

From Static to Dynamic: Constructing AIGC-Empowered Resource Ecosystem for Ideological Education in EFL Audio-Visual-Oral Courses — An Empirical Study of the Three-Dimensional Five-Loop Model

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Abstract

Against the backdrop of China Education Modernization 2035 and the Guidelines for Curriculum Ideology and Political Education in Higher Education, this study addresses the challenges of inefficient ideological content supply, simplistic evaluation systems, and superficial technology use in English audio-visual-oral courses. Drawing on the Content-Language Integration Learning (CLI) and Production-Oriented Approach (POA) theories, an AIGC-empowered "Three-Dimensional Five-Loop" model is constructed, integrating dynamic resource generation (e.g., AI-adapted corpora on "poverty alleviation" with 300% higher update efficiency via GPT-4.0), contextual task design and data-driven evaluation. A quasi-experiment involving 280 experimental students and 70 controls reveals significant improvements: Policy concept expression accuracy in English reached 82.7% (vs. 44.7% in controls), with cross-cultural case citation frequency increasing by 130% (5.73 vs. 2.49 times/1,000 words). Active use of Chinese policy cases in oral output rose to 65% (vs. 20%), and weekly platform engagement duration was tripled (36 vs. 12 minutes). Qualitative feedback showed 89% technology acceptance, with "cultural confidence" discourse deepened by 3.5x in reflection logs. Challenges such as content homogenization (mitigated via "AI suggestion-manual revision" tasks) and teacher digital literacy gaps (addressed through prompt design training) are discussed. The model transforms static textbooks materials into dynamic visual and audio resources ecosystems, providing a replicable framework for integrating technological innovation with ideological education in foreign language courses.

Keywords

Digital transformation; Audio-Visual-Oral English; Ideological and Political Education; AIGC; Three-Dimensional-Five-Loop Model

1. Introduction

The China Education Modernization 2035 and the Guidelines for the Construction of Ideological and Political Education in Higher Education explicitly mandate that foreign language teaching should leverage technological innovation to empower value guidance and cultivate 复合型人才 (compound talents) with "Chinese sentiments and an international vision." In the context of digital transformation, English audio-visual-oral courses, as core components for language output and cross-cultural communication, serve both as a "frontline" for spreading Chinese narratives and a potential risk zone for ideological infiltration. However, current teaching faces structural contradictions in transforming policy discourse into practice. Take the English Audio-Visual-Oral course widely offered in domestic universities' English majors as an example; three critical challenges demand technological solutions:

First, **inefficient content supply**: Teachers spend excessive time manually screening ideological and political materials, resulting in fragmented content. Textbooks contain insufficient Chinese policy-related materials, failing to meet the demand for "real-time dissemination of Chinese policy concepts" (Li et al., 2022).

Second, **oversimplified evaluation systems**: Traditional assessments focus solely on linguistic forms (e.g., grammar accuracy) while lacking quantitative measures for "depth of cultural identity."

Third, **superficial technology application**: Existing digital tools mainly function as "resource repositories" without establishing a closed loop of "generation-application-feedback." The key challenge for the digital transformation of ideological and political education in foreign language courses is thus how to convert vast off-curricular ideological and political resources into dynamic content adaptable to language skill training.

Driven by the national New Generation Artificial Intelligence Development Plan, current research is advancing rapidly, leveraging technological breakthroughs in image recognition, speech processing, and large language models (e.g., AIGC) to deepen dynamic resource supply (Su Yan, 2023; Liao Liling, 2024), precise teaching adaptation (Xie Jingxian, 2024), and human-AI collaborative innovation (Chen Jingyuan et al., 2023). AIGC has addressed the long-standing issues of static textbooks and unbalanced representation of Western culture (Liu Yuan, 2021) by intelligently generating bilingual case databases (e.g., "Belt and Road" themes) and knowledge graph-driven ideological and political resource libraries (Chen Jingyuan et al., 2023). Its empirical benefits in improving teaching efficiency (Hu Xiaoli, 2024), innovating evaluation systems (Lv Ruifeng, 2024), and enhancing cross-cultural competence (Hou Yanan, 2023) have been validated.

While international studies focus on AI ethics in education (Fütterer et al., 2023), domestic research on AI-driven ideological education in foreign languages remains fragmented, particularly in English audio-visual-oral courses—where dynamic language output and cross-cultural negotiation require real-time integration of policy

discourse. Existing models often overlook the 'language-ideology' dual objectives, lacking empirical frameworks for embedding Chinese policy concepts (e.g., 'ecological civilization') into listening-speaking tasks (Liu Xuan & Qin Ying, 2023). This study fills this gap by designing an AIGC-powered model tailored to the unique demands of oral proficiency and value guidance in such courses. Structural challenges also include value cognition inertia caused by technological dependence (Zhi Yuying, 2023), gaps in teachers' digital literacy (Zhang Yan et al., 2023), and disciplinary transfer barriers (e.g., constructing economic ethics decision trees for business English). Ethically, the dual-edged sword of ideological penetration via AI-generated content (Huang Shiwang, 2024) necessitates a "red corpus verification algorithm" (Yu Xupeng, 2024) and a dual human-AI review mechanism.

