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Smart Teaching Platform Empowering Energy and Power English Reading, Writing and Translation: An Innovative Pathway for Translation Competence Development

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Abstract: To address the challenges of outdated resources, monotonous teaching methods, and insufficient personalized support in the traditional teaching of Energy and Power English reading, writing, and translation, and to meet the industry's demand for compound translation talents, this study adopts the Chaoxing Learning Platform as the practice platform to explore application paths and effects of smart teaching platforms. Using a "literature research – case analysis – empirical verification" approach, it constructs a hybrid teaching model of "platform empowerment – task-driven – scenario simulation," designs three application scenarios—classroom teaching, after-class autonomous learning, and practical projects—and establishes a diversified evaluation system combining "quantitative + qualitative" and "process + result." Empirical results show that, compared with traditional teaching, the platform significantly improves students' translation competence: the accuracy rate of professional terms increases from 58% to 89%, and the semantic deviation rate decreases from 32% to 12%. At the same time, it optimizes learning efficiency and experience. This study provides practical support for the intelligent reform of ESP translation teaching and for cultivating internationally oriented talents in the energy and power sector.

Keywords: Smart Teaching Platform; Energy and Power English; Translation Competence Cultivation; Hybrid teaching model; Teaching Effect Evaluation

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1. Background

Globalization has accelerated the internationalization of the energy and power sector. Large state-owned utilities such as the State Grid Corporation of China and China Southern Power Grid are continually expanding overseas projects, which has created an urgent demand for multidisciplinary translators who combine domain expertise with precise English translation skills. The accuracy of specialist translation directly affects project implementation and risk control — for example, mistranslation of contractual clauses or technical specifications may give rise to disputes[1]. The accuracy of professional translation directly affects project progress and risk control; for instance, mistranslation of contract clauses or technical specifications may lead to disputes. However, traditional translation teaching remains constrained by outdated resources, monotonous methods, and insufficient personalized support. Survey findings indicate that 67% of domestic Energy and Power English classes still rely on a textbook-based, lecture-centered model, and only 38% of students achieve the expected standard of translation competence[2]. Smart teaching platforms integrate multiple technologies and offer advantages in resource consolidation, tool-enabled support, and personalized services. Applied to the teaching of Energy and Power English reading, writing, and translation, they can enhance efficiency, help students build compound competence structures, and provide talent assurance for the internationalization of the industry.

This study focuses on "empowering the cultivation of Energy and Power English reading, writing, and translation competence through a smart teaching platform." Its objectives are to construct a platform-adaptive teaching model, to verify the platform's effectiveness in improving translation competence, and to optimize application strategies. The study addresses three core questions: (1) How can teaching content and processes be reconstructed with the support of the platform? (2) What are the differentiated effects of the platform on the three dimensions of translation competence? (3) What are students' experiential feedback and optimization needs regarding platform use?

2. Theoretical Foundations and Platform Functions

2.1. Core Dimensions of Translation Competence

Translation competence is a multidimensional construct. Linguistic competence is foundational and should encompass lexical depth, grammatical accuracy, and pragmatic appropriateness. In Energy and Power English, weaknesses cluster around domain terminology and the handling of long, complex sentences: 35% of errors stem from term confusion, and 28% from improper logical segmentation of long sentences[3]. Domain knowledge is crucial: translators need both domain knowledge and situational knowledge. A lack of professional knowledge accounts for 30% of translation errors[4]. Translation techniques serve as the bridge. Techniques such as part-of-speech conversion and split-and-merge translation must be applied flexibly to technical texts; mastery of such techniques can increase the efficiency with which translated texts are understood by 25%[5].

2.2. Core Functions of Smart Teaching Platforms

Smart teaching platforms create an integrated resources–tools–services environment. An intelligent text-analysis module, built on natural language processing, enables three-layer analysis—terminology annotation, syntactic parsing, and semantic association—supports custom tagging, and can improve students' accuracy in extracting key information as well as their retention of terminology[6]. A real-time translation assistance module provides instant references, multi-version comparisons, and error prompts, features context adaptivity, and employs graded prompting to prevent over-reliance. A personalized learning-path planning module, powered by big-data analytics, generates tiered study plans and can raise learning motivation by 30% and learning efficiency by 25%[7].

