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## AI-EMPOWERED PRODUCTION-ORIENTED APPROACH AND FIVE-STAGE INSTRUCTIONAL MODEL IN HIGHER VOCATIONAL ENGLISH: A CASE STUDY OF UNIT 3 “PROFESSIONALISM”

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**Abstract:** With the rapid development of artificial intelligence, its integration into English language teaching has become an inevitable trend. Wen (2015) proposed the Production-Oriented Approach as a pedagogical theory rooted in the Chinese context. The theory effectively tackles the long-standing problem of “separation of learning and application” in foreign language education. However, applying the Production-Oriented Approach to higher vocational English teaching is not straightforward, common challenges include insufficient teaching resources, a lack of personalized scaffolding for students, and delayed feedback from assessments. To address these challenges, this study aims to construct an artificial intelligence-empowered instructional design framework that integrates the Production-Oriented Approach with the five-stage instructional model (Engage, Explore, Explain, Elaborate, Evaluate) by Bybee et al. (2006) and to demonstrate its application through a case design. A case study approach was adopted. The study took place in the autumn semester of 2025 at Sichuan Vocational College of Information Technology at the author’s institution in Guangyuan of China, involving a class of 50 first-year higher vocational students. Taking Unit Three “Professionalism” from a higher vocational English textbook *New Career English 1* as the context, the final output task—writing a narrative essay titled “My Role Model”—was broken down into four progressive subtasks across four teaching sessions. These subtasks follow a cognitive progression: macro understanding→micro focusing→internalizing cultivation→externalizing action. Various Artificial intelligence technologies (e.g., for vocabulary learning, speech recognition, text analysis, grammar checking, writing assistance, translation, and learning analytics) were woven into each session within the five-stage instructional cycle. The results show that this artificial intelligence empowered integrated model works well. It effectively boosts students’ learning motivation and optimizes the Production-Oriented Approach based cycle of “Motivating–Enabling–Assessing.” The subtask decomposition reduces cognitive load and provides clearer learning pathways, while real-time artificial intelligence generated feedback helps students make timely improvements. Notably, over ninety percent of the students successfully completed the final output task, which suggests the design is feasible. It is concluded that the artificial intelligence empowered integrated model is a promising instructional approach for higher vocational English, as it resolves key difficulties in traditional Production-Oriented Approach implementation. The progressive subtask design aligns well with Production-Oriented Approach’s enabling principle and supports the deeper integration of language learning with professional ethics education. Based on these findings, this study recommends: enhancing teachers’ artificial intelligence literacy, adopting subtask decomposition strategies, providing institutional training on artificial intelligence tools with due attention to data privacy protection, and following a “Human-Machine Collaboration” model. This study offers a detailed case design along with visual frameworks, which can serve as a practical reference for instructional innovation and implementation.

**Keywords:** artificial intelligence, Production-Oriented Approach, five-stage instructional model, higher vocational English, instructional design

### 1. INTRODUCTION

Digital transformation has brought artificial intelligence into foreign language education, and the changes are significant. With artificial intelligence technologies maturing, they are gradually being adopted in educational contexts to support personalized, adaptive, and more efficient learning (Huang & Yan, 2025). Higher vocational English, in this context, is expected to help cultivate technical and skilled talents, people who are capable of cross-cultural communication and ready for the international labor market. Nevertheless, traditional higher vocational English instruction faces multiple bottlenecks: insufficient instructional hours, scarcity of authentic language environments, lack of personalized evaluation, and the persistence of “mute English”—a phenomenon where students manage written examinations but struggle with oral expression. These challenges are particularly acute in vocational institutions, where class sizes are often large and students’ English proficiency levels vary significantly (Hui, 2026).