This study builds on the Content-Language Integration Learning (CLI) theory (Chang Junyue, 2019), emphasizing "dual-track integration" of language skills and ideological content to avoid the fragmentation of "forced ideological integration." Drawing on the Production-Oriented Approach (POA) (Wen Qiufang, 2021), it constructs a closed-loop teaching model of "drive-facilitate-evaluate" to transform language input into value output. Innovations lie in two areas: 1) the integration of AIGC technology with ideological and political education in English courses; 2) the development of AI-assisted innovative evaluation indicators for ideological and political literacy. The study addresses two core questions:

- (1) How can AIGC technology construct a teaching closed loop of "intelligent adaptation of authoritative corpora-contextual design of cross-cultural tasks-data-driven evaluation of learning outcomes"?
- (2) What is the specific impact mechanism of this model on students' "linguistic accuracy" and "internalization of ideological and political values"?

2. Construction of the "Three-Dimensional Five-Loop" Teaching Model for Audio-Visual-Oral English Courses

The AIGC-empowered teaching model for ideological and political education in English audio-visual-oral courses centers on technological enablement, structured around three dimensions—technology support, teaching implementation, and quality assurance—to achieve intelligent generation and precise adaptation of ideological and political resources. Aligned with five core objectives—"community consciousness, patriotism, cultural literacy, moral cultivation, and professional competence"—it designs a closed loop of "pre-class & pre-learning & in-class interaction-post-class creation" to implicitly integrate ideological and political elements, forming a synergistic education system of "dynamic content generation, task-driven contextualized design, and data-quantified outcomes."

2.1 Model Framework: Dynamic Resource Ecosystem of Technology Support

Data Layer: Constructs a multi-modal database integrating authoritative ideological and political corpora and school-based resources, including audio clips from Governance of China (English version), videos from the "Learning Power" platform and AIGC-generated videos on themes like "poverty alleviation heroes." Student-generated materials (e.g., English recordings of hometown intangible cultural heritage) form a "teaching-generation-feedback" loop.

Algorithm Layer: Utilizes GPT-4.0 API with a fine-tuned Chinese policy corpus to generate level-appropriate listening materials (BLEU score ≥ 65 for translation tasks), while deepseek-R1 optimizes question generation for cross-cultural scenarios. The 'cross-cultural negotiation decency scorecard' quantifies linguistic appropriateness (e.g., 'mutual benefit' usage accuracy) and cultural sensitivity (e.g., tone detection via sentiment analysis API), providing real-time feedback with F1-score ≥ 0.82 .

Application Layer: Develops a teaching resource platform with four functions: subtitle generation for sentence-level analysis, collaborative filtering-based resource recommendation, automated generation of self-assessment quizzes for language skills, and quantitative tools like "cross-cultural negotiation decency scorecards."

2.2 Implementation Path: Five-Dimensional Ideological Integration and Three-Stage Closed Loop

Pre-Class Stratified Pre-Learning: AIGC pushes multimodal resources to activate background knowledge, such as English speeches on "a community with a shared future for mankind" paired with AI-generated keyword indexes (e.g., "community with a shared future"). Comparative videos on "Spring Festival temple fairs" and "Christmas traditions" use AI to annotate culture-loaded terms (e.g., "Spring Festival couplets") for cross-cultural cognition.

In-Class Deep Interaction: For tasks like "environmental cooperation negotiations in multinational enterprises," students use AIGC-generated negotiation scripts (incorporating terms like "green development" and "carbon neutrality"), with AI analyzing dialogue texts in real time to flag grammatical errors (e.g., misuse of "mutual benefit") and cultural conflicts (e.g., overly aggressive tone). Weekly group discussions (≥ 3 times) ensure thorough exchange of ideological topics.

Post-Class Creative Drive: Assignments like "international communication of hometown culture" English vlogs use AI to detect keyword density (e.g., "intangible cultural heritage" ≥ 3 times per 1,000 words) and push "cultural core guidance templates" for superficial descriptions. A "three-dimensional evaluation model" (process-outcome-development) analyzes ideological content coverage and linguistic accuracy via AI.

2.3 Guarantee Mechanism: Ethical Security and Teacher Empowerment

Dual-Track Review System: Pre-sets 56 keyword indexes (e.g., "community con-

sciousness," "patriotism") for automated content filtering, supplemented by weekly manual audits (20% of generated materials) to ensure compliance.

Data Security: Anonymized student audio/video data is stored locally to mitigate leakage risks.

Teacher Training: Shared prompt templates and digital literacy workshops reduce technical barriers and design time for ideological integration.

