the fundamental task of resource construction should still return to the original aspiration of "cultivating virtue and nurturing talents", allowing technology to continuously serve the core mission of "conveying China's values in English and guiding language learning through ideological and political education", injecting lasting momentum into the high-quality development of ideological and political education in college English courses and the digital transformation of education.

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