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Exploration and Practice of Blended Foreign Language Teaching Mode in Energy and Power Universities

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Abstract: This paper focuses on the demand for transformation in foreign language teaching modes within energy and power universities, delving into the exploration and practice of a blended foreign language teaching model. It first elaborates on the theoretical foundations and construction principles of the blended teaching model. Building upon this, it details the specific implementation of this model in foreign language teaching at energy and power universities, encompassing the design of teaching procedures, integration of teaching resources, selection of teaching strategies, and construction of a teaching evaluation system. The aim is to provide valuable references for reforming foreign language teaching in these institutions.

1. Introduction

Energy and power universities, serving as crucial bases for cultivating professionals in the energy and power industry, place significant importance on foreign language teaching within talent development. However, traditional foreign language teaching models suffer from limitations such as finite teaching resources, monotonous teaching methods, and insufficiently scientific evaluation, making it difficult to meet the demands of talent cultivation. The blended teaching model organically combines online and offline instruction, leveraging the strengths of both to enhance teaching effectiveness and student motivation. Therefore, exploring and implementing a blended foreign language teaching model in energy and power universities holds substantial practical significance.

2. Theoretical Foundations and Construction Principles of the Blended Teaching Model

2.1. Theoretical Foundations

Constructivist Learning Theory: Learners actively construct cognitive frameworks by processing authentic industry situations, such as independently generalizing terminological patterns of technical attribution when analyzing reports of cross-border power plant accidents. Teachers provide scaffolding support to guide the independent design of communication strategies by prompting only religious taboo clues in a simulation of power transmission and transformation negotiations in Southeast Asia. The industry casebook serves as a vehicle for meaning construction, and students naturally form a standardized transformational thinking model when comparing the differences in expression between the European Union and China's special equipment codes. The process of knowledge construction emphasizes the transformation of individual experiences, such as reconstructing the terminology conflict encountered in the corporate internship as a cognitive node of cross-cultural communication. Cognitive conflict triggers in-depth adjustment, forcing the terminology system to be iteratively upgraded when the feedback from overseas clients rejects the original translation program.[1]

Interactive Teaching Theory: Students and faculty collaborate on the translation of technical documents to form a dynamic dialog mechanism, whereby the instructor pushes the original ASME standard for cross-checking parameter ambiguities. Industry experts intervene in the virtual project to form a triangular interaction, analyzing potential objections from Middle Eastern owners while annotating the equipment acceptance clauses formulated by the students online. Peer debates serve as cognitive catalysts to stimulate refined interpretations of ISO standard clauses in the context of disputes over the expression of vibration values for combustion engines. Interaction density increased with task complexity, from basic terminology checking to on-the-fly strategy adjustment for negotiating multinational environmental regulations. Non-verbal interactions are embedded in hands-on training sessions, with physical demonstrations of operating a turbine complementing the expressive limitations of culturally loaded words.

Deep Learning Theory: Cognitive processing focuses on the essential issues of the industry, requiring students to trace the evolution of the terminology of nuclear safety regulations in relation to the Chernobyl accident. Critical thinking runs through the entire learning process, with students considering both technical rigor and ethical tensions of religious clauses in the formulation of cross-border EPC contracts. Knowledge transfer emphasizes the ability of cross-scenario application, flexibly transforming the carbon trading terminology acquired in the classroom into the elements of feasibility studies for projects in Southeast Asia. Conceptual networks are deeply interconnected to establish a terminological mapping system between turbine thermal efficiency parameters and carbon neutral policy texts. Metacognitive monitoring is concretely presented, with students regularly annotating the mapping of cultural sensitivity lapses in technical negotiation recordings.[2]

2.2. Construction Principles

Goal-oriented principle: The teaching design is always anchored on the competence needs of the industry, and the course modules are extrapolated according to the job standards of the International Electrotechnical Commission. The content screening focuses on the high-frequency pain points of cross-border projects, and prioritizes the integration of combustion engine troubleshooting terminology and religious taboos database. The gradient of task complexity is designed with reference to the milestones of overseas projects, from the translation of basic equipment manuals to the simulation of negotiation on multinational environmental regulations. The dynamic adjustment mechanism responds to the iteration of energy policies, and when the carbon border regulation mechanism is updated, it is immediately integrated into the power equipment export scenario training. Competency verification scenarios are straight out of the real work environment, with corporate mentors revising training parameters based on ASEAN Grid Collaboration performance.[3]

Student-Centered Principle: Adaptive platform builds individual competency profiles and dynamically pushes EU Pressure Vessel Directive micro-courses according to the heat map of terminology application. The diagnostic system captures deviations in the understanding of culturally loaded terms and automatically generates communication strategy training for Middle

East projects. Learning paths are optimized in real time with feedback from internships, and those who are weak in writing combustion engine reports trigger the standard case comparison module. Self-regulation mechanism is embedded in the whole project process, and students independently choose the order of technical difficulties in the virtual EPC bidding. The reflection tool visualizes the cognitive trajectory and requires marking the nodes of terminology conversion mistakes in the cross-border arbitration simulation.