2.3. Literature Review and Point of Entry

Substantial work has examined the use of smart teaching platforms in translation pedagogy, though emphases and outcomes differ. Internationally, research started earlier and has grown rapidly since 2010, focusing on technology application and effect validation along two main lines: (1) verifying the alignment between platform functions and translation instruction—for example, Lee (2020) empirically found that intelligent translation-assistance tools can increase students' translation speed by 35% and accuracy by 28%, with particularly pronounced gains in technical terminology[8]; and (2) building personalized teaching models—for instance, Csomay (2019) proposed an AI-driven translation teaching model that analyzes eye-tracking data and keystroke logs to diagnose students' translational thinking pitfalls and deliver targeted guidance[9]. Strengths include deep integration of technology and pedagogy (e.g., using machine learning to predict translation errors). Limitations include weak domain specificity (a predominant focus on general English translation), limited attention to subfields such as energy and power, and insufficient consideration of how linguistic-cultural differences affect translation.

In China, research began around 2015, spurred by New Engineering initiatives and foreign-language teaching reforms, showing a "theory–practice–optimization" progression with emphasis on model innovation and local adaptation. Core contributions include Wang Peng's (2021) hybrid model of online autonomous learning + offline flipped classroom [10], and Zhang Zhixiong's (2022) big-data-driven translation evaluation framework [11]. The distinguishing features are localization combined with specialization (e.g., dedicated Energy and Power English corpora). Constraints remain, however: empirical samples are relatively small (typically 50–100 participants), and core platform functions are not fully leveraged.

Against this backdrop, the present study advances along two axes—domain focus and empirical deepening: it constructs a platform-adaptive teaching model for reading, writing, and translation in Energy and Power English; expands the sample size (n = 380) and extends the observation period (one semester) to assess sustained effects; and explores a teacher–platform–student collaborative mechanism, thereby offering a replicable solution for ESP translation pedagogy.

3. Current Status and Problem Analysis of Teaching Reading, Writing, and Translation in Energy and Power English

3.1. Course Characteristics and Teaching Objectives

The course on reading, writing, and translation in Energy and Power English is an interdisciplinary offering that integrates *domain knowledge + language competence + translation techniques*, combining strong specialization with high practical relevance. Its specialization lies in the deep linkage between texts and industry knowledge, covering both foundational and emerging terminology (e.g., "power station/ 电站 ," "virtual power plant/ 虚拟电厂 "), complex technical principles (e.g., the layered control architecture of smart grids), and international and domestic industry standards (e.g., IEC standards, GB/T 50297-2018). Some terms exhibit polysemy. Its practicality is reflected in the alignment of translation tasks with workplace requirements: text types include power/energy contracts and technical documentation; modalities span written translation, interpreting, and sight translation. Students are expected to master core competencies such as the precise translation of contractual clauses and the standardized expression of technical parameters.

The teaching objectives are structured at three levels:

- **Foundational objectives:** mastery of core linguistic elements, including 500+ domain-specific terms and 10+ prototypical sentence patterns;

- **Competence objectives:** flexible application of translation techniques and the development of cross-cultural communication awareness;
- **Application objectives:** the ability to independently complete authentic translation tasks, meeting the industry's demand for "plug-and-play" talent.

3.2. Core Problems of the Traditional Teaching Model

Monotonous methods: Instruction is teacher-centered; approximately 70% of class time is devoted to terminology and grammar explanation, with only 30% allocated to single-sentence translation exercises. There is a lack of full-text training and authentic scenario simulations. Interaction tends to be low-level and one-way, with little in-depth discussion of translation reasoning and techniques. As a result, students "know the what but not the why," and struggle to convert knowledge into practical ability.

Outdated resources: Textbook development cycles are long (2–3 years), and emerging terminology is often missing. Texts are simplified, diverging markedly from authentic materials such as power-equipment manuals. A "one-size-fits-all" approach fails to meet the personalized needs of students with different foundations, thereby increasing their learning burden.

Low student engagement: Students lack motivation because they do not perceive a clear linkage between learning and career outcomes. Assignment feedback is delayed (by 1–2 weeks) and general, lacking analysis of error causes and guidance for improvement. Translation tasks are largely completed individually, with few opportunities for collaboration and discussion, which easily leads to cognitive fixation.