The Production-Oriented Approach, proposed by Professor Wen Qiufang, is a foreign language teaching theory with Chinese characteristics that effectively overcomes the separation of receptive learning and productive language use. Wen (2015) describes the Production-Oriented Approach as having three phases: Motivating, Enabling, and

Assessing. This framework puts learning at the center and tries to bring together learning and using the language, basically making input and output work as one. For higher vocational education, this approach works well because it focuses on real language use and getting tasks done, which is exactly what vocational students need for their future jobs. The study has explored artificial intelligence can assist teachers in motivating phase (He, 2025). However, in practice, when teachers try to use the Production-Oriented Approach in vocational settings, there are often problems. Teaching resources may be limited, assessment tends to be the same old methods, and it is hard to give different students the kind of support they need.

Recent developments in artificial intelligence might help with these problems. Artificial intelligence can create realistic communication scenarios, offer personalized learning materials, give immediate diagnostic feedback, and improve teaching efficiency overall. For instance, artificial intelligence based platforms can simulate real workplace conversations, provide reading materials at different levels, and offer instant pronunciation correction. All of these are quite useful for vocational English teaching. Nevertheless, existing research on artificial intelligence-empowered Production-Oriented Approach has predominantly focused on undergraduate education, with limited exploration in the context of higher vocational English teaching. Moreover, most studies concentrate on isolated phases of the Production-Oriented Approach rather than an integrated design across the entire teaching cycle. A lesson study has discussed the potential of application in classroom settings (Liu, 2025).

Therefore, this study constructs an artificial intelligence-empowered instructional design framework that integrates the Production-Oriented Approach with the five-stage model (Engage, Explore, Explain, Elaborate, Evaluate). Taking Unit Three “Professionalism” from the textbook *New Career English 1* as the case study, this paper demonstrates how artificial intelligence technology can be systematically applied to support the complete Production-Oriented Approach teaching process, providing practical guidance for front-line vocational English teachers and offering new perspectives for the digital transformation of higher vocational English.

## 2. MATERIALS AND METHOD

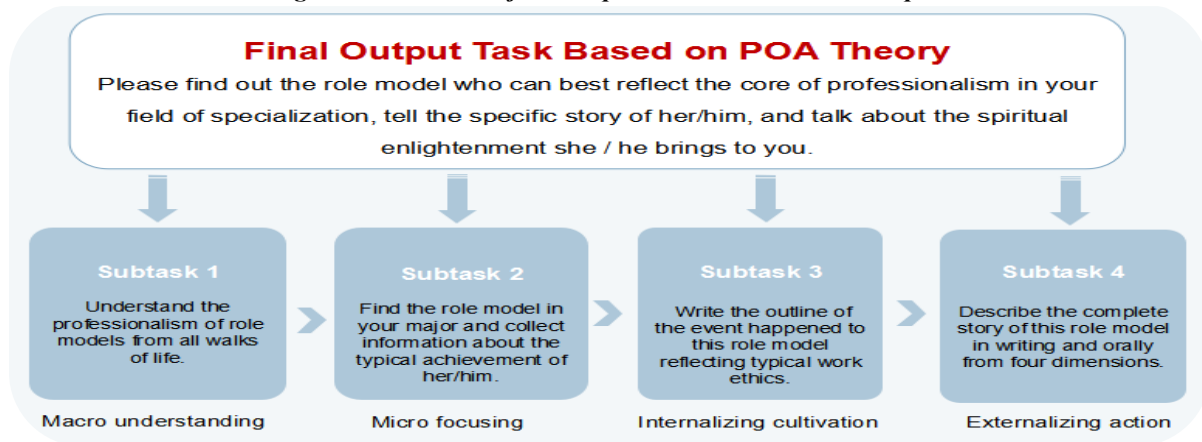
This study adopted a case study design and was carried out in the autumn semester of 2025 with a teaching class of 50 first-year higher vocational students at Sichuan Institute of Information Technology, China, where the author works. The research context was Unit Three “Professionalism” from the textbook *New Career English 1*. The target students were in their first semester, before this unit, they had already looked at topics like craftsman spirit and careers, so they knew the basic vocabulary about professional ideals. Most of them had a fairly clear idea of their future career direction, but they did not have a systematic understanding of professional responsibility, attitude, or ethics. A quick questionnaire before the unit showed that more than 70% of the students liked multimodal learning and were interested in using digital tools for language practice.

