

AI-Empowered Textbook Use Under the Production-Oriented Approach: A Case Study of Literature-Major Freshmen in College EFL Classrooms

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Abstract

Against the backdrop of college EFL reform, the Production-Oriented Approach (POA) highlights that textbook resources ought to serve concrete productive learning assignments. In real-world teaching, nevertheless, instructors adopting POA-aligned teaching materials frequently run into practical hurdles when translating theories into daily lessons. Although generative artificial intelligence (GAI) opens new possibilities for optimising how teachers utilise textbooks, most existing publications remain at theoretical discussion level, lacking fine-grained evidence obtained from real-classroom interventions. This intrinsic qualitative case study draws on one teaching unit *A new journey in life* from *iEnglish Comprehensive Course 1 (Basic Volume 1)*. Thirty-five freshmen majoring in Chinese Language and Literature from a local undergraduate institute participated in this instructional practice. Centred on practical production goals and real-life student learning demands, the present paper explores how GAI can assist teachers to redeploy textbook resources within the POA instructional cycle. Based on six-hour classroom practice, three concrete operational routines are summarised to resolve typical textbook-application difficulties: locating instructional priorities through backward-oriented analysis, promoting deep engagement with textbook texts via multimodal resources, and building just-in-time scaffolding for unexpected learning deficits revealed by student outputs. This study delivers hands-on suggestions for human-AI co-adaptation of teaching materials in university English teaching contexts.

Keywords

Generative artificial intelligence; Production-Oriented Approach (POA); textbook utilisation; AI-assisted teaching; human-AI cooperation.

1. Introduction

Textbooks constitute the main tangible input source for university English courses. Under the POA framework, textbooks are no longer scripts for teachers to recite word-for-word. Instead, they act as a material bank supporting students' task-driven output activities. Developed to mitigate the "learn-practice separation" phenomenon in domestic EFL education, POA puts forward two key standpoints for material handling: production-goal primacy and material-for-production principle (Wen, 2017). From this perspective, teachers are expected to pick, revise and add textbook content according to assigned output tasks, rather than covering every textbook segment mechanically.

Still, ordinary college-English instructors often struggle to finish such tailored material adjustment amid limited class time, which brings about three recurrent practical obstacles during POA lesson delivery. Even though generative models provide new technical options for textbook processing, few studies report complete unit-long classroom trials. For the above reasons, this case-oriented research carries out classroom intervention and data collection,

aiming to figure out feasible ways of applying GAI to POA-based textbook handling and offer practical references for front-line college-English educators.

Research questions: (RQ1) What practical obstacles do university English teachers meet when implementing POA-oriented textbooks in authentic class settings? (RQ2) Within POA's "driving-enabling-evaluating" lesson sequence, what usable instructional routines can generative AI support to ease those textbook-using obstacles? (RQ3) What core principles should EFL instructors observe to realise effective human-AI joint utilisation of POA-oriented textbooks?

2. Theoretical Background

2.1. Functions of EFL textbooks in POA-style lessons

English textbooks supply theme-related contents, linguistic samples and pre-organized learning activities for EFL instruction (McDonough et al., 2013). In this study's target unit *A new journey in life*, reading passages describe freshmen's setbacks and psychological adjustment after entering university. These texts offer rich content foundations for the core assignment: composing a reflective personal letter. Apart from thematic materials, the textbook provides target vocabulary, sentence patterns and task guidelines for letter-writing practice, and also fosters students' self-reflection on personal growth.

Even so, printed textbooks are static printed products. They cannot automatically single out teaching points for certain output assignments, nor can they generate diversified learning formats or instant supplementary materials for unforeseen learner weaknesses in class (Guerrettaz et al., 2021). Consequently, textbooks function as raw-material libraries instead of ready-to-use lesson plans. Instructors need to modify them through adding, deleting, revising and re-organising content to satisfy dynamic classroom requirements.

2.2. Core ideas of the Production-Oriented Approach

POA represents a pedagogical framework instead of a textbook series; it specifies how educators may exploit teaching materials to facilitate productive language learning (Wen, 2016). Its well-known "driving-enabling-evaluating" cycle advocates selective learning. In the driving phase, learners attempt the output task so that their content-related, linguistic and genre-relevant weak points become visible. During the enabling stage, students extract usable ideas, lexical chunks and discourse structures from textbook passages rather than memorising full texts. The evaluating phase adopts teacher-student joint assessment to polish learner productions.