3.3. Current Status of Students' Translation Competence

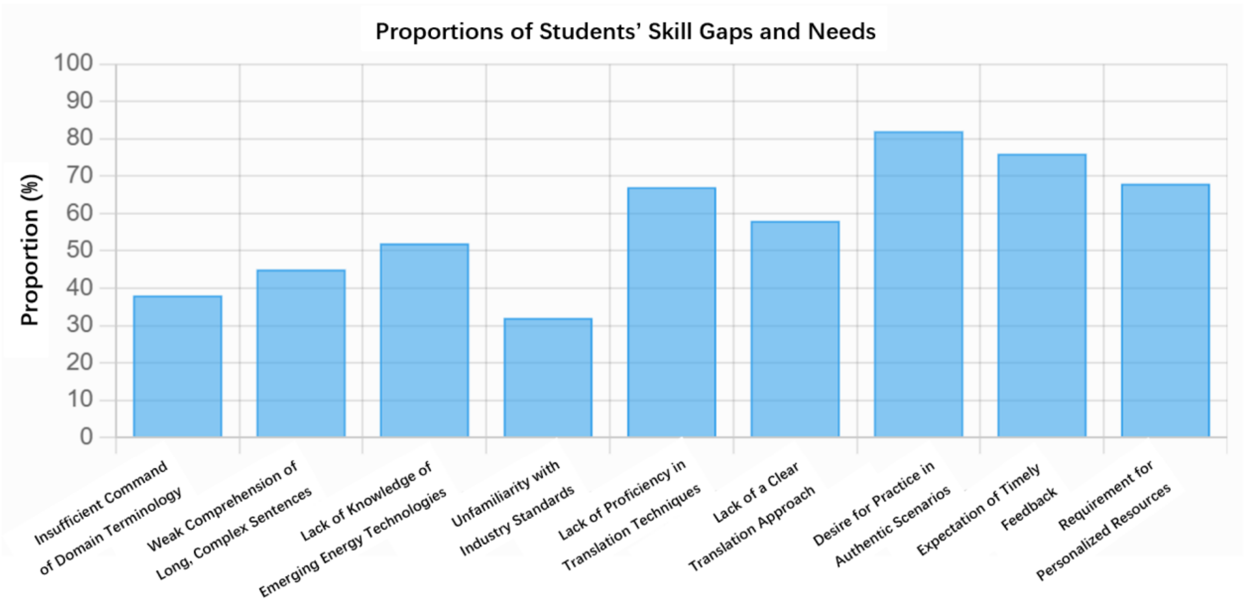

Figure 1. Proportions of Students' Skill Gaps and Needs.

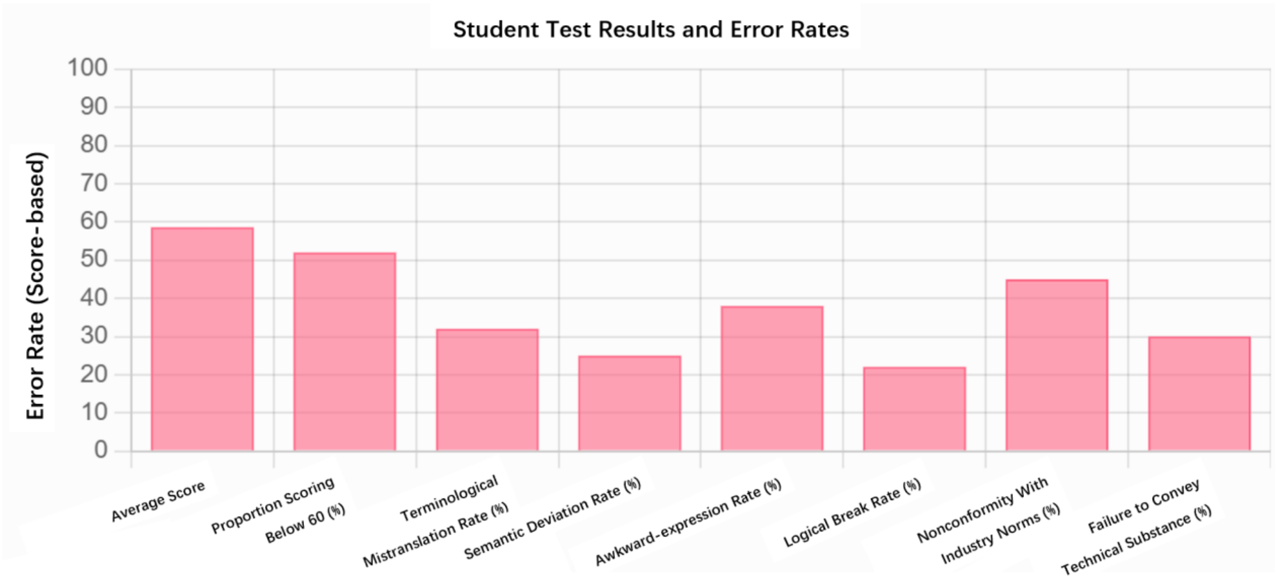

Figure 2. Student Test Results and Error Rates

A survey conducted in September 2024 employing both questionnaires and tests among 380 sophomore students reveals pronounced weaknesses in their reading, writing, and translation competence in Energy and Power English. The questionnaire results indicate that 38% of students have insufficient command of domain terminology; 45% have difficulty understanding long and complex sentences; 52% lack knowledge of emerging energy technologies; 32% are unfamiliar with industry standards; 67% are not proficient in applying translation techniques; and 58% lack a clear translation approach. Meanwhile, 82% of students desire practice in authentic scenarios, 76% expect timely feedback, and 68% require personalized resources.