### Final Output Task and Subtask Decomposition Based on POA

The Production-Oriented Approach has a core principle: production is both what drives learning and its final goal. Following this principle, the study designed a final output task. Students were asked to write a narrative essay titled *My Role Model*. They needed to tell a specific story about a professional role model and then discuss the spiritual inspiration that person gave them. This task was chosen because it requires students to bring together language skills. It also helps them connect language learning with their future professional identities.

Based on the Production-Oriented Approach’s enabling principle, this task was decomposed into four hierarchical subtasks, each corresponding to one teaching session (eight class hours in total). The four subtasks follow the cognitive and ideological-political progression of “macro understanding→micro focusing→ internalizing cultivation→externalizing action.” This way of breaking down the task fits well with Vygotsky’s zone of proximal development. It makes sure each subtask is hard enough to push students forward but still doable with the right support. Figure 1 shows how the breakdown works.

Figure 1. POA-based final output task and subtask decomposition



Source: author's research

At the top of the figure is the final output task, which branches vertically into four subtasks. Each subtask is labeled with its description and the corresponding ideological-political theme: Subtask 1: Understand professionalism of role models from all walks of life (Macro understanding); Subtask 2: Find a role model in one's own major and collect typical achievements (Micro focusing); Subtask 3: Write an outline of a specific event reflecting work ethics (Internalizing cultivation); Subtask 4: Describe the complete story from four dimensions (Externalizing action).

#### Integration of Artificial Intelligence Technologies within the 5E Cycle

In each session of the five stage instructional cycle (Engage, Explore, Explain, Elaborate, Evaluate), the study made use of several artificial intelligence technologies. These included artificial intelligence powered vocabulary learning through Quizlet, speech recognition for giving pronunciation feedback, text analysis to help with discourse comprehension, grammar checking via Grammarly, writing assistance from iWrite, various translation tools, and artificial intelligence generated learning analytics. The selection of these tools was guided by their proven effectiveness in second language acquisition research and their accessibility in Chinese vocational education contexts. Table 1 summarizes the AI tools applied in each subtask and their functions.

Table 1. AI tools applied in each subtask within the 5E Instructional Cycle

Subtask	5E Stage	Main AI Tools	Functions
Subtask 1 (Listening & Speaking)	Engage Explore Explain Elaborate Evaluate	Quiz-let (vocabulary), Speech recognition, Doubao/Kimi (voice assistants)	Vocabulary games, pronunciation feedback, speaking scoring, real-time conversation practice
Subtask 2 (Reading & Speaking)	Engage Explore Explain Elaborate Evaluate	ChatGPT (viewpoints), XMind (mind mapping), Text analysis, Voice synthesis	Discourse structuring, key expression extraction, translation, story retelling resources
Subtask 3 (Reading & Writing)	Engage Explore Explain Elaborate Evaluate	Grammarly (grammar check), iWrite (writing assistant), Five-element analysis tool	Grammar checking, non-finite verb practice, outline writing, structural accuracy
Subtask 4 (Translation & Writing)	Engage Explore Explain Elaborate Evaluate	AI Q&A system, AI mind map, AI translation, AI writing evaluation	Background knowledge, writing framework, translation support, holistic scoring

Source: author's research

The table has four rows and four columns with headings: Subtask, 5E Stage, Main AI Tools, Key Functions. Content: Subtask 1 (Listening & Speaking)–Engage, Explore, Explain, Elaborate, Evaluate; Quiz-let, speech recognition, Doubao/Kimi; vocabulary games, pronunciation feedback, speaking scoring, dialogue practice. Subtask 2 (Reading & Speaking)–same 5E stages; ChatGPT, XMind, text analysis, voice synthesis; discourse structuring,

key expression extraction, translation support, story retelling. Subtask 3 (Reading & Writing)– same 5E stages; Grammarly, iWrite, five-element analysis tool; grammar checking, non-finite verb practice, outline writing, structural accuracy. Subtask 4 (Translation & Writing)–same 5E stages; AI Q&A system, AI mind map, AI translation, AI writing evaluation; background knowledge, writing framework, translation support, holistic scoring.

