A Study on AI-Enabled Project-Based Instructional Design and Operational Mechanisms in Legal English Courses

Bin Xu
Department of Foreign Language, Sanya University, Sanya, Hainan, China

Abstract: This study explores the design and operational mechanisms of AI-enabled project-based instruction in Legal English. Grounded in English for Specific Purposes (ESP), project-based learning (PBL), and human–AI collaborative learning theories, it constructs a task-centered instructional framework that integrates legal language learning with authentic professional contexts. The study proposes a modular course structure and examines how artificial intelligence can be embedded across instructional stages, including pre-task scaffolding, in-task support, and post-task feedback. Findings suggest that AI integration enhances learner engagement, reduces cognitive barriers in processing complex legal texts, and strengthens the practice-oriented nature of Legal English instruction. An operational model is further developed, encompassing instructional process design, role transformation, and staged learner development pathways. While the study indicates strong feasibility, it also identifies challenges such as over-reliance on AI tools, output instability, and teacher competency demands, alongside corresponding optimization strategies. The study is conceptual in nature and calls for future empirical validation in real classroom settings.

Keywords: Legal English; Artificial Intelligence; Project-Based Learning; English for Specific Purposes; Instructional Design; Human-AI Collaboration

1. Introduction

With the continued advancement of the Hainan Free Trade Port, higher demands have been placed on the cultivation of internationally competent legal professionals. As cross-border economic activities intensify, legal services are becoming increasingly specialized and globalized. Legal practitioners are thus expected to possess not only solid legal knowledge but also the ability to communicate effectively in international legal contexts. In this regard, Legal English serves as a critical link between legal education and global practice, and its importance within the law curriculum has become more pronounced.

In many undergraduate law programs, however, Legal English teaching remains largely focused on vocabulary explanation and text translation. Instruction is predominantly input-oriented, with limited task-based practice or authentic application, which constrains the development of students' professional competencies. In addition, students often struggle with weak general English proficiency and difficulties in understanding legal discourse, further reducing instructional effectiveness. These challenges highlight the need for more practice-oriented and discipline-aligned teaching models.

Recent advances in generative artificial intelligence (AI) have created new opportunities for language education, particularly through its capacities for text generation, language processing, and feedback provision [1]. When integrated into Legal English instruction, AI can help reduce linguistic barriers and support task-based learning. However, several challenges remain. Traditional teacher-centered approaches continue to limit student engagement, while project-based learning, though effective in principle, is often constrained by complex task design and unclear learning pathways. In addition, the use of AI tools is frequently fragmented and lacks systematic integration, preventing the establishment of sustained instructional support [2].

Given these challenges, it is necessary to reconsider Legal English course design from a holistic perspective by integrating project-based learning with AI-supported teaching mechanisms [3]. This study focuses on the Legal English course for undergraduate law majors and explores pathways for AI-enabled instructional reform. Specifically, it examines the theoretical

foundations of project-based course design; develops an AI-supported instructional framework, and analyzes implementation mechanisms, including the integration of AI and its impact on teacher–student roles. The study aims to offer practical insights for the reform of Legal English teaching.

2. Theoretical Foundations for the Project-Based Reconstruction of Legal English Courses

2.1 English for Specific Purposes (ESP)

English for Specific Purposes (ESP) is oriented toward disciplinary and professional needs, emphasizing the use of language in authentic contexts. Unlike general English, ESP prioritizes genre conventions, specialized terminology, and communicative norms, aiming to align linguistic competence with professional capability. This is particularly evident in Legal English, where texts are structurally rigorous, terminology-dense, and norm-governed. Learners are therefore required not only to understand linguistic forms but also to grasp the organization and conventions of legal discourse.

At the level of course design, ESP adopts a needs-based approach and promotes contextualized, task-driven learning. Accordingly, Legal English instruction should move beyond text explanation toward tasks grounded in legal practice, such as case analysis, contract interpretation, and legal drafting. Such task design supports the development of language use in professional contexts.

2.2 Project-Based Learning (PBL)

Project-Based Learning (PBL) centers on complex tasks and problem-driven activities, guiding learners to integrate knowledge and skills through project completion. It views learning as a process of meaning construction through practice rather than mere knowledge acquisition. In language education, PBL promotes output, engagement, and contextualized use.

