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# Exploration of the POA + 5E Model in English Teaching for Art Postgraduates Empowered by AI*

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With the rapid advancement of Artificial Intelligence (AI) technologies, addressing persistent challenges within traditional English instruction for postgraduate students has become imperative. Responding to these pedagogical shortcomings, this study integrates AI tools into an instructional framework that synergizes the Production-Oriented Approach (POA) with the 5E instructional model (Engage, Explore, Explain, Elaborate, Evaluate). Grounded in the principles of student-centered and leveraging the guiding role of instructors, this hybrid model facilitates active knowledge construction among learners. Consequently, it establishes an intelligent, output-driven, and discipline-integrated teaching loop designed to enhance students' intrinsic motivation for English learning and improve their proficiency in Academic English communication.

*Keywords:* Artificial Intelligence empowerment, Production-Oriented Approach (POA), 5E instructional model

## Introduction

With the acceleration of globalization and advances in Artificial Intelligence (AI), art universities—key institutions for cultivating high-level artistic talent—face growing demands to preserve local culture, drive disciplinary innovation, foster global competence, and engage in international academic and industrial exchange. Yet, AI-integrated teaching models remain underdeveloped in most art universities, and assessment systems are often overly simplistic. Thus, innovating teaching frameworks that leverage AI while incorporating discipline-specific features has become an urgent priority.

The Production-Oriented Approach (POA), a China-originated foreign language teaching theory, has proven effective in enhancing learners' motivation and language output (Chang, 2017). Its application across diverse disciplines and learner levels, especially at the postgraduate stage, continues to evolve. Meanwhile, the 5E instructional model (Engage, Explore, Explain, Elaborate, Evaluate), widely used in basic and general English education, requires further empirical investigation at the postgraduate level—particularly regarding its capacity to stimulate interest through problem-based scenarios, promote autonomous knowledge construction, deepen

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understanding via application and reflection (N. G. Lederman & J. S. Lederman, 2014), and develop higher-order thinking through inquiry and collaboration (D. W. Sunal, C. S. Sunal, & Haas, 1994). Moreover, there remains a need to examine how AI can be integrated to support generative inquiry learning (Fu, 2024) and to interface effectively with established pedagogical theories such as POA. Accordingly, this study aims to construct an AI-empowered 5E (Engage, Explore, Explain, Elaborate, Evaluate) instructional model guided by POA, and to explore innovative approaches to English teaching for postgraduate students in art universities.

## Rationale for the AI-Empowered POA + 5E Integration

The POA and 5E instructional models share strong philosophical and design complementarities. POA, driven by "production tasks" (Wen, 2015), revolves around the "Motivating—Enabling—Assessing" cycle, with a core aim to enable language production. The 5E model complements this by stimulating cognitive conflict and guiding active knowledge construction through exploration (Bybee et al., 2006), thereby enriching POA's enabling stage.

AI-powered integration facilitates three key advancements. First, through personalized empowerment (Zhang, Wang, Yuan, & Wang, 2021; Hong & Qiao, 2024), AI enables "precise enabling" via differentiated exploration. Unlike traditional classrooms, AI assists teachers in designing authentic, cognitively challenging tasks informed by prior knowledge analysis, enhancing motivation. During enabling/exploration-explanation, AI delivers real-time diagnostics and tailored resources, scaffolding individualized learning. Second, contextual empowerment (Wang, Zhu, Yang, & Zhang, 2024) fosters "immersive motivation" and "authentic exploration". Using VR simulations and interest-aligned materials, AI diversifies production tasks and narrows the gap between classroom learning and real-world language use. And third, data-driven empowerment enables "evidence-based assessment" and process optimization. Multimodal data collected throughout POA and 5E phases—covering behavioral patterns, discussion input, and linguistic complexity—feed into a learning analytics dashboard (Hong, 2018). This supports dynamic instructional adjustments and promotes closed-loop, sustainable refinement of teaching practices.

## AI-Empowered Integrated POA + 5E Teaching Practice

This study presents a case of instructional design for Unit 2 ("Beautiful China") in *Understanding Contemporary China*, delivered by a doctoral-qualified English professor with 33 years of experience. Focusing on 29 non-English-major doctoral students in an art university, the practice integrates institutional characteristics with AI technologies under the Production-Oriented Approach (POA) and adopts the 5E model (Engage, Explore, Explain, Elaborate, Evaluate). Guided by POA, it aims to enhance students' English linguistic proficiency, language application skills, critical thinking, and overall academic competence.

Adopting a student-centered yet teacher-guided approach, the course leverages AI to clarify its positioning. The integrated 5E model operates as follows: Engage stimulates interest and introduces the theme via learning platforms; Explore facilitates autonomous learning through human-computer interaction and mind maps for text structure analysis; Explain emphasizes standardized terminology to ensure accurate comprehension of ecological civilization and sustainable fashion development; Elaborate extends learning by integrating environmental concepts into students' majors (e.g., fashion design); Evaluate employs multi-dimensional assessment (online/offline participation, group discussions, fashion design projects, and academic writing).