POA sets normative standards for textbook adaptation, yet theoretical guidelines cannot remove real-classroom difficulties. As previous research has pointed out, teachers frequently face three prominent difficulties: identifying appropriate enabling priorities from static texts, fostering deep text processing for input-output transformation, and supplying timely scaffolding for emerging student learning gaps (Zhang, 2025). Such practical gaps create room for generative AI to support teacher-led textbook implementation.

2.3. Complementary relations between textbooks, POA and generative AI

To put it briefly, POA works as the pedagogical orientation: it defines output-centred goals and guides instructors to reorganise textbook resources. Textbooks serve as the raw-material pool that provides thematic and linguistic input for output-focused learning. Without POA's guidance, teachers may fall into the trap of lecturing every textbook paragraph word-by-word. Without reliable textbook resources, POA-style teaching will lack solid input foundations. Manual-only textbook modification consumes considerable working hours and may be influenced by instructors' personal bias. Generative AI has the capacity to assist teachers to

follow POA principles, narrowing the gap between theoretical expectations and real-classroom conditions (Wen & Liang, 2024).

3. Methodology

3.1. Research design

This work adopts intrinsic qualitative case-study methodology (Yin, 2018). One complete college-English teaching unit was selected as the research site, to observe how generative AI assisted POA-oriented textbook handling in a real university class. Case-study methods fit this research purpose, because the boundary between teaching phenomena and class context cannot be easily separated. This design prioritises in-depth description of on-site teaching challenges and AI-supported instructional operations, instead of broad-scale population generalisation.

3.2. Research context and participants

The investigation took place at a private undergraduate university in Northeast China. Participants included 35 first-year Chinese-Language-and-Literature majors (26 female, 9 male). These students demonstrated solid Chinese text-analysis competence, while their general English proficiency was roughly at CEFR B1- level. Many participants reported struggles in practical L2 writing tasks, especially producing semi-formal reflective personal letters in English.

Teaching material was Unit 1 *A new journey in life* from *iEnglish Comprehensive Course 1 (Basic Volume 1)*, the officially-adopted textbook for this university's college-English curriculum. Students were required to finish a reflective-letter assignment: describing real-life difficulties in university and sharing personal academic and psychological adjustment strategies. The whole unit followed the POA “driving-enabling-evaluating” workflow and consumed six 45-minute class periods. The researcher acted as course instructor and carried out human-AI collaborative textbook adjustment throughout lessons.

3.3. Teaching intervention and AI resources

Three categories of generative-AI resources were utilised for textbook-related instructional support: a bilingual large-language-model platform for text generation and analysis, an AI image-generation tool, and an AI audio-generation tool. Under POA guidance, AI resources were deployed in three key instructional links:

Backward-oriented identification of enabling priorities: The large-language model produced sample reflective letters matching the unit assignment. By comparing AI-produced samples with textbook reading sections, the researcher sorted out theme-related lexical chunks, sentence patterns and discourse norms as teaching focuses, lowering subjectivity in selecting textbook content. Considering literature majors' strength in reading comprehension but weakness in L2 output, special attention was paid to letter-writing pragmatic rules and expressive word groups.

Multimodal support for text processing: AI generated simplified explanatory paragraphs, short illustrative stories, matching images and audio clips. These materials helped students interpret textbook content and build explicit logical links between reading input and letter-writing output. Multimodal aids were intended to ease foreign-language writing anxiety for students accustomed to Chinese-medium literary analysis.

On-demand scaffolding generation: When unexpected learner deficits appeared during class (such as monotonous sentence patterns, improper letter-writing tone, insufficient supporting details), generative AI created supplementary model paragraphs and focused practice exercises to compensate for static-textbook shortages.

All AI-generated content went through strict manual review, revision and filtering by the course teacher before being delivered to students, so as to eliminate factual mistakes, cultural bias and logical defects.

3.4. Data collection

Multiple data sources were collected for triangulation to enhance research trustworthiness: Classroom field notes and lesson records covering all six periods, documenting teacher-student interaction and concrete steps of AI-aided textbook adaptation.

Post-unit open-ended questionnaires distributed to all 35 participants, collecting their perceptions towards textbook content, AI-supported learning activities and self-reported difficulties for the reflective-letter assignment.

Two semi-structured focus-group interviews with eight students of varied writing performance. Interviews explored their real learning experiences as well as perceived strengths and downsides of AI-assisted textbook-based learning. Each interview lasted approximately 30 minutes; audio recording was performed after receiving participants' informed consent.

All 35 students' final reflective-letter manuscripts, treated as tangible evidence of assignment performance. Teaching-resource archive, including original AI prompts, unpolished AI outputs, and teacher-revised instructional materials.

Every participant was informed about research purposes; personal anonymity was guaranteed, and participants possessed the right to withdraw from data collection at any moment.