Applied to Legal English, PBL helps overcome the limits of traditional instruction. Tasks such as contract analysis, case discussion, and legal presentation enable students to apply language in context while developing legal reasoning. Its staged and progressive structure also informs course design, allowing complex tasks to be decomposed into sequenced sub-tasks.

However, PBL faces practical constraints, including demanding task design, classroom management challenges, and difficulties in assessment standardization. These issues call for technological support to enhance its implementation.

2.3 Human-AI Collaborative Learning

Human-AI collaborative learning incorporates artificial intelligence as a cognitive support tool, forming an interactive system among teachers, learners, and technology. In this model, AI extends beyond information access to provide support in language processing, content generation, and feedback.

In Legal English teaching, generative AI can assist at multiple stages: facilitating comprehension through terminology and syntactic analysis, supporting task execution via scenario generation and prompts, and enhancing evaluation through feedback on language use [4]. Such functions contribute to a more continuous and efficient learning process.

At the same time, this approach redefines the teacher's role, shifting from knowledge transmission to instructional design and facilitation [5]. Effective integration of AI tools is therefore essential to align technological support with pedagogical goals.

In sum, ESP provides a needs-oriented and contextual framework, PBL offers a task-based organizational model, and human–AI collaboration enables technological integration. Together, they form the theoretical basis for the project-based reconstruction of Legal English courses.

3. AI-Enabled Project-Based Instructional Design for Legal English Courses

3.1 Overall Design Framework

Building on the theoretical foundations of ESP, project-based learning, and human-AI collaborative learning, the course is structured around three core principles: competence orientation, task-driven learning, and human-AI integration. It aims to reconstruct traditional Legal English instruction by embedding language learning into authentic legal practice contexts, particularly those involving cross-border legal communication and documentation.

From a macro design perspective, the course responds to two central shifts. First, it moves from knowledge transmission to competence

development, emphasizing the integrated cultivation of legal language ability, discourse awareness, and analytical thinking. Second, it shifts from teacher-centered instruction to task-centered learning organization, in which learning outcomes are achieved through the completion of structured, authentic tasks.

Within this framework, Legal English is no longer treated as an isolated linguistic subject, but as a practice-oriented discourse system. Learning activities are organized around professional tasks such as contract interpretation, case reasoning, and legal argumentation. These tasks serve as the core carrier for language acquisition and skill development.

At the same time, AI technologies are embedded as an enabling layer throughout the learning process. Rather than functioning as an auxiliary tool for isolated use, AI is systematically integrated into task design, learning support, and feedback generation. This enables a multi-layered support system involving language scaffolding, task structuring, and adaptive feedback, thereby improving both learning efficiency and instructional responsiveness.

3.2 Modular Course Structure

Aligned with the staged development of learner competence, the course is organized into three interconnected and progressively advanced modules. Each module corresponds to a different level of cognitive and linguistic demand, forming a structured pathway from language foundation to professional application.

3.2.1 Foundational language and legal discourse

This module targets learners' insufficient disciplinary language base and aims to establish essential Legal English competence. The instructional focus includes core legal terminology, frequently used syntactic structures, and genre-specific features of legal discourse.

Special emphasis is placed on sentence-level deconstruction and discourse-level recognition, particularly in handling complex legal sentences characterized by embedding and nominalization. Through guided analysis, students develop initial awareness of legal textual conventions and improve reading accuracy and comprehension efficiency.

In addition, this module introduces basic discourse mapping skills, enabling students to identify structural elements such as definitions, obligations, conditions, and exceptions within legal texts.

3.2.2 Legal text comprehension and analysis

Building on foundational linguistic competence, this module shifts toward higher-order textual interpretation and analytical reasoning. The instructional focus is placed on the internal logic of legal texts and the mechanisms of legal argumentation.

Key content includes case analysis frameworks (e.g., IRAC structure), identification of argumentative patterns, and interpretation of logical relations such as causality, condition, and exception within legal discourse.

Students are guided to move beyond surface comprehension and engage in structured legal reasoning, including issue identification, rule extraction, and application analysis. This stage emphasizes the integration of linguistic decoding and conceptual understanding, forming a bridge between language learning and legal thinking.

3.2.3 Project practice and language output

This module represents the application-oriented stage of the course and is designed around task-based and project-based learning principles. It focuses on transforming acquired knowledge into communicative and professional output.

Typical tasks include contract analysis reports, case presentations, legal opinion drafting, and structured group discussions on legal issues. These activities require students to integrate linguistic resources with analytical reasoning and communicative strategies.