Resource Integration Principle: Intelligent crawling engine real-time aggregates IEA reports and overseas engineering records, and reconstructs knowledge units according to themes such as hydrogen energy safety. The physical training platform is equipped with a bilingual fault simulation system, and receives ASME standard warning voices when disassembling and assembling the turbine. Corporate mentors regularly inject current project controversy material, such as the original communication data flow of the acceptance of a photovoltaic power plant in a certain country. Paper literature and digital resource versions are linked to ensure that ASEAN Grid Blue Book updates are instantly mapped to the virtual project library.[4]

Multiple Evaluation Principle: Industry supervisors collect terminology conversion stability data at cross-border sites and synchronize the entry of shared evaluation matrix. Third-party certification organizations intervene in competency verification to observe the quality of ethical decision-making through simulated technology leakage scenarios. Corporate Mentor Alliance establishes cross-cultural competence radar charts to quantify the response time to religious taboos and the localization coefficient of negotiation strategies. The platform automatically tracks full-cycle behavioral traces, generating improvement maps from prep terminology cloud mapping flaws to virtual collaboration mistakes. Dynamic competency modeling correlates in-class debate performance with fluctuations in overseas customer satisfaction.[5]

3. Practice of Blended Foreign Language Teaching in Energy and Power Universities

3.1. Teaching Procedure Design

(1) Pre-class Preparation Stage

Teachers design a modularized pre-study package based on energy equipment technology documents, integrating authentic corpus such as excerpts from English manuals of supercritical units or actual transcripts of international clean energy summits. Students complete the task of constructing a terminology cloud through the adaptive platform, and the system automatically marks cognitive biases in the expression of combustion engine parameters. The preview data triggers an early warning mechanism, such as dynamically generating a list of key parsing points in the class when most students confuse the near-sense expressions of carbon capture and storage technology. Industry tutors synchronize the uploading of the latest overseas project cases, presetting typical controversial points in cross-border technology negotiations for in-depth investigation in the classroom.[6]

(2) In-class Teaching Stage

Teachers and students carry out contextualized training around the pre-study pain points, For example, simulating small accident analysis meetings of overseas power plants and conducting role-playing debates on technical responsibilities between equipment suppliers and buyers. The teacher introduces a dynamic corpus to assist decision-making, comparing the differences in terminology mapping between the ASME standard and the Chinese Special Equipment Code in real time. The group collaborates to deal with unexpected scenarios, such as the temporary insertion of data on frequency changes in a country's power grid, requiring immediate adjustment of the equipment parameter representation scheme. The interactive whiteboard records the logic chain of terminology selection and highlights cases of communication breakdown triggered by cultural taboos.

(3) Post-class Consolidation Stage

The platform pushes personalized reinforcement tasks, and customizes the EU ETS terminology game to address the weaknesses in gas turbine parameter expression exposed in the class. The virtual engineer community opens up a project practice area, where students participate in the collaborative translation of cross-border wind power operation and maintenance work orders, and the system tracks the consistency and timeliness of terminology use. Corporate mentors annotate cultural adaptation flaws in the localization scheme of thermal power plant safety regulations online, triggering multiple rounds of modification process. Learning profiles automatically update the competency matrix and recommend the latest terminology guide chapters released by the International Electrotechnical Commission.[7]

3.2. Teaching Resource Integration

(1) Online Resource Integration:

Industry Dynamics Corpus continuously grabs real materials such as IEA technical reports and multinational enterprises' equipment maintenance videos, and automatically categorizes them by topics such as combustion turbine troubleshooting and carbon trading compliance. The teaching platform has a built-in intelligent annotation engine that automatically highlights the culturally loaded words in the operation and maintenance logs of Southeast Asian power plants. When students carry out virtual overseas projects, the system instantly pushes out information packages on the evolution of power regulations in relevant countries. The teacher team dynamically adjusts the weight of resources based on the heat map of terminology application, for example, increasing the proportion of multilingual cross-referenced versions of hydrogen energy safety regulations. Resource recommendation algorithms correlate with students' recent training performance, prioritizing those with confusing terminology with animated explanations of standardized procedures.[8]