The practice spans pre-class, in-class, and post-class stages, with cross-application of the 5E components: Engage captures attention via pre-class brainstorming on China's pollution control measures (theme:

environmental protection); Explore supports sustained inquiry through autonomous learning (e.g., watching the teacher's recorded MOOC Painting an Ecological Picture and Building a Green Future—China's Ecological Civilization from the "Two Mountains" Theory and interactive exercises (e.g., text shadowing, vocabulary galaxy maps for contextualized memorization, key sentence analysis, and specialized training in vocabulary, grammar, reading, and writing; see Figure 1).

Through pre-class, in-class, and post-class design, coupled with 5E integration (e.g., cross-contextual Engage, continuous Explore, thematic Elaborate, interactive Explain, and multi-agent Evaluate), the study demonstrates how POA's scientific rigor and practicality are realized in AI-enhanced postgraduate English teaching.




*Figure 1.* AI-empowered autonomous learning for students.

Students engage in reflective inquiry to deepen Elaborate learning through three guided questions:

(1) How does the "Two Mountains" theory challenge conventional economic views, with Anji and Bijie illustrating its practical application?

(2) What implications does the author draw about the link between personal growth and societal change?

(3) Reflecting on the unity of humans and nature ("Heaven and earth coexist with me, all things and I are one"), how would you characterize the human-clothing relationship and justify your view?

Classroom instruction begins with AI-generated mind maps to assess students' grasp of the text's logical structure and writing style. Instructors evaluate comprehension of ecological civilization terminology (English recall), parallel/conditional sentence translation, rhetorical devices (metaphor/personification), and culture-loaded word translation strategies, while emphasizing coherence techniques to strengthen intercultural language output.

Concurrently, AI empowers Elaborate by fostering critical thinking on global pathways to harmonize clothing heritage/innovation with environmental sustainability. Students, utilizing AI tools (e.g., Kimi, ChatGPT), discuss and present solutions—from material selection to design innovation—for minimizing pollution. These activities align with the 5E model, integrating knowledge activation (Engage), inquiry-based exploration

(Explore), collaborative exchange (Explain), competency development (Elaborate), and diversified assessment (Evaluate).

Post-class practice, as an extension of instruction, critically reflects teaching efficacy and aligns with students' professional development. Grounded in affective design theory, the instructor prompts students to creatively redesign discarded denim items—such as jeans transformed into skirts, bags, cushions, or accessories—through cutting, patchwork, embroidery, or fabric painting. These activities foster enjoyment while reinforcing environmental consciousness. As students progress from basic alterations to intricate redesigns, they internalize textual concepts and engage in a cyclical process of learning, practicing, and reflecting. This experiential phase strengthens linguistic mastery, broadens academic horizons, and cultivates proactive commitment to sustainability, embodying the unity of clothing and self.

To deepen this connection, the instructor shares firsthand insights from her translation research on Sustainable Design: A Subversive Strategy for Transforming Our Consumer Culture. Excerpts from her correspondence with the author of *Sustainable Fashion Design* illustrate authentic scholarly engagement, bridging the gap between educator and learner. These communications reveal practical pathways for integrating professional expertise with global sustainability discourse in fashion. Inspired by this mentor ship, students collaborate on sustainable design projects, embedding environmental awareness into English language acquisition. This synthesis exemplifies how graduate English instruction can organically unify competency development with disciplinary knowledge.

## Results and Conclusion

This study constructs an AI-empowered, production-oriented, and discipline-integrated teaching closed-loop model by integrating AI with the Production-Oriented Approach (POA) and the 5E instructional model. The three-phase POA framework (Motivating, Enabling, Assessing) aligns with the 5E model's progressive cognitive logic. In the Engage/Motivating stage, discipline-relevant authentic problems trigger cognitive conflict, stimulating intrinsic motivation. The Explore/Enabling stage uses AI to provide personalized resources and precise input, improving language proficiency alongside subject-based problem-solving. The Explain—Elaborate—Evaluate stages facilitate the transition from knowledge comprehension to flexible application, achieving the integration of learning and practice.

As an auxiliary tool, AI enhances instructional precision in resource provision, learning behavior tracking, automated assessment, and textual analysis. Students exhibit significantly increased English learning motivation, with marked improvements in the logicality, terminological accuracy, and interactivity of their academic oral expression. Vocabulary accumulation and syntactic proficiency have notably advanced, enabling students to write academic papers and participate in international conferences. By course completion, 62% had received revise-and-resubmit or acceptance notices from international journals. Open-ended critical-thinking discussions and AI-empowered collaborative analysis further strengthened academic reasoning, oral/written communication, and reciprocal benefits for both students and instructors.

Concurrently, students integrate disciplinary expertise with sustainability principles during English learning. Through "apparel innovation design", they blend cultural contexts and global trends to produce innovative works and publish English academic papers. These outcomes validate the model's efficacy and offer theoretical, practical, curricular, and new insights for graduate English education.

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