3.5. Data analysis

Interview audio files were fully transcribed into written texts. This study adopted the six-phase thematic-analysis workflow proposed by Braun & Clarke (2006) to conduct iterative qualitative coding. The researcher repeatedly read field notes, questionnaire feedback and interview transcripts to get familiar with raw information. Initial open codes were created and relevant text fragments were labelled. Afterwards, codes were grouped into candidate themes corresponding to three textbook-use challenges under POA, AI-supported teaching operations, student learning experiences, and practical dilemmas of human-AI cooperation. Themes were repeatedly refined, checked and defined against the full dataset. Student letter manuscripts were examined to identify common output-related weak points and observable learning improvements linked to AI-supported textbook-handling activities. Cross-source triangulation was applied to validate analytical outcomes.

4. Findings

4.1. Backward-oriented identification of enabling priorities: reducing subjectivity in textbook-content selection

Within POA-oriented teaching, one major difficulty lies in picking appropriate instructional priorities out of static textbook passages. In this class, literature-major students could well grasp thematic connotations of reading texts, yet they tended to ignore lexical chunks and pragmatic rules that could be reused for English letter-writing. Without auxiliary tools, the teacher might arbitrarily select language knowledge points from textbook chapters.

Through the backward-oriented workflow, generative AI first produced several sample reflective letters for this unit's assignment. The researcher cross-checked these samples against Unit 1 textbook passages and sorted two sets of enabling priorities: lexical chunks for depicting university-life hardships and self-adjustment; pragmatic and discourse conventions for personal reflective letters, including greeting forms, tone shifts and paragraph-closing structures. These priorities became targets for students' selective learning, rather than requiring full-text memorisation.

Field records indicated that this workflow prevented over-teaching reading-comprehension knowledge irrelevant to letter-writing. Questionnaire statistics showed that 73 % of respondents gained clearer awareness about which linguistic resources they needed to extract from textbook texts. One interviewee commented: “Previously I only read articles for story plots. Now I understand which expressions I may borrow and apply to my own letter.” Student letter manuscripts further proved that participants consciously adopted target word groups identified via this AI-aided procedure.

4.2. Multimodal-supported deep textbook processing: constructing input-output connections

The second textbook-using difficulty is promoting deep-level text processing, helping learners transform reading input into usable output resources. Though these literature-major participants possessed solid Chinese-text-analysis capabilities, quite a few could not build natural links between textbook reading materials and letter-writing assignments. Some students reported that textbook paragraphs felt distant from their real-writing demands.

Based on original textbook content, the teacher created a series of multimodal learning resources with generative AI: simplified rephrased segments, short student-oriented adaptive-life stories, matched pictures and audio clips. In class, learners took part in group discussions, picture-story matching and sentence-paraphrasing tasks. These multimodal products functioned as cognitive bridges connecting textbook reading materials and the letter-writing output task.

Interview feedback suggested that multimodal resources mitigated L2-writing anxiety among literature-major students who were used to Chinese-language text analysis. Instead of merely interpreting textbook content intellectually, learners were guided to reorganise unit-related ideas to fit reflective-letter genre features. Student-script analysis revealed that more concrete personal examples appeared in their letters after these multimodal activities.

Nevertheless, observable drawbacks also emerged. A small subset of learners relied excessively on AI-simplified texts and skipped careful reading of original textbook articles. Hence, repeated teacher reminders were necessary to keep the official textbook as the primary information source.

4.3. AI-produced just-in-time scaffolding: addressing unforeseen output-related gaps uncovered by static textbooks

Static printed textbooks cannot satisfy context-specific learning deficits emerging during real-time class activities. Two prominent output-related weaknesses showed up in this class’s driving phase. First, the pragmatic gap: many students composed letters with stiff essay-style academic tone and failed to adopt the semi-informal reflective tone suitable for writing to a teacher. Second, the expressive gap: students could list facts about university adaptation, but their sentences remained repetitive and plain, lacking diversified phrases for describing inner emotional experiences.

Since the official textbook offered no targeted practice for these two weaknesses, the teacher leveraged generative AI to make supplementary scaffolding materials. Contrast sample paragraphs were generated to illustrate inappropriate essay-style writing versus proper semi-informal letter writing. Phrase banks for depicting confusion, frustration and gradual self-growth were compiled, together with fill-in-blank and sentence-rewriting exercises. Such materials were distributed after students finished their first-draft attempts.

Revised student letters displayed visible progress in pragmatic tone and sentence richness. Several questionnaire participants pointed out that these AI-assisted exercises filled gaps which the textbook alone could not cover. Even so, some AI-drafted paragraphs carried overly

western communicative habits. All scaffolding materials therefore required manual teacher revision before classroom usage.