Unlike traditional output exercises, this module emphasizes authenticity, task completion, and professional simulation, ensuring that language use approximates real legal communication scenarios. Through iterative practice, students gradually develop the ability to produce coherent, context-appropriate legal discourse.

Collectively, the three modules form a progressive competence development trajectory, moving from linguistic foundation → discourse comprehension → professional application. This structure ensures coherence between learning stages and provides a stable scaffold for project-based implementation.

3.3 Design of Project-Based Units

Within the modular structure, the course is operationalized through project-based units, each anchored in a specific legal scenario. Each unit is designed as a complete instructional cycle, incorporating context activation, task decomposition, guided execution, and output

presentation.

Taking the international trade contract analysis project as an example, the instructional design unfolds as follows:

Contextualization Phase: A realistic cross-border trade scenario is introduced, providing background conditions and authentic legal documents to establish situational relevance.

Task Decomposition Phase: The project is broken into structured subtasks, including contract structure identification, clause classification, terminology extraction, and functional analysis of legal provisions.

Implementation Phase: Students engage in collaborative interpretation and modification of contract clauses, supported by guided discussion and analytical scaffolding.

Output Phase: Learners produce structured deliverables, such as written contract analysis reports or oral presentations summarizing legal interpretations.

Similarly, case-based projects are designed around real or simulated legal disputes. Students are required to extract key facts, identify legal issues, apply reasoning frameworks, and construct logically structured arguments.

Across all project units, a consistent pedagogical principle is maintained: progression from comprehension → analysis → production → application. This ensures that learners move from input processing to output generation in a controlled and scaffolded manner, reducing cognitive overload while maintaining authenticity of task performance.

3.4 AI-Supported Task Design

Within the project-based framework, artificial intelligence is embedded as a distributed support system across all stages of task execution, rather than as an isolated technological add-on.

In the pre-task stage, AI is used to generate scaffolding materials, including glossaries of key legal terminology, simplified versions of complex legal texts, and guiding questions that help activate prior knowledge and establish task orientation.

In the while-task stage, AI provides real-time linguistic and cognitive support. This includes syntactic parsing of complex sentences, explanation of legal terminology in context, generation of reference expressions, and provision of structural templates for writing or oral production [6]. These functions reduce comprehension barriers and support sustained task engagement.

In the post-task stage, AI contributes to formative evaluation by offering preliminary assessments of language accuracy, coherence, and logical structure [7]. It may also generate revision suggestions, enabling students to engage in iterative improvement.

Importantly, AI integration in this model is governed by a clear pedagogical boundary. It functions as a scaffolding mechanism rather than a decision-making authority. Teachers retain full control over task design, learning objectives, and final evaluation. AI outputs are subject to instructional validation to ensure disciplinary accuracy and pedagogical alignment.

Through this triadic design—pre-task scaffolding, in-task support, and post-task feedback—the course establishes a continuous and adaptive learning support loop, enhancing both efficiency and depth of Legal English learning.

4. Operational Mechanisms and Implementation Pathways of the Course

4.1 Process Design for Project-Based Instruction

Within the project-based framework, course delivery follows an integrated learning cycle: contextualization, task decomposition, guided support, output production, and evaluative feedback. Instruction begins with the introduction of authentic or simulated legal scenarios to stimulate engagement. Project tasks are then broken down into staged components to clarify objectives and learning pathways. During implementation, linguistic and cognitive support is provided as needed. Students subsequently produce outcomes in oral or written form, followed by multi-dimensional evaluation and feedback.

This process consolidates fragmented teaching activities into a coherent sequence, aligning classroom work with task progression. The staged structure also reduces task complexity and enhances student participation.

4.2 AI-Embedded Instructional Support

AI is integrated across all stages of the instructional process, forming a continuous support system [8]. In the contextualization phase, it assists in generating case scenarios and guiding questions. During task decomposition, it provides structured suggestions for task

sequencing and sub-activities.

In implementation, AI supports comprehension and task execution through syntactic analysis, terminology explanation, and model expressions. At the output stage, it offers preliminary evaluation and targeted feedback on student performance.

This integration establishes a continuous support pathway—from initial guidance to process facilitation and final feedback—thereby strengthening the effectiveness of project-based instruction.

4.3 Teacher Roles and Instructional Organization

In an AI-supported, project-based environment, the teacher's role shifts from knowledge transmission to instructional design and facilitation [9]. Teachers are responsible for project planning, task structuring, and process regulation rather than sole content delivery.