(2) Offline Resource Integration:

The training center configures bilingual work cards in the turbine disassembly and assembly bench, so that students are exposed to the standardized English naming of valve components when operating the equipment. Corporate instructors regularly lead workshops with current overseas project materials, such as the analysis of the original communication records of the acceptance dispute of a photovoltaic power plant in a certain country. The physical repository updates paper documents such as the ASEAN Grid Interconnection Technology Blue Book in a timely manner, forming a version linkage mechanism with the online thesaurus. The industry audio-visual corner rotates international engineering on-site negotiation records, focusing on non-verbal communication strategies in technical dispute scenarios. The cross-cultural sandbox area simulates construction taboos in specific religious regions, strengthening the concrete cognition of cultural elements in technical communication.

3.3. Teaching Strategy Selection

Personalized Teaching Strategies: The adaptive platform dynamically adjusts the learning menu according to the heat map of students' terminology mastery, and pushes an animated explanation of the EU Pressure Vessel Directive for those who are weak in the expression of turbine parameters. The diagnostic system captures the understanding deviation of culturally loaded words and automatically generates special training modules for avoiding religious taboos. Teachers customize the tutoring program with reference to the simulation data of overseas projects, and design the micro-lesson chain to address the communication breakpoints of power transmission and transformation negotiations in Southeast Asia. The learning path is updated in real time with the feedback from the enterprise internship, and the standard case comparison module is immediately inserted when there is a logical break in the writing of the combustion turbine fault report. The competency matrix correlates with the International Electrotechnical Commission Job Competency Model, recommending a sandbox of nonverbal communication strategies for those who have difficulty in cross-cultural collaboration.[9]

Contextual Teaching Strategies: Teachers build immersive industry scenarios, organize students into groups to deal with unexpected outages at virtual overseas power stations, and role-play the technical responsibility determination between equipment vendors and local grid companies. Injecting the national policy change variables into the corpus dynamically and in real time, it is necessary to immediately adjust the legal risk warning clauses in the equipment parameter specifications. The training center sets up a bilingual obstacle work order in the turbine disassembly and assembly stand, so that students can simultaneously deal with the installation conflict caused by the mistranslation of equipment nameplates during operation. Contextual complexity increases with competency, upgrading from single equipment commissioning to a joint multinational carbon quota negotiation simulation, with a library of cultural variables continually loaded with real-world distractions such as religious holiday scheduling.

Collaborative Learning Strategy: The project team undertook a real industry task to collaborate on a cross-version translation and calibration of the ASEAN Grid Interconnection Technical Specification. The cloud collaboration platform automatically flags terminology conflict points, triggering an online debate on the accuracy of combustion engine vibration values. The task is designed with a mandatory cross-validation session, requiring members to take turns verifying cultural taboos and omissions in cross-border EPC project bids. The system records the collaboration trajectory to generate a cognitive network diagram, which visualizes the evolution of collective blind spots in the process of technical standard transformation. Corporate mentors set up unexpected variables to interrupt the collaboration flow, and simulate on-site equipment failures to force the team to reconfigure communication strategies.[10]

3.4. Teaching Evaluation System Construction

Diversified Evaluation Subjects: Industry supervisors collect hands-on data at cross-border program sites to record the stability of terminology conversion when students handle bilingual instruction on equipment. Corporate mentor consortiums establish a shared evaluation library to compare the accuracy of implementing culturally taboo terms in different country environments. Overseas customers provide regular feedback on the localization quality of technical documentation, with special attention paid to the effectiveness of communication conflict resolution triggered by religious holiday scheduling adjustments. A third-party certification body intervenes in the core competency verification, testing the logical rigor of proof in technical standard disputes by simulating international arbitration scenarios. The teacher team integrates the observation results from multiple parties and cross-analyzes the difference in expression behaviors between classroom simulation and engineering site.[11]

Whole-Process Evaluation: The platform automatically tracks the trajectory of the entire learning cycle, analyzing everything from terminology mapping deficiencies during the pre-study phase to collaborative failures in post-course virtual projects. The interactive whiteboard records the terminology application deviation of technical debates in real time, and generates an instant warning of competence short boards. Key nodes of assessment are set in the corporate internship session, such as the dynamic scoring of regulatory compliance in the writing of acceptance reports for overseas power plants. The evaluation data flow runs through the whole process of cross-border

EPC project simulation, marking the coherent performance from the preparation of bidding documents to the notification of unexpected accidents. The training center equipment operation evaluation form is associated with the cultural sensitivity dimension, capturing the cross-cultural transmission loss value of terminology instructions when disassembling and assembling the turbine.