5. Discussion

5.1. Answering research questions

Consistent with Zhang (2025), this case study verified three major textbook-using obstacles under the POA framework. For Chinese-literature-major freshmen in this university, those challenges showed disciplinary traits. Although participants demonstrated strong Chinese-text-interpretation competence, they lacked awareness to transfer textbook linguistic and pragmatic knowledge into English output tasks. In-class observations confirmed that static textbooks plus manual lesson-preparation alone cannot fully realise POA's theoretical propositions of production-goal primacy and material-for-production (Wen, 2017).

Three practical GAI-supported instructional routines were validated in this real-class setting: backward-oriented identification of teaching priorities, multimodal-resource-driven deep textbook processing, and on-demand scaffolding for unexpected learning deficits. Generative AI functioned as instructional assistance instead of textbook replacement; original textbook passages remained the main source of thematic and linguistic input. This point matters especially for literature-major learners, who tend to focus on thematic meaning while overlooking second-language linguistic details.

This classroom practice validated the two guiding orientations and two balancing principles summarised by Zhang (2025) within literature-major EFL context. First, GAI-assisted textbook adjustment should stick to dual orientations: production-related goals and actual student learning demands. In this unit, every AI-supported operation served the reflective-letter assignment and aimed at solving literature-major students' specific weaknesses (insufficient pragmatic awareness, monotonous sentence expressions). Without such anchors, AI-generated resources would become disconnected from real teaching purposes. Second, two balances should be maintained:

Balance between textbook authority and AI-generated supplementary materials. The phenomenon that a small number of students skipped original-textbook reading after accessing simplified AI resources reminds instructors to guard against over-dependence on AI outputs.

Balance between teacher's instructional agency and generative-AI capacities. AI outputs may contain culturally biased expressions and must be strictly reviewed manually. Teachers occupy the core position in judging teaching priorities, screening AI-generated materials and diagnosing student learning gaps (Wen & Liang, 2024). High-quality human-AI cooperation depends on teachers' professional pedagogical judgements, rather than blind trust towards large-model outputs.

5.2. Pedagogical implications

Several practical suggestions can be drawn for college-English instructors teaching literature-major undergraduates. First, for learners equipped with strong native-language text-interpretation competence yet weak L2 output capacity, teachers may adopt the backward-oriented AI-assisted workflow to set teaching priorities, guiding students to shift from "understanding text meaning" to "mining output-usable linguistic resources from textbooks". Second, multimodal AI-produced resources can ease foreign-language-learning anxiety for arts-background students. Even so, teachers need to set clear requirements to guarantee learners engage with original textbook texts, instead of merely reading simplified AI substitutes. Third, college-English educators ought to develop human-AI negotiation competence: mastering practical prompting skills, critically assessing AI-generated output, and revising improper expressions before applying materials in class.

5.3. Limitations

Several limitations should be acknowledged. This is a single-unit intrinsic case study, covering only 35 literature-major freshmen from one local university. Findings cannot be widely generalised to other majors, different English-proficiency groups or other textbook units. Only short-term within-unit learning performance was measured; long-term impacts of AI-assisted textbook utilisation on learners' sustained second-language output competence remain unknown. Besides, this research mainly collected questionnaire, interview and written-work data; students' self-directed out-of-class AI usage was not systematically tracked.

5.4. Suggestions for further research

Future research can expand investigation in multiple directions. Researchers may recruit participants from diverse majors and proficiency strata, testing the transferability of these AI-supported textbook-using routines. Longitudinal research can explore the sustained effects of human-AI collaborative POA textbook implementation across one semester or one academic year. Additionally, follow-up studies may explore students' voluntary out-of-class generative-AI learning behaviours and teachers' prompting-strategy development for textbook-adaptation purposes.

6. Conclusion

This qualitative case study explored GAI-supported POA-oriented textbook utilisation among Chinese-literature-major freshmen. Three workable classroom routines were summarised to cope with three well-known textbook-using obstacles: backward-oriented identification of instructional priorities, multimodal-driven deep textbook processing, and on-demand scaffolding for unexpected output-related deficits. To realise effective human-AI collaborative textbook handling, instructors need to follow dual orientations (production goals and real-student-learning demands) and keep two key balances: between textbook authority and AI-generated auxiliary materials, and between teacher instructional agency and generative-AI technical affordances. Generative AI acts as a powerful auxiliary tool rather than replacement for textbooks or educators. Given single-case-study constraints, more cross-group and longitudinal empirical investigations are required to verify and extend relevant conclusions within EFL research.

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