The test results show an average score of only 58.6/100, with 52% of students scoring below 60. The error profile includes a 32% rate of terminological mistranslation and a 25% rate of semantic deviation; 38% of outputs are linguistically awkward, 22% exhibit logical breaks, 45% fail to conform to industry conventions, and 30% do not accurately convey the technical substance. In sum, current teaching shows deficiencies in methods, resources, and feedback, while students display weaknesses in terminology translation, handling of long and complex sentences, and professional adequacy. Reform and optimization via smart teaching platforms are urgently needed.

4. Application of Smart Teaching Platforms in Teaching Reading, Writing, and Translation in Energy and Power English

4.1. Platform Selection and Application-Scenario Design

4.1.1. Platform Selection: Fitness Considerations for Chaoxing Learning (Xuexitong)

This study selects Chaoxing Learning (Xuexitong) as the practice platform from three dimensions—functions, resources, and operations.

First, comprehensive functional coverage of the entire teaching process. The platform's core functions are highly aligned with the demands of reading, writing, and translation in Energy and Power English. The intelligent text analysis module can automatically tag power-sector terminology (e.g., tagging "carbon capture, utilization and storage" as "碳捕集利用与封存") and link to industry standards. The real-time translation assistance module supports multi-version comparison of renderings (e.g., distinguishing between technical-document style and more colloquial phrasing). The personalized pathway planning module pushes tailored exercises based on students' diagnostic test results. In addition, the platform supports course construction, task release, and interactive discussion, thereby meeting diverse instructional needs across all stages.

Second, robust reserves of industry-specific resources. The platform includes a built-in Energy and Power English specialized corpus comprising 1,000+ authentic texts (e.g., IEC standard translations and bilingual versions of power-equipment manuals) and 5,000+ domain terms, with monthly updates to incorporate emerging-technology vocabulary—addressing the lag inherent in conventional textbooks. It also provides a companion library of 200+ typical translation cases (including cases of terminological mistranslation, handling of long complex sentences, and expert commentaries) to help students avoid common pitfalls.

Third, low operational threshold and adaptability to multiple learning scenarios. Instructors can rapidly build teaching modules using templated functions. Students may participate via mobile app or desktop, with support for offline resource downloads—accommodating varied contexts such as pre-class preparation and post-class review.

4.1.2. Three-Dimensional Application-Scenario Design

Aligned with the course goals of reading, writing, and translation, the platform's use is organized into three types of scenarios to achieve precise alignment between functions and objectives.

Table1. Platform Application Scenarios Aligned with Course Goals in Reading, Writing, and Translation

Application Scenario	Platform Function Application	Teaching Objectives
In-class teaching	1) Intelligent text analysis: parse technical texts, annotate terminology, and segment long sentences.	1) Help students grasp the technical logic of professional texts.
	2) Interactive discussion: initiate sharing of translation approaches and small-group collaborative discussions.	2) Stimulate active thinking and cultivate collaborative learning skills.
	3) Real-time feedback: instructors mark students' translation assignments online, highlight errors, and provide revision guidance.	3) Correct translation errors in a timely manner and reinforce proper translation methods.
After-class autonomous learning	1) Personalized pathway planning: push terminology drills, micro-lessons on techniques, and text-translation tasks.	1) Achieve targeted improvement in students' weak areas.
	2) Real-time translation assistance: provide multi-version renderings and error prompts.	2) Enable students to solve translation problems independently and develop self-directed learning ability.
	3) Self-assessment and evaluation: generate terminology quizzes and mock translation items, with automatic scoring and analysis of weak links.	3) Help students clearly understand their proficiency level and define learning directions.
Practical projects	1) Project management: release simulated international power-project translation tasks and set milestones and role allocations.	1) Simulate real-world working contexts and strengthen practical capabilities.
	2) Collaborative tools: support group-based shared documents, real-time co-editing, and message boards for discussion.	2) Cultivate teamwork and communication skills.
	3) Outcome showcase: upload translation deliverables and enable instructor reviews and peer assessment.	3) Improve translation quality through multi-stakeholder evaluation.

4.2. Constructing a "Platform Empowerment–Task-Driven–Scenario Simulation" Teaching Model

Building on Chaoxing Learning (Xuexitong), we develop a pre-class–in-class–post-class closed-loop model to achieve deep online–offline integration.

