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Research on Enhancing "Dual-Qualified" Competencies and Teaching Innovation of Foreign Language Teachers in Energy and Power Universities under the Empowerment of New Quality Productive Forces

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Abstract: *This study focuses on enhancing the "dual-qualified" competencies and teaching innovation of foreign language teachers in energy and power universities under the empowerment of New Quality Productive Forces (NQPF). It elucidates the essence of NQPF and its impact on the energy and power industry and foreign language teaching, analyzes the current status of foreign language teachers' "dual-qualified" competencies and existing teaching issues, and proposes strategies for enhancing these competencies and fostering teaching innovation. The aim is to provide references for reforming foreign language teaching and promoting the professional development of teachers in energy and power universities.*

Keywords: *New Quality Productive Forces; Energy and Power Universities; Foreign Language Teachers; "Dual-Qualified" Competencies; Teaching Innovation*

1. Introduction

Amidst rapid global technological advancements and deepening economic globalization, New Quality Productive Forces (NQPF), as the core driver of economic and social development, are profoundly reshaping the landscape of various industries. The energy and power industry, a crucial pillar of national economic development, faces urgent tasks of transformation, upgrading, and innovation. The development of NQPF drives the industry to continuously expand into new areas in technological innovation, international cooperation, and market development, leading to a growing demand for compound talents possessing cross-cultural communication skills, a global vision, and comprehensive foreign language proficiency.

Energy and power universities, serving as vital bases for cultivating professionals in this field, bear the responsibility of supplying high-quality talent for the industry. Foreign language teachers, as key players in university education, directly impact the quality of foreign language talent cultivation through their "dual-qualified" competencies (mastering solid theoretical professional knowledge alongside rich practical experience) and their level of teaching innovation. However, current foreign language teachers in these universities exhibit deficiencies in "dual-qualified" competencies, and teaching models struggle to meet industry demands under the NQPF framework. Therefore, research into enhancing "dual-qualified" competencies and teaching innovation in this context holds significant practical importance.

2. The Essence of New Quality Productive Forces and Its Impact on the Energy and Power Industry and Foreign Language Teaching

2.1 Essence of New Quality Productive Forces

New Quality Productive Forces represent an advanced form of productive forces, driven primarily by scientific and technological innovation. They break away from traditional economic growth models and development paths, characterized by high technology, high efficiency, high quality, and alignment with the new development philosophy. They emerge from revolutionary technological breakthroughs,

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innovative allocation of production factors, and deep industrial transformation and upgrading. Their fundamental essence lies in the leap of laborers, means of labor, objects of labor, and their optimized combination, with a significant increase in total factor productivity serving as the core indicator. Their defining feature is innovation, the key is quality superiority, and their essence is advanced productive forces [1].

Within the energy and power sector, NQPF manifests in the R&D and application of new energy technologies (e.g., efficient utilization technologies for solar, wind, hydro, and other renewables), the construction and operation of smart grids (achieving intelligence, automation, and high efficiency), and the development of energy internet (promoting intelligent coordination in energy production, transmission, distribution, and consumption). These areas demand a large number of innovative talents who must not only master advanced scientific and technological knowledge but also possess strong international communication skills and foreign language proficiency to facilitate technical cooperation with international peers, participate in setting international standards, and expand into international markets.

2.2 Impact of NQPF on the Energy and Power Industry

Technological Innovation Drives Industrial Upgrading: NQPF development compels continuous technological innovation within the industry, driving industrial upgrading. For instance, the application of new energy technologies diversifies the energy structure, reducing reliance on traditional fossil fuels; smart grid construction enhances grid stability and reliability while lowering energy losses.

Increasingly Frequent International Cooperation: As the industry's internationalization deepens, international cooperation becomes a crucial trend. Enterprises need to collaborate with foreign research institutions and companies on joint technology R&D, project construction, and market expansion to access more resources and market share.

Shifting Market Demands: NQPF development alters the structure of market demand in the energy and power sector. Consumers demand higher quality, efficiency, and environmental performance from energy, prompting enterprises to continuously adjust their products and services to meet market needs.

2.3 Impact of NQPF on Foreign Language Teaching

Impact on Teaching Content: The emergence of new technologies and concepts necessitates timely updates to foreign language teaching content to reflect the latest industry developments. For example, teaching should incorporate professional vocabulary and expressions related to new energy technologies, smart grids, and the energy internet.

Impact on Teaching Methods: Traditional methods struggle to cultivate the practical and innovative abilities required under NQPF. More diverse, interactive methods are needed, such as project-based teaching, case-based teaching, and inquiry-based learning, to stimulate student interest and initiative.