### Teaching Procedures

Session 1 (Subtask 1: Listening and Speaking): The teacher started by playing a video showing professionals from different fields, such as healthcare, manufacturing, and the service industry. Students were then asked to discuss what professionalism means in each of those work settings. Based on the responses students submitted through the Xuexitong platform, the artificial intelligence system generated a real time keyword cloud. This gave the class a visual picture of their shared understanding of professionalism. After that, students used Quizlet to learn vocabulary related to professionalism through matching games and live competitions, which helped keep them engaged and improved retention. For listening practice, the class worked with an audio passage about Yang Jiang and her dedication to translation work. The artificial intelligence had pre recorded three versions of the same passage at different speeds: slow, moderate, and natural. This was done to accommodate students with different proficiency levels. While students were doing the listening task, artificial intelligence speech recognition offered immediate feedback on pronunciation by highlighting which phonemes had been mispronounced. During the elaboration stage, students watched a short video on traditional Chinese woodcut art. This led to a paired dialogue task where they discussed the relationship between interest and occupation. They practiced using artificial intelligence voice assistants, specifically Doubao and Kimi, which provided real time suggestions for vocabulary and sentence patterns. Finally, the artificial intelligence speaking scoring system gave each student a score based on accuracy, fluency, and completeness.

Session 2 (Subtask 2: Reading and Speaking): A video clip from the First National Craftsman Innovation Conference was shown to activate prior knowledge. The teacher used ChatGPT to pre-collect diverse viewpoints on whether traditional crafts would be replaced by industrial assembly line products, which were then presented to students as reference material for discussion. Students first skimmed the text “Craftsmanship or Innovation?” At the same time, they used XMind, a mind mapping tool powered by artificial intelligence. The tool automatically generated a basic discourse structure by picking up topic sentences from the text. This helped students see the argumentative logic more clearly. Then, artificial intelligence text analysis pulled out key expressions, such as “integrate craftsmanship into innovation,” “gain a good command of,” and “arouse the idea of.” It also provided several Chinese translations for complex sentences. Students could compare these different translations and discuss them with each other. For speaking practice, students retold the three character stories (Lin Qian, Xiao Qiang, Zhu Ming) using a structured framework. AI voice synthesis converted their retellings into audio resources for self-review. The AI also generated argumentative writing templates and key sentence patterns for students to imitate in their subsequent production.

Session 3 (Subtask 3: Reading and Writing): The session opened with a short video about “Welding Mulan” Yi Ran, a female welder who produced 80,000 railway freight cars over 21 years, and news reports of bus drivers who safely pulled over after suffering heart attacks. These authentic cases elicited the theme of conscientiousness and student discussion. Students then speed-read Text B, which describes the author’s experience of exceptional service during a business trip in Japan. The AI generated a five-element analysis table (Who, Where, When, What–opening/development/result, feelings) to help students extract key narrative information efficiently. The teacher explained non-finite verbs (e.g., “Flooded with calls,” “Standing above the rushing water”) and cohesive words(e.g., “Once again,” “Then,” “Finally”). Grammarly was used to demonstrate how replacing clauses with non-finite verbs increases conciseness and logical flow. For writing practice, students composed a narrative paragraph (outline) about their selected model figure using the five elements and cohesive devices. iWrite provided real-time grammar and style suggestions, highlighting areas for improvement. The teacher then selected three samples (low, average, and high scores) for collective evaluation, with AI providing initial automated scores and the teacher adding qualitative comments.