4.2.1. Pre-class: Platform-Enabled Autonomous Preparation

Instructors release preparation resource packs aligned with the teaching objectives (e.g., "Micro-lesson on Key Smart-Grid Terms," "Excerpts from New Energy Technology Reports with Intelligent Analysis Outputs") and assign preparatory tasks (e.g., "Identify and translate three core terms"). Based on students' historical learning data, the platform pushes personalized supplementary resources—terminology flash cards for students with weaker foundations and contrastive terminology exercises for more advanced students (e.g., comparing "transmission/输电" and "distribution/配电"). Students complete preparation via the platform, use the real-time translation assistance to resolve terminological queries, take in-platform notes to record uncertainties, and discuss them in the forum. The platform automatically generates a preparation report, which instructors use to recalibrate instructional emphasis for the upcoming class.

4.2.2. In-class: Task-Driven Interactive Inquiry

Drawing on industry realities, instructors assign core tasks (e.g., "Translate the force majeure clause of a power contract"), first presenting mis-translation cases on the platform to prompt reflection. Students work in groups of 4–5 and use the group-discussion features to divide roles and collaborate (one student verifies terminology, two translate sentences, and one organizes the logical flow). After the first draft is uploaded, instructors annotate common errors online and explain the rationale (e.g., using split translation to handle long sentences with multiple attributive clauses). The session concludes with a whole-class discussion on translation techniques (e.g., converting English passive voice into active constructions in Chinese), during which the instructor provides real-time commentary to reinforce methods.

4.2.3. Post-class: Scenario-Simulation for Practice and Enhancement

Instructors assign a simulated international power-project task (e.g., translating the abstract of a technical manual for an overseas photovoltaic power plant), specifying milestones (first draft due in 3 days, revised draft due in 5 days) and evaluation criteria (e.g., terminological accuracy, fluency of the translation). Students form teams and divide labor (e.g., document translation group, interpreting group). They co-edit in real time using shared documents and resolve disagreements via message boards (e.g., whether "photovoltaic module" should be rendered as "光伏组件" or "太阳能电池板"). Instructors provide just-in-time guidance using the progress-tracking function. Upon completion, teams submit deliverables in the showcase area. Comprehensive feedback is generated through a combination of platform auto-scoring (terminology/grammar) + instructor evaluation (professional adequacy) + peer assessment (fluency).

4.3. Teaching Case: The "Smart Grid" Unit

4.3.1. Case Design and Implementation

This study adopts the "Smart Grid" instructional unit for sophomores majoring in Energy and Power Engineering to verify the effectiveness of the smart teaching platform. The unit has clear objectives, focusing on three core competencies: (1) mastering 20+ core terms in the smart grid domain (e.g., demand response/需求响应); (2)

skillfully applying split translation and part-of-speech conversion to handle technical texts; and (3) independently completing the translation of a 300-word abstract of a smart-grid technical report.

With respect to platform use, a complete pre-class–in-class–post-class loop is established. Pre-class, instructors push via the platform a "smart-grid terminology micro-lesson," excerpts of a technical report with terminology annotations (including grid stability/ 电网稳定性), and a preparatory task ("translate five core terms + identify two long sentences"). Data show that 85% of students completed the preparation, and 23% posted proactive questions in the discussion forum—such as inquiring about the standard rendering of self-healing grid/ 自愈电网 —demonstrating the effectiveness of the preparation stage. In class, the instructor assigns a long-sentence translation task based on: "While smart grids can improve energy efficiency, their high construction cost and complex control systems pose challenges to large-scale application" (尽管智能电网可提升能源效率，但其高昂的建设成本与复杂的控制系统为大规模应用带来挑战). Student groups use the platform's real-time translation assistance to confirm the standard rendering of complex control systems/ 复杂控制系统 , and outline the translation approach in online notes (i.e., "splitting the concessive clause + supplying a logical subject"). The instructor then comments on common issues—such as omitting the pronoun " 其 ," which breaks logical coherence—and simultaneously explains split translation techniques. Post-class, students complete the 300-word abstract translation. After auto-scoring by the platform, the instructor releases a micro-lesson addressing common errors (e.g., demand response mistranslated as " 需求反馈 "), guiding students to revise their output based on feedback. Throughout the process, platform functions are tightly aligned with instructional phases.

4.3.2. Effects of the Application

In the "Smart Grid" unit, the smart teaching platform produced marked gains in students' translation competence in Energy and Power English. In terms of abilities, the terminological mistranslation rate dropped from 35% pre-instruction to 12% post-instruction; the correct translation rate for distributed generation (分布式发电) rose dramatically from 48% to 89%, indicating substantially improved precision in terminology mastery. Moreover, 82% of students were able to apply split translation proficiently to long, complex sentences in technical texts; the overall average score for text translation increased from 56 to 78. The most substantial improvement occurred in professional adequacy, which jumped from 42 to 75, suggesting that students' translations conformed more closely to textual norms in the energy and power industry and conveyed the technical substance more accurately.