They design tasks aligned with course objectives, organize learning stages, and guide the appropriate use of AI tools. During instruction, they monitor student progress and provide timely intervention to ensure task completion.

Instructional organization also shifts from lecture-based delivery to task-driven, collaborative learning. Group discussion and presentation are emphasized to increase interaction and engagement.

4.4 Student Learning Pathways and Competence Development

Under the project-based model, learning progresses from input to output through four stages: comprehension, analysis, production, and application. Students first develop basic understanding of legal texts, supported by AI tools. They then analyze textual structure and logic through guided tasks, followed by producing structured language output. Finally, they apply acquired knowledge in task-based contexts.

This pathway integrates language development with legal reasoning. Through iterative task practice, students enhance both comprehension and expression, shifting from passive reception to active use. AI-supported feedback further enables continuous adjustment, contributing to a stable mechanism for competence development.

Overall, the integration of project-based processes with AI support establishes a coherent operational model, ensuring effective implementation of Legal English courses.

5. Feasibility and Risk Analysis of Implementation

5.1 Feasibility

From a practical perspective, AI-enabled project-based Legal English instruction demonstrates strong feasibility across technological, pedagogical, and learner dimensions.

At the technological level, recent advances in generative artificial intelligence, particularly large language models, have significantly lowered the threshold for educational application. Combined with institutional platforms such as Xinwei, teachers are able to design, deploy, and integrate instructional agents into course workflows without requiring advanced programming expertise. These tools support functions such as text generation, language analysis, and feedback automation, thereby providing a stable technical infrastructure for classroom implementation.

At the pedagogical level, project-based learning has been widely recognized in foreign language education as an effective instructional approach. Its core features—task orientation, contextualized learning, and process-based evaluation—are highly compatible with the applied nature of Legal English.[10].In particular, the emphasis on authentic tasks such as case analysis and legal interpretation aligns closely with disciplinary learning objectives, making pedagogical transition relatively smooth.

At the learner level, current university students generally demonstrate high familiarity with and acceptance of digital learning environments. The integration of AI tools not only matches their learning habits but also enhances engagement through interactive and adaptive support mechanisms. As a result, AI integration is more likely to function as a facilitator rather than a barrier in course implementation.

5.2 Challenges

Despite its overall feasibility, the implementation of AI-enabled project-based Legal English instruction may encounter several structural and pedagogical challenges.

First, there is a risk of over-reliance on AI-generated outputs. Students may treat AI tools as substitutes for cognitive processing rather than

scaffolding instruments, leading to superficial engagement with learning tasks and a weakening of independent analytical ability.

Second, the inherent instability of generative AI outputs remains a critical concern. AI-generated content may contain factual inaccuracies, syntactic inconsistencies, or deviations from legal discourse conventions. In Legal English, where precision and normative expression are essential, such limitations require careful human validation.

Third, effective implementation places higher demands on teachers' digital and instructional competencies. Teachers are expected to possess the ability to design effective prompts, select appropriate tools, interpret AI outputs critically, and integrate them into pedagogical decision-making. This shift increases the complexity of instructional preparation and may pose adaptation challenges, particularly for educators with limited experience in educational technology.

In addition, there is a broader systemic challenge related to assessment validity. Traditional evaluation frameworks may not fully capture learning processes in AI-supported environments, necessitating reconsideration of assessment criteria and methods.

5.3 Optimization Strategies

To address the above challenges, a multi-layered optimization framework can be constructed from the perspectives of instructional design, evaluation mechanism, and teacher development.

First, process-oriented instructional design should be strengthened. Learning tasks should be decomposed into clearly defined stages with explicit objectives, procedural guidance, and evaluation indicators. This design helps ensure that AI tools function as cognitive scaffolds rather than shortcuts, thereby maintaining the integrity of learning processes and promoting sustained learner engagement.

Second, a dual validation mechanism combining AI support and teacher supervision should be established. In this model, AI is responsible for providing initial scaffolding, such as linguistic support and draft feedback, while teachers retain authority over final judgment, correction, and conceptual alignment. This layered mechanism ensures both efficiency and disciplinary accuracy, particularly in legally sensitive content domains.