Requirements for Teacher Competencies: NQPF development demands that foreign language teachers possess not only solid linguistic knowledge and teaching skills but also an understanding of energy and power industry knowledge and the ability to teach across disciplines. Additionally, teachers need innovative awareness and capability to continuously explore new teaching models and methods [2].

3. Analysis of Current "Dual-Qualified" Competencies and Teaching Issues of Foreign Language Teachers in Energy and Power Universities

3.1 Current Status of "Dual-Qualified" Competencies

There is a disconnect between knowledge and practice regarding the dual qualifications of foreign language teachers in energy and power universities. The professional background of the teaching staff has long been confined to the realm of language theory, lacking a mechanism for in-depth tracking of the evolving trends in new power systems. This has resulted in the professional terminology database lagging behind industrial changes by more than six months. The training programs designed by institutional planners have focused on traditional teaching methods, failing to establish a mandatory mechanism for teachers to regularly participate in on-site practices at power grid companies. This has led to case development being detached from real-world business scenarios such as smart power plant

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construction. Institutional resource allocation overlooks the synchronous conversion of cutting-edge technical literature, with key materials such as virtual power plant dispatch procedures not yet incorporated into the teachers' knowledge update system. The rapid iteration of industry standards continues to compress the interdisciplinary conversion cycle for teachers, and continuing education courses lack specialized language training modules for emerging fields such as hydrogen energy storage. There is a lack of regular information exchange channels between technical departments and teaching teams, resulting in English white papers from the power industry entering the teaching curriculum months after their release, creating a vicious cycle where professional knowledge and language instruction grow increasingly divergent. This situation fundamentally stems from the disconnect between industry and education caused by the absence of an integrated mechanism.

3.2 Analysis of Teaching Issues

Current teaching issues highlight the deep-seated challenges posed by dual qualifications gaps in classroom practice. Teachers encounter bottlenecks in the transmission mechanism when integrating professional content with language instruction, and there is a significant time lag between advancements in industry-leading technologies and updates to classroom training modules. When designing energy-themed foreign language courses, teaching teams overly rely on cases from standardized textbooks, lacking an immediate conversion mechanism for time-sensitive materials such as English dispatch instructions for ultra-high voltage transmission and transformation systems. This results in project tasks being misaligned with corporate on-site needs for months. Classroom activity organization exposes weaknesses in virtual scenario construction capabilities. When simulating power transaction negotiations, teachers fail to incorporate the latest English terms from carbon quota trading rules, thereby weakening the industry-specific value of language training. Student learning behavior research reflects the negative impact of insufficient professional foreign language application scenarios. Training modules struggle to align with the intensity of real-world language materials from power dispatch center shift handover briefings, with task complexity remaining at the basic level of translating single sentences of equipment parameters. Teacher assessment methods continue to rely on traditional grammar accuracy metrics, lacking comprehensive evaluation scales for the quality of international bid document writing for new energy projects, thereby hindering students from developing the integrated pragmatic skills required for workplace scenarios [3].

4. Strategies for Enhancing "Dual-Qualified" Competencies under the Empowerment of NQPF

4.1 Building a "Dual-Qualified" Competency Enhancement System

Strengthen professional training: Universities should regularly organize energy and power subject training courses for foreign language teachers, invite industry experts to give lectures, and introduce industry trends and technological achievements to teachers. It is necessary to encourage participation in relevant academic conferences and seminars to broaden one's horizons.

Implement enterprise internship program: Schools should establish a system for foreign language teachers to intern in energy and power enterprises. The task may involve participation in actual production, technology research and development, or project management. This has established industry experience and improved practical teaching skills.

Encourage industry certification: It is also necessary to incentivize teachers to obtain relevant professional certifications in the energy and power fields (such as registered electrical engineers, energy managers). Certification enhances professional competence and industry recognition.

4.2 Strengthening Inter-University Collaboration and Deepen University-Industry Cooperation

Inter-University Collaboration: Energy and power universities should enhance collaboration, sharing faculty and teaching resources. Activities like faculty exchange programs, joint teaching research, and collaborative curriculum development can collectively boost "dual-qualified" competencies.

Deepening industry university research cooperation: Schools should establish long-term and stable partnerships with enterprises to jointly build internship/practice bases and research and development centers. Enterprises can participate in formulating talent training plans, curriculum development, and teaching evaluation, providing teachers with practical opportunities. Universities, in turn, can offer

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technical support and training services to enterprises, achieving mutual benefit [4].

4.3 Enhancing Teachers' Self-Development Awareness and Capability

Self assessment and planning: Schools should encourage teachers to conduct self-assessment to identify strengths and weaknesses, and teachers should also develop personalized career development plans.Teachers should set clear goals for targeted improvement of their "dual-qualified" competencies.