Student feedback further corroborates these outcomes: 90% of students affirmed that the intelligent text-analysis function helped them understand professional technical texts; 83% believed the real-time translation assistance broadened their repertoire of renderings and effectively broke the limitations of a single translation mindset; and 76% expressed a desire for more practice tasks of the same kind, reflecting recognition of the platform-based pedagogy and a strong appetite for deeper learning.

In sum, this case demonstrates that the smart teaching platform—through the synergistic effects of targeted resource pushing, real-time feedback, and scenario simulation—effectively addresses the core bottlenecks of Energy and Power English translation, namely "terminology difficulty, challenges in handling long complex sentences, and insufficient professional adequacy." Meanwhile, the learning data recorded by the platform provide an evidence base for instructors to dynamically adjust teaching strategies, thereby achieving an optimized closed loop of teaching–learning–assessment.

5. Construction of the Evaluation System: Indicators and Methods

5.1. Evaluation-System Construction: Indicators and Methods

To objectively assess the effects of the smart teaching platform, this study establishes a *three-dimension, quantitative* + *qualitative* evaluation system.

5.1.1. Multi-dimensional Evaluation Indicators

Centering on the core components of translation competence, we define three primary indicators—**translation accuracy**, **translation fluency**, and **application of professional knowledge**—together with six secondary indicators. The total score is 100 points, as detailed below.

Table 2. Multi-dimensional Evaluation Indicators for Translation Competence (Total Score = 100)

Primary Indicators	Secondary Indicators	Indicator Definitions and Scoring Criteria (Total Score: 100 points)
Translation Accuracy	Terminological Accuracy (40 pts)	Evaluates the precision of domain-term translation. A perfect 40 is awarded if there are no terminological errors; 5 points are deducted for each error, down to zero. Example: rendering "power grid" as " 电网 " earns full points; translating it as " 电力网 " incurs a 5-point deduction.
	Semantic Consistency (30 pts)	Evaluates consistency of meaning and logic between source and target. A perfect 30 is awarded if there are no semantic deviations; 3 points are deducted per deviation. Example: omitting the effective date in a force majeure clause incurs a 3-point deduction.
Translation Fluency	Naturalness of Language (20 pts)	Evaluates idiomaticity in the target language. Full points are awarded for fully natural expression; 2 points are deducted for each awkward phrasing. Example: a literal passive such as " 措施已被采取 " ("measures have been taken") triggers a 2-point deduction.
	Logical Coherence (10 pts)	Evaluates the smoothness of sentence- and paragraph-level connections. Full points are awarded for clear logic; 1 point is deducted for each coherence break. Example: failing to add appropriate connectives after splitting a long sentence triggers a 1-point deduction.
Application of Professional Knowledge	Conveyance of Professional Concepts (15 pts)	Evaluates accurate communication of domain concepts and technical principles. Full points are awarded when there is no professional misunderstanding; 3 points are deducted per misunderstanding. Example: discussing grid frequency regulation without indicating the "50 Hz ± 0.2 Hz" standard incurs a 3-point deduction.
	Conformity to Textual Norms (15 pts)	Evaluates alignment with industry textual conventions. Full points are awarded when fully compliant; 3 points are deducted per nonstandard expression. Example: using colloquial phrasing like " 赔钱 " ("lose money") in a contract incurs a 3-point deduction.

5.2. Teaching-Effect Comparison: Experimental vs. Control Classes

5.2.1. Improvements by Core Competence Dimension

Table 3. Improvements by Core Competence Dimension (Pretest vs. Posttest; Experimental vs. Control)

Competence Dimension	Pre-test (Experimental Group vs. Control Group)	Post-test (Experimental Group vs. Control Group)	Statistical Significance (of the Difference)
Terminological Accuracy	58% vs. 56%	89% vs. 68%	($p < 0.01$)
Semantic Deviation Rate	32% vs. 34%	12% vs. 25%	—
Awkward Expression Rate	42% vs. 45%	15% vs. 32%	—
Professional Misunderstanding Rate	40% vs. 42%	18% vs. 35%	—

Specifically, in the experimental class, the correct rendering of "demand response" as " 需 求 响 应 " rose from 45% to 91%; 85% of students were able to convert English passive constructions into natural active Chinese forms (e.g., " 已采取措施提升电能质量 "); and 78% supplemented grid frequency regulation with the relevant technical standard. In the control class, by contrast, 28% still mistranslated "transmission line" as " 传输线 ," and only 45% added the conceptual underpinnings correctly.