Third, systematic professional development for teachers is essential. Institutions should provide targeted training programs focusing on AI literacy, including prompt engineering, task design in AI environments, and critical evaluation of machine-generated content. In addition, peer collaboration and instructional sharing mechanisms can facilitate the diffusion of effective practices and reduce individual adaptation burdens.

Finally, continuous optimization of prompts and task structures should be incorporated into course design cycles. Through iterative refinement based on classroom feedback and learning data, the stability, relevance, and pedagogical alignment of AI outputs can be progressively improved, enabling a more robust and adaptive instructional system.

6. Conclusion

This study investigates the instructional design and operational mechanisms of AI-enabled project-based teaching in Legal English. Grounded in English for Specific Purposes (ESP) theory, project-based learning (PBL), and human–AI collaborative learning, it constructs a task-centered course framework that integrates disciplinary language development with authentic legal practice. Within this framework, Legal English is reconceptualized as a form of professional discourse competence developed through structured task completion rather than isolated linguistic instruction.

On this basis, the study further examines pathways for integrating artificial intelligence into course implementation and evaluates the proposed operational model. AI is embedded across the instructional cycle, supporting pre-task scaffolding, in-task language assistance, and post-task formative feedback. The findings suggest that such integration can enhance learner engagement, reduce cognitive load in complex legal texts, and strengthen the practice-oriented nature of Legal English instruction. At the same time, the operational model is systematically articulated through instructional process design, role transformation, and learner development pathways. Instruction is organized as a continuous cycle of contextualization, task decomposition, guided implementation, output production, and evaluation feedback; teachers shift toward roles as instructional designers and facilitators, while AI functions as a supplementary support system for language

processing and feedback generation; learners progress through staged competence development from comprehension to analysis, production, and application. This integrated structure provides a practicable reference for classroom implementation.

Furthermore, the study evaluates feasibility conditions and identifies potential risks, including over-reliance on AI tools, variability in AI-generated outputs, and increased demands on teachers' digital literacy. In response, it proposes corresponding optimization strategies, such as process-oriented instructional design, a dual validation mechanism combining AI assistance with teacher oversight, and continuous refinement of task structures and prompts, in order to ensure both pedagogical integrity and technological effectiveness.

It should be acknowledged that this study is primarily conceptual and design-oriented, and its conclusions are based on theoretical analysis rather than large-scale empirical validation. Therefore, the proposed model remains exploratory in nature. Future research should focus on empirical implementation in authentic classroom contexts, employing mixed methods such as learning analytics, classroom observation, and student feedback to evaluate effectiveness and inform iterative refinement, thereby further improving the applicability and robustness of AI-enabled Legal English.

References

[1] Dong Q. Research on the Practice of AI-Empowered College English Teaching Models. Office Informatization, 2026, 31(04): 46-48.

[2] Su X, Liao Y. Research on AI-Enabled Foreign Language Classroom Teaching Model in Higher Vocational Colleges: Innovation of Classroom Teaching Model for Business English Major in Guangzhou South China Business Vocational College. Education Reform and Development, 2025, 7(11): 133-140.

[3] Miao R. AI-Enabled Production-Oriented Approach: Construction and Implementation Paths for College English Teaching Design Principles. International Education Forum, 2025, 3(9): 52-60.

[4] Chen L. Research on the Feasibility and Strategies of AI-enabled Formative Assessment in College Oral English Teaching. US-China Education Review A, 2025, 15(11): 66-70.

[5] Zhang M. Exploration of AI-Enabled Smart Teaching in University English Education. Forum on Research and Innovation Management, 2025, 3(4): 1-6.

[6] Liu J. Practice of College English Listening and Speaking Teaching in the Context of AI-enabled Cross-cultural Communication. Literature and Art Development and Innovation, 2025, 2(7): 1-5.

[7] Chen S, Yang J. Innovative Research on AI-Enabled Innovation of Multiple Evaluation Systems in College English Teaching. Journal of Contemporary Educational Research, 2025, 9(8): 213-218.

[8] Zhou F Y. Construction of an AI-Empowered "Teaching- Learning-Assessment Integration" System for Ideological and Political Education in College English Courses. Delta, 2025, (35): 93-95.

[9] Ma S. Discussion on AI-enabled Teaching of English Majors. Research and Commentary on Humanities and Arts, 2025, 3(1): 1-4.

[10] Guo W. Construction of an AI-Empowered Deep Learning Model for College English Teaching under the Core Competency Orientation. Shanxi Youth, 2025, (23): 193-195.