Multi-dimensional Evaluation Indicators: The evaluation framework deeply integrates the industry competency model, breaking down terminology rigor into observation points such as the precision of equipment parameter expression and the accuracy of international standard invocation. The cross-cultural dimension establishes concrete indicators such as response speed to religious taboos and localization coefficient of negotiation strategies. The practical ability assessment focuses on the quality of emergency response, quantitatively analyzing the information notification timeliness and technical attribution logic in equipment failure simulation. The professionalism dimension is realized through shadow assessment, which records students' ethical decision-making process when dealing with fictitious technology leakage incidents. The dynamic competency matrix continuously updates cognitive flexibility parameters, correlating the changing patterns of in-class debate performance with overseas customer satisfaction data.[12]

4. Conclusion

This paper has explored and practiced the blended foreign language teaching model within energy and power universities. Practical case analysis has verified its effectiveness and feasibility. By organically integrating online and offline teaching, leveraging their respective strengths, the model enhances teaching outcomes and student motivation. Through resource integration, strategic teaching method selection, and constructing a multi-faceted evaluation system, this model meets the new demands of foreign language teaching in these universities, cultivating compound talents with international vision and cross-cultural communication skills.

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References

[1] Gao Chaoyang. (2021). Analysis of Blended English Teaching Effectiveness in Application-Oriented Universities. Journal of Shanxi University of Finance and Economics, 43(S2), 175-178+195.

[2] Han Ye & Gao Xuesong. (2022). A Review of Research on Foreign Language Teachers' Cognition and Practice in Blended Teaching. Foreign Languages and Their Teaching, (01), 74-83+149.

[3] He Chunxiu, Meng Yu & Chen Jianlin. (2024). Foreign Language Teachers' Role Identity in Blended Teaching Contexts. Computer-Assisted Foreign Language Education, (02), 63-69+110.

[4] Hu Jiehui. (2021). Theoretical Connotation and Research Paradigm of Blended Foreign Language Teaching. Foreign Language World, (04), 2-10.

[5] Liang Wenhua, Xiang Mengwei & Zhang Chao. (2022). Diachronic and Synchronic Characteristics of Blended College English Teaching Research in China. Computer-Assisted Foreign Language Education, (02), 32-38+116.

[6] Meng Yaru & Cui Yu. (2023). Research on Formative Assessment Literacy and Development Pathways of Foreign Language Teachers in Blended Teaching. Foreign Languages and Their Teaching, (05), 86-98+147-148.

[7] Qian Xi, Meng Yaru & Yue Zhen. (2023). The Impact of Dynamic Assessment-Integrated Blended Teaching on the Development of Paraphrasing Skills in Academic English. Foreign Language Education, 44(02), 63-68.

[8] Ruan Xiaolei & Zhan Quanwang. (2021). Action Research on Constructing a "Online + Offline" College English Course from the Perspective of Blended Learning. Computer-Assisted Foreign Language Education, (05), 101-106+15.

[9] Wu Wangjiao. (2024). Construction of a Blended Teaching Model for Less Commonly Taught Language General Education Courses from an Ecological Perspective. Contemporary Foreign Languages Studies, (05), 92-102+206-207.

[10] Zhang Shuyue. (2024). Exploring an Evaluation Model for "Internet+" Blended Teaching Effectiveness in Foreign

Language Education from the Perspective of Foreign Language Pedagogy. Contemporary Foreign Languages Studies, (05), 116-124+208.
[11] Wu, H. (2020). Exploration and Practice of Network Teaching Mode in Colleges and Universities in the Era of Omnimedia. 5th International Conference on Contemporary Education, Social Sciences and Humanities - Philosophy of Being Human as the Core of Interdisciplinary Research (ICCESSH 2020):17-21.
[12] Pan, T. Zhu, Y. & Chen, S. (2020). Exploration and practice of international collaborative teaching mode for innovation talents. Higher Education Studies, 10.