5.2.2. Platform-Data–Based Corroboration

Platform analytics further corroborate the gains in the experimental class. Terminology test accuracy rose from 58% pre-intervention to 89% post-intervention, indicating a marked improvement in mastery of Energy and Power terminology. Average revision count per assignment increased from 1.2 to 2.8, reflecting greater learner initiative in checking and correcting errors. Average translation time decreased from 65 minutes to 45 minutes, directly evidencing increased efficiency and the platform's optimization of the learning process.

Analysis of 50 valid questionnaires and 10 interviews from the experimental class offers additional insight into user experience. On the positive side (recognized by over 75% of students): 92% agreed that the intelligent text-analysis function helped them rapidly comprehend technical texts; 88% found the real-time translation assistance provided multi-version renderings that effectively resolved term confusions such as transmission/ 输 电 vs. distribution/ 配 电 ; 86% affirmed the precision of the personalized pathway planning in addressing weaknesses; and 78% were satisfied with real-time feedback. Some students reported that pushed terminology drills raised their correctness from 60% to 90%. Moreover, 84% believed simulated international power projects (e.g., overseas PV document translation) matched workplace needs, and 76% said collaborative tasks improved team communication.

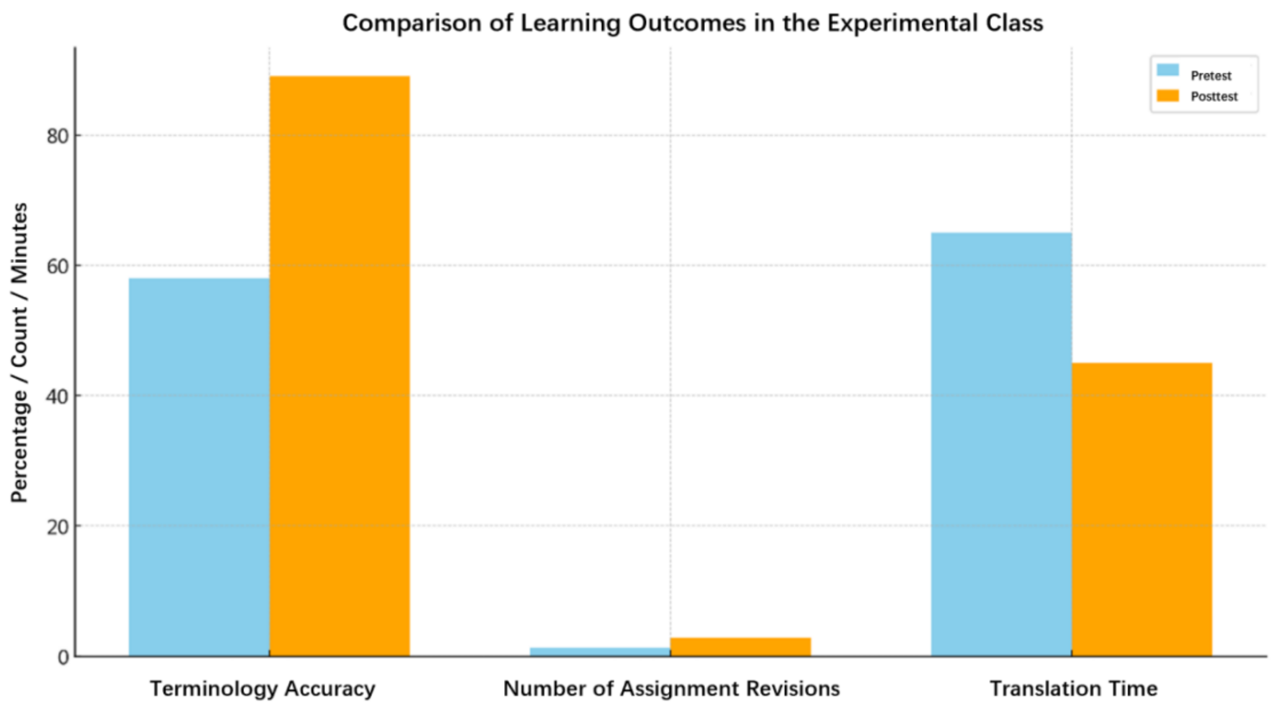

Figure 3. Comparison of Learning Outcomes in the Experimental Class

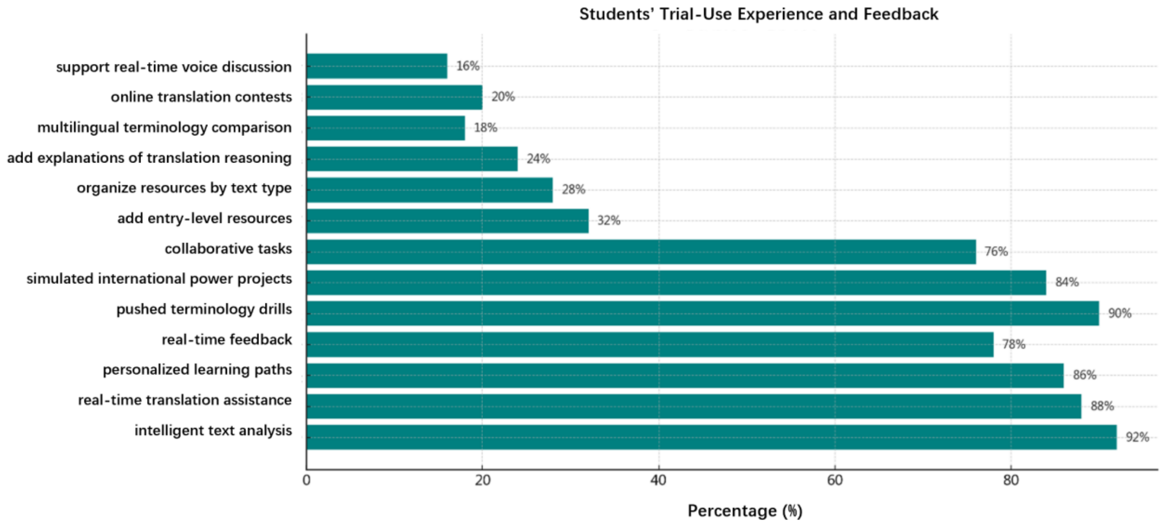

Figure 4. Students' Trial-Use Experience and Feedback

At the same time, students proposed optimizations: 32% suggested more entry-level resources; 28% requested resource organization by text type; 24% hoped the real-time assistance would include explanations of translation reasoning; 18% requested multilingual terminology comparison; 20% recommended adding online translation contests; and 16% wished group-collaboration tools supported real-time voice discussion.

In sum, while the smart teaching platform significantly enhances students' translation competence, further optimization is needed in resources, tools, and interaction to better accommodate diverse learner needs.

6. Conclusions and Prospects

Focusing on the teaching of reading, writing, and translation in Energy and Power English, this study explores the application of smart teaching platforms and yields three key contributions. First, it constructs a hybrid teaching model of platform empowerment–task-driven–scenario simulation. Relying on Chaoxing Learning (Xuexitong), it builds a closed-loop process of pre-class personalized resource pushing–in-class industry-task collaboration–post-class international project simulation. This breaks the limitations of traditional lecturing and enables the coordinated development of domain knowledge, language competence, and translation techniques, precisely aligning with the industry's demand for compound translation talent. The model