Lifelong Learning: Given the rapid evolution of NQPF and industry technologies, teachers must embrace lifelong learning. Utilize online platforms, academic journals, etc., to continuously acquire the latest knowledge in energy/power and foreign language pedagogy.

5. Strategies for Teaching Innovation in Foreign Language Teaching under the Empowerment of NQPF

5.1 Innovating Teaching Models

Under the framework of new-quality productive forces, innovative strategies for foreign language teaching in energy and power universities focus on transforming teaching models, integrating technology-driven approaches into language learning processes, fully considering the existing resource levels of general universities, and balancing interactions among teachers, students, and teaching entities to promote the organic integration of foreign language proficiency and professional competence.

Project-based teaching model: Teachers serve as core designers, planning long-term task systems that integrate industry demands into the foreign language curriculum framework, guiding students to collaborate on interdisciplinary practical assignments. Teachers must systematically break down project objectives into executable units, such as developing language training modules centered on the theme of power generation technology evolution, integrating digital tools like basic analysis platforms to support group discussions of professional literature and the production of bilingual reports. This instructional design emphasizes team collaboration and real-world scenario simulation, ensuring that each phase progresses seamlessly to deepen the theme. It does not reduce content depth due to university equipment limitations but instead flexibly employs a universal learning management system to strengthen feedback mechanisms, cultivating students' professional pragmatic abilities and their engineering thinking adaptability.

Case based teaching: The teaching team leads the development of a case library, selects representative scenarios that closely reflect real-world energy issues, and constructs multidimensional analysis models. These models are applied in classroom discussions to deepen the transfer of foreign language skills. The team must carefully select industry cases, including examples of energy policy evolution or power transformation challenges, and prepare supporting English materials to support structured exploration activities. This enables students to repeatedly practice the interactive mode of language reasoning and critical reflection. Case implementation relies on team collaboration to optimize resource allocation, such as using standardized case templates to ensure continuity in each stage, using low threshold visualization tools to present complex concepts to avoid high technical barriers, and integrating a two-way evaluation mechanism between teachers and students to improve language expression accuracy and professional applicability, thereby strengthening the inherent consistency of the knowledge system [5].

Inquiry-based teaching: Students take on a central role to stimulate their motivation for independent learning, encouraging them to design open-ended question chains based on the intersection of foreign languages and energy, and to pursue in-depth exploration of scientific language expression methods individually or in groups. Students actively set topics such as communication challenges in the evolution of smart grid technology, utilize simple resource libraries available at universities for information retrieval and experimental verification, and gradually form a critical analysis framework and foreign language solutions. This model emphasizes a structural shift where teachers guide rather than dominate, supporting students in naturally constructing the synergistic evolution of professional knowledge and linguistic logic during the exploration process. It ensures that content depth is maintained while reducing technical dependency, and through continuous feedback and path adjustment, it maintains learning continuity.

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5.2 Promoting Digital Teaching

Under the framework of new-quality productive forces, the promotion of digital teaching focuses on the organic integration of technological tools and teaching processes. It is based on the existing hardware conditions of general universities to implement incremental reforms, and constructs implementation pathways around the functional synergy between teaching entities and support systems, avoiding unrealistic technological utopianism.

The construction of online teaching platforms is led by teaching teams, who oversee resource integration and technical adaptation processes. Fragmented foreign language learning materials are reorganized into tiered course modules and embedded into cloud-based systems. Customized learning pathways centered on energy and power themes are developed based on the foundational functionalities of existing Learning Management Systems (LMS). The team needs to organize professional foreign language knowledge maps and convert industry-standard terminology databases into interactive digital resources. Leveraging campus networks, lightweight virtual classrooms are established to enable cross-campus synchronous collaboration. Flexible assessment mechanisms are designed to support students in accessing power literature translation toolkits as needed to complete phased tasks. Platform maintenance considers the server capacity limits of general universities, adopting a distributed storage solution to reduce concurrent pressure. Open-source code is used to develop a simple automated grading plugin to minimize manual intervention. Additionally, a peer review function between teachers and students is embedded to form a closed-loop feedback mechanism, maintaining a dynamic balance between technical barriers and instructional depth.

The application of VR/AR technology relies on collaboration between the technical department and teachers to incubate scenarios. Typical energy work scenarios are selected to develop lightweight virtual training modules, and mobile device compatibility technology is used to reduce equipment dependency. The technical department needs to dissect the language interaction logic of on-site power operations and design a 3D model library for basic scenarios such as substation patrols or equipment maintenance. This is combined with the Unity engine to create low-polygon rendering scenes compatible with the standard configuration of campus computer labs. Teachers focus on developing multi-modal language training scripts that match the virtual scenarios, guiding students to conduct bilingual reporting exercises on equipment parameters using head-mounted devices. With the support of basic peripherals such as haptic feedback gloves, they simulate technical communication scenarios during fault troubleshooting. This deployment adopts a modular update mechanism to avoid the pressure of rapid hardware iteration, and utilizes a localized deployment model to ensure the continuity of teaching, enabling the immersive experience to focus on the internalization and improvement of professional language skills [6].