3. Empirical Research: Validation of Model Effectiveness

3.1 Research Design

Using a quasi-experimental design and mixed methods, the study sampled first-year English and translation majors at a Zhejiang applied university: experimental group (n=280) (3 classes of 2023 translation majors and 6 classes of 2024 translation/English majors, using the "AIGC + ideological and political teaching" model); Control group (n=70, 58% female) received traditional teaching using textbook-integrated ideological units, where teachers manually selected 5 – 8 ideological education-related cases per semester without AI assistance. Both groups had comparable pre-test scores in listening ($t=0.87$, $p=0.38$) and speaking ($t=1.02$, $p=0.31$), with similar prior exposure to cross-cultural communication courses. Groups were balanced by entry-level language scores. The study spanned September 2023 – December 2024, with Phase 1 testing platform functions on 100 translation students and Phase 2 collecting full-cycle (16-week) data from 280 students.

Tools included:

- (1) Quantitative measures: Ideological comprehension questionnaires (Cronbach's $\alpha=0.87$, measuring English accuracy of concepts like "common prosperity"), platform logs (weekly login duration, subtitle usage, task completion), and speech corpora (BERT model analyzing density of ideological terms like "Belt and Road").
- (2) Qualitative measures: NVivo-coded reflection logs (Kappa=0.82, focusing on "cultural identity" and "technology acceptance") and semi-structured teacher interviews (5 project members on AIGC usability and ideological integration challenges).

3.2 Data Comparison and Qualitative Analysis

Quantitative results showed significant improvements in the experimental group:

- Ideological comprehension: English expression accuracy of policy concepts reached 82.7% (vs. 44.7% in controls, $\chi^2=38.72$, $p<0.001$).
- Cross-cultural case citation: Density of terms like "rural revitalization" increased by 130% (5.73 vs. 2.49 times/1,000 words, $t=12.34$, $p<0.001$).
- Linguistic accuracy: Rose to 89% (vs. 73%, $t=5.67$, $p<0.05$).
- Platform engagement: Weekly usage duration was 3x higher (36 vs. 12 minutes), with 61.2% accurate resource recommendations.

In a textbook case study (Unit 6 "Lending a Hand"), AI-generated materials on "Chi-

nese poverty alleviation experiences" improved detail capture (78% vs. 42%) and policy term recognition (+45%) in the experimental group. Oral output showed 65% of experimental students actively cited Chinese policy cases (vs. 20% in controls). Qualitative feedback revealed 89% technology acceptance, with students noting "AIGC-generated dialogues are more realistic than textbook cases." NVivo analysis showed "cultural confidence" and "critical thinking" themes appeared 3.5x more in experimental logs. Teachers reported 60% time savings in material development and tripled update frequency.

Limitations included initial homogenization of AI-generated content (addressed via "manual revision comparison" tasks, increasing deep thinking from 32% to 60%).

4. Findings and Analysis

4.1 Core Findings

Technological empowerment of dynamic resources: AIGC increased Chinese-themed materials from <15% to 45% in textbooks, with resource update efficiency tripling, resolving structural issues of static and narrow content.

Deepened educational integration: The "Three-Dimensional Five-Loop" model enhanced cross-cultural case application through contextual tasks, with most students affirming the authenticity of AI-generated materials.

Data-driven evaluation: The AI-powered "generation-application-evaluation" loop expanded assessments from linguistic forms to "depth of cultural identity," validated by keyword density analysis.

4.2 Challenges and Optimization Recommendations

Homogenization vs. critical thinking: Despite the "AI suggestion-manual revision-reflection log" mechanism improving deep thinking to 67%, balancing technological efficiency with cognitive depth requires long-term exploration. Future research may integrate speech emotion analysis (e.g., Google Speech Emotion Recognition API) to evaluate "linguistic accuracy-emotional engagement-value identification" via intonation changes during patriotic discourse.

Teachers' prompt design skills: A 40% instruction deviation rate highlights urgent needs for digital transformation. A visualized prompt template ("theme-language difficulty-ideological dimension") and "AI material re-creation guidelines" could reduce barriers and promote critical use of AI outputs.

5. Summary and Outlook

This study constructs and empirically validates an AIGC-empowered "three-dimensional five-loop" model for ideological and political education in English audio-visual-oral courses, demonstrating its effectiveness in dynamic resource supply, precise teaching adaptation, and data-driven evaluation. It transforms "static

textbooks" into "dynamic resource ecosystems" and "vague education" into "traceable data." However, challenges remain in technological dependency, teachers' digital literacy gaps, and equity of model adoption. The model's technology-ideology integration framework offers transferable insights for business English (e.g., embedding 'Belt and Road' negotiation cases with AI-generated ethical dilemma scenarios) and minority languages (e.g., digitizing regional cultural policies via AIGC). Future studies should include longitudinal tracking (e.g., 3 to 4 year follow-ups on ideological internalization and develop AI-generated content risk assessment protocols (e.g., combining speech emotion analysis with keyword density) to ensure sustainable value guidance in AIGC-enabled education."

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