closely accords with the view of Dong Yanping and Zhan Cheng (2025) that interpreter training must "move beyond traditional teaching formats and achieve coordinated competence development through multi-link integration." Both emphasize an industry-driven approach to professional language instruction, in which structured teaching processes connect knowledge transmission with skills training—thereby providing a theoretical echo for model innovation in professional translation talent cultivation[12].

Second, empirical comparison between experimental and control classes verifies the platform's significant effect on improving translation competence: terminological accuracy, semantic deviation rate, awkward-expression rate, and professional-misunderstanding rate all show substantial optimization. Platform analytics further confirm that core functions effectively address translation bottlenecks. This empirical pathway is consistent with the logic adopted by Cheng Shuang and Zhang Yushuang (2025) in research on post-editing pedagogy—namely, "instructional intervention–quantitative validation–competence outcome evaluation." Both employ controlled experiments and statistical analysis to precisely demonstrate how pedagogical interventions enhance language-processing abilities, highlighting the scientific value of empirical research in validating outcomes of professional translation pedagogy and providing cross-domain reference for the functional effectiveness of smart teaching platforms[13].

Third, the study distills a replicable practical scheme for instruction: it clarifies platform-selection dimensions, delineates the coverage of application scenarios, and details a diversified evaluation model. Coupled with student feedback, it proposes optimization suggestions that can inform smart teaching in other ESP domains.

The study further offers multi-level implications for practice: at the instructor level, there is a need to strengthen technological application and industry collaboration; at the institutional level, teaching support and evaluation mechanisms should be improved; and at the platform level, resource stratification and functional iteration warrant optimization. These implications resonate with Dong and Zhan's (2025) argument that interpreter training requires multi-party coordination (state–industry–university) to improve the support system, further confirming the general rule that reform in professional language education must involve multi-actor linkages and multi-dimensional efforts[12].

Finally, this research has limitations, including a relatively narrow sample scope, short duration, and insufficient control of variables. Future work should expand the scope to multiple institutions and disciplines, conduct long-term longitudinal studies, integrate emerging technologies, and refine experimental design. Such efforts will enhance the generalizability and depth of the findings and further advance the sustained development of smart teaching for professional English.

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