5.3 Strengthening Practical Teaching

Establishing on-campus practical training bases: The construction of on-campus practical training bases focuses on low-cost, high-efficiency physical space renovations and the integrated development of basic digital infrastructure. General universities can utilize existing training facilities to implement incremental upgrades. A multi-modal operation platform is created by retrofitting traditional laboratory control terminals with bilingual interactive interfaces. Terminology voice recognition modules are overlaid on conventional relay protection training devices or boiler simulation systems, requiring students to simultaneously complete multilingual voice announcements of equipment parameters while executing standard operating procedures. A lightweight analysis system is developed based on open-source code libraries to create software that records operational behaviors, automatically capturing command input time differences and terminology usage frequencies from turbine simulation programs to generate training trajectory reports. The teaching resource hub integrates publicly available industry standard document libraries to construct a terminology verification matrix. When translating transmission line maintenance procedures, students can access three-dimensional equipment models to assist with semantic calibration. While retaining key physical equipment operation functions, the system achieves deep integration of language training and engineering actions through foundational intelligent modules.

Enhancing school-enterprise practical training: School-enterprise cooperation adopts modular resource packages to replace complex industrial data direct connections, converting enterprise technical documentation into step-by-step training materials. The document collaboration platform integrates with power generation companies' anonymized equipment maintenance logs and safety procedure

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databases. Cross-language conversion tasks for gas turbine shutdown maintenance work orders drive students to verify professional terminology by referencing equipment photo collections; the case analysis system extracts typical accident response reports provided by enterprises to construct a bilingual case tree, with student teams collaborating to reconstruct multilingual versions of transformer fault analysis meeting records; The remote observation window accesses equipment monitoring video streams authorized for public access by the enterprise, synchronously analyzing natural language command features during engineer operations to generate terminology comparison tables. The training process does not require real-time intervention in production systems but instead uses enterprise-authorized static data and audiovisual materials to achieve precise alignment between language application rules and industry practice logic while ensuring production safety [7].

6. Conclusion

The development of New Quality Productive Forces presents both opportunities and challenges for foreign language teaching in energy and power universities. By constructing systems to enhance teachers' "dual-qualified" competencies, innovating teaching models, strengthening teaching resources, and improving incentive mechanisms, the "dual-qualified" competencies and teaching innovation levels of foreign language teachers can be effectively elevated. This will cultivate high-quality foreign language talents who meet the demands of NQPF development. In practice, each university should explore and innovate based on its specific conditions to deepen foreign language teaching reform and teacher professional development. Simultaneously, government, enterprises, and universities must strengthen cooperation to provide support and safeguards for the advancement of foreign language teaching in these institutions, contributing to the international development of the energy and power industry.

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References

[1] He Xuelian. (2024). The Logical Approach and Promotion Strategies for the Teaching Ability Development of "Dual-Qualified" Foreign Language Teachers. Journal of Mudanjiang University, 33(02), 80-87.

[2] Liu Junling. (2024). Research on Practical Pathways for Cultivating Innovative Foreign Language Talents from the Perspective of New Quality Productive Forces. Journal of Xi'an International Studies University, 32(03), 55-59.

[3] Shen Qi & Li Xiaoyang. (2025). Model Construction and Pathway Optimization for Foreign Language Talent Cultivation from the Perspective of New Quality Productive Forces. Foreign Language in China, 22(02), 4-11.

[4] Sun Feng & Xu Zhengru. (2017). Development Strategies for "Dual-Qualified" Foreign Language Teachers in Application-Oriented Undergraduate Universities. Higher Education Exploration, (S1), 151-152.

[5] Wang Jianping. (2024). Exploration of the Cultivation Path for "Dual-Qualified" Faculty in Universities—Review of Research on the Construction and Evaluation Reform of "Dual-Qualified" Faculty in Universities. Journal of The Chinese Society of Education, (09), 129.

[6] Wang Xuemei & Zhou Maojie. (2024). The Mechanism of New Quality Productive Forces Empowering High-Quality Development of Foreign Language Disciplines: An Activity Theory Perspective. Foreign Language Education, 45(06), 54-59.

[7] Zheng Yongyan & Gao Xuesong. (2024). Exploration of New Quality Foreign Language Education Concepts. Foreign Language in China, 21(06), 4-11.