Session 4 (Subtask 4: Translation and Writing): A guessing game using keywords (female, Ningbo Zhejiang, Nobel Prize, artemisinin, contribution) introduced Tu Youyou as a role model. An AI Q&A system automatically answered student questions about her life and achievements, building background knowledge efficiently. Students then read a short passage about Tu Youyou, and an AI mind mapping tool organized the four-dimensional writing framework (basic information, main events, achievements, evaluation) visually. The teacher presented sentence patterns for each dimension (e.g., “was born in...,” “graduate from...,” “be devoted to...,” “be honored as...”). Using Tencent Shared Documents, students engaged in segmented writing, with an AI translation tool offering English equivalents for Chinese expressions when students encountered difficulties. As a practice exercise, students wrote a complete article about “sugar painting,” a traditional Chinese folk craft, using cohesive words (first, second, then, finally).

They then applied the same structure to write about their own role model. The AI writing evaluation system provided holistic scores and specific suggestions for improving coherence and vocabulary use.

#### **Evaluation Design**

The Teacher-Student Collaborative Assessment model provides a theoretical foundation for integrating artificial intelligence into the evaluation process. (Wen, 2016) A multi-dimensional evaluation system was established covering three dimensions. For the language dimension, which covered vocabulary mastery, listening comprehension, speaking fluency, reading ability, and writing quality, the study used data from several artificial intelligence platforms including Quizlet, speech recognition tools, and iWrite. These data were then combined with teacher evaluation, peer evaluation, and self evaluation. For the competence dimension, the focus was on information extraction, discourse analysis, cross cultural communication, collaborative learning, and critical thinking. These were assessed through classroom observation, presentation evaluation, and records of group discussions. The ideological-political dimension (understanding of professionalism, craftsman spirit awareness, professional ethics identification, dedication spirit, cultural confidence) was evaluated via reflective journals, project reports, classroom performance, and open-ended questionnaires. AI support included data analysis, speech recognition scoring, automated writing evaluation, learning behavior analysis, collaboration data mining, text sentiment analysis, and topic model recognition. This multi-source, multi-method approach ensured triangulation of evidence and reduced the bias inherent in any single evaluation method.

### **3. RESULTS**

The results of this case design indicated that the artificial intelligence-empowered integrated teaching model effectively stimulated students' learning motivation and optimized the "Motivating- Enabling- Assessing" cycle. It also found that the motivating phase is effective. (Zhou, 2022)The final output task was broken into four progressive subtasks, which are presented in Figure 1. This reduced cognitive load and showed students a clear learning path. Each subtask had targeted artificial intelligence tools as listed in Table 1, so students received appropriate scaffolding at each stage.

Students wrote about this in their reflective journals. One student, referred to as Student A, said the artificial intelligence powered vocabulary games made learning more interesting and less stressful. Another student, Student B, noted that real time pronunciation feedback helped them finally understand why their pronunciation was incorrect. The feedback from artificial intelligence came in many forms, from pronunciation scoring to grammar checking to automated writing evaluation. This helped students see where they were weak and make improvements quickly. More than ninety percent of the students finished the final output task successfully, which shows that the design works. Comparing the writing samples from before and after the unit shows clear improvement in how students used cohesive devices, non-finite verbs, and professionalism related vocabulary. The structured, subtask-based approach, supported by artificial intelligence and the five-stage cycle, led to high engagement. Attendance averaged 96% across the four sessions, and task completion rates were high.

### **4. DISCUSSIONS**

The findings of this case design confirm that the artificial intelligence-empowered integration of the Production-Oriented Approach with the five-stage model yields significant pedagogical benefits. First, the subtask decomposition shown in Figure 1 follows the enabling principle of gradual progression from the Production-Oriented Approach. When a complex writing task is broken down into smaller, manageable steps, students can see a clear learning pathway. This reduces cognitive load and helps build their confidence. The finding is consistent with what Zhang (2015) observed, namely that a well-designed enabling phase is critical for successfully implementing the Production-Oriented Approach.

Second, each subtask receives targeted artificial intelligence support appropriate to its learning objective, as shown in Table 1. For Subtask 1, AI-generated keyword clouds and speech recognition help students grasp key concepts and improve pronunciation. For Subtask 2, AI mind mapping and text analysis support discourse comprehension. For Subtask 3, AI grammar checking and writing assistance focus on structural accuracy. For Subtask 4, AI translation and writing evaluation facilitate comprehensive output. This targeted approach differs from traditional instruction, which tends to use the same materials and the same feedback for students at different proficiency levels. Zhang (2025) makes a similar point that using artificial intelligence in the Production-Oriented Approach. materials can help with this kind of differentiation.

Third, the four subtasks move forward in a way that makes sense both for cognitive development and language learning. This progression is similar to the ideological-political sequence, which goes from macro understanding to micro focusing, then to internalizing cultivation, and finally to externalizing action. This alignment enables deep integration of language learning with professional ethics education, which is a key goal of higher vocational

education in China. Students wrote in their reflective journals that learning about role models such as Tu Youyou and Yi Ran made them take their future professional duties more seriously. That said, bringing artificial intelligence into teaching also brings some problems. Teachers need to change their roles. They are no longer just transmitters of knowledge. Instead, they have to become learning designers, data analysts, and emotional facilitators. This requires stronger digital skills on their part. There are also technical limits. Automatic speech recognition still does not work well with non-standard accents or non-native English patterns, and this can cause frustration for students. In the present design, a few students with strong regional accents received lower pronunciation scores even when their content was correct, which required the teacher to manually adjust feedback. Strict protection is needed for student voice recordings and behavioral logs. It is also important to balance human computer interaction with affective education. Artificial intelligence lacks genuine emotional connection and the ability to understand nuance, humor, or politeness. Teachers have to provide what artificial intelligence cannot give: emotional support, encouragement, cultural awareness, and the human touch in communication.

Compared with traditional Production-Oriented Approach implementation without artificial intelligence support, this model reduced the teacher's workload in providing individualized feedback and allowed more class time for interactive activities. However, the initial setup of AI tools required additional preparation. Future iterations could further streamline tool integration using unified learning platforms.

## 5. CONCLUSIONS

This study constructed an artificial intelligence-empowered instructional design framework integrating the Production-Oriented Approach with the five-stage instructional model. Using Unit Three "Professionalism" from the textbook *New Career English 1* as the case study, the paper elaborated on the specific applications of artificial intelligence technology throughout four teaching sessions. A key contribution of this design is the decomposition of the final output task into four progressive subtasks (Figure 1) with targeted AI support (Table 1). The artificial intelligence-empowered integrated teaching model effectively stimulates students' learning motivation, optimizes the "Motivating-Enabling-Assessing" teaching cycle, and promotes the deep integration of language learning with professional ethics education. The design also offers a replicable template for other units and other vocational disciplines, provided that appropriate AI tools are selected based on local contexts.

The use of artificial intelligence in education means that teachers have to rethink their roles. Educators need to improve their technical skills and take on more data driven leadership. At the same time, they must stay aware of the limits of the technology, including problems with accent recognition, cultural differences, and data ethics. Future studies could look at how the artificial intelligence empowered Production-Oriented Approach affects students' workplace English performance over the long term. Researchers could also try to find the right balance between what artificial intelligence does automatically and what teachers handle themselves. For higher vocational English education, a model of human machine collaboration is likely to work best. Artificial intelligence can handle the repetitive, impersonal parts of language learning. Teachers, though, can focus on human centered elements like empathy, cultural understanding, and nuanced communication. If higher vocational education takes this kind of thoughtful and balanced approach, it can truly prepare skilled professionals who are globally competitive and ready for the modern world.

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