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Research on Strategies for Stimulating the Subjective Initiative of Power-related Higher Vocational Students in the Context of the "Double-high" Initiative: Taking the "Relay Protection Technology" Course as an Example

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Abstract: In the context of the "Double-high plan" promoting the high-quality development of vocational education, power-related higher vocational colleges urgently need to construct a student-centered strategy for stimulating students' subjective initiative in learning, so as to solve problems such as insufficient learning motivation and weak self-learning ability among higher vocational students. This article proposes a four-dimensional collaborative stimulation system of "ideological and political education in courses as the guide-stratified teaching as the foundation-integration of industry and education as the driver-psychological empowerment as the support." It reconstructs students' professional value cognition through the organic integration of ideological and political elements and professional courses, activates learning motivation based on stratified teaching, strengthens practical drive relying on real-world projects from the integration of industry and education, and enhances self-efficacy by combining with a psychological intervention mechanism. Taking the professional course "Relay Protection Technology" as an example, this article designs the curriculum system, aiming to systematically improve students' subjective initiative in learning, professional identity, skill mastery, and comprehensive qualities, providing theoretical references and practical paths for talent cultivation in power-related higher vocational colleges.

Keywords: Power-related higher vocational students; Subjective initiative in learning; Ideological and political education in courses; Stratified teaching; Integration of industry and education

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1. Introduction

Under the strategic background of the "Double-high plan" promoting the high-quality development of

vocational education, the power industry, as a pillar industry for national energy security and economic development, has an ever-increasing demand for high-quality technical and skilled talents. However, talent cultivation in power-related higher vocational colleges still faces prominent problems such as insufficient learning motivation, weak self-learning ability, and low professional identity among students. A survey shows that the classroom participation rate of power-major students is less than 30%, reflecting that the traditional teaching model is difficult to meet the requirements of "leading reform and supporting development" put forward by the "Double-high plan." This contradiction is particularly significant in power-related professional courses. These courses have both theoretical depth and practical complexity, but there are common structural imbalances in the teaching process, such as "emphasizing theoretical instruction while neglecting value shaping", "emphasizing unified teaching while neglecting individual differences", and "emphasizing knowledge indoctrination while neglecting psychological empowerment."

In recent years, vocational education researchers have carried out multi-dimensional explorations on stimulating students' subjective initiative in learning. Han Xianzhou pointed out that the in-depth integration of professional courses and ideological and political elements can effectively enhance students' professional identity and social responsibility [1]. Lei Ping and others, through the analysis of classical garden cases, combined flower culture with professional ethics education, which significantly enhanced students' cultural confidence and professional pride [2]. Hou Yuling proposed a project-based teaching model for ideological and political courses. Through the integrated design of "learning by doing", students can internalize knowledge and achieve value recognition while completing specific tasks [3]. Yao Xiaoning adopted a gradient-topic-selection strategy in the PLC curriculum design. By combining basic tasks with expansion tasks, the learning needs of students at different levels were taken into account [4]. Zhu Xiangli, in the group teaching of the AutoCAD course, achieved an overall improvement in students' participation through the ability-matching and role-division of "good, medium, and poor" students [5]. Luo Wei found through the analysis of skill-competition cases that students participating in industry competitions had significantly improved their soft skills, such as professional qualities and innovation abilities [6]. Hu Ying and others, through the practice of the fluid mechanics course, found that the use of contextual teaching methods such as scientists' stories and real-life cases could significantly enhance students' learning interest [7]. Dong Hang and others' empirical research shows that there is a significant positive correlation between self-efficacy and learning initiative. Psychological interventions such as goal-setting and positive feedback can effectively enhance students' learning confidence [8]. Song Changhong explored the difficulties and influencing factors of stimulating the subjective initiative of higher vocational students in learning and proposed corresponding countermeasures from the three levels of society, school, and teachers [9]. Zhang Zheng enhanced students' learning enthusiasm by innovating teaching methods and improving the evaluation system [10]. Rodríguez Aura Stella and others increased students' interest in learning English by using computers and group work [11]. Rashidi AHA explored the potential of digital task-based instruction (DTBI) to enhance motivation among English as a foreign language (EFL) learners in Saudi Arabia based on activity theory [12]. Xiaofang Xiong found that there is a significant positive correlation between educators' teaching methods and students' learning engagement, and students' motivation during the learning process can be improved by improving teaching methods [13]. Wang R and others found that positive psychology (PP) can improve the well-being and learning enthusiasm of vocational education students from a multi-dimensional perspective [14]. Jiabao Wu explored the learning motivation of higher vocational art design students in an online PBL model based on the self-efficacy theory [15].

Most of the existing research focuses on single-dimension or shallow multi-dimension reform strategies, lacking the design of a systematic multi-dimensional collaborative mechanism, and there are few local explorations tailored to the characteristics of power-related majors. Based on the construction requirements of the "Double-high plan" and aiming at the characteristics of power-related majors, this study proposes a four-dimensional stimulation system of "ideological and political education in courses as the guide-stratified teaching as the foundation-integration of industry and education as the driver-psychological empowerment as the support", providing a replicable solution for power-related higher vocational colleges to enhance students' subjective initiative and facilitating the cultivation of high-quality technical and skilled talents.

2. Theoretical basis and problem analysis

2.1. Requirements of the "Double-high plan" for power-related higher vocational education

As a national strategy for the high-quality development of vocational education, the "Double-high plan" puts forward clear requirements for power-related higher vocational education. The plan takes moral education as its fundamental task and emphasizes the cultivation of technical and skilled talents with a craftsmanship spirit and innovation ability through deepening the integration of industry and education and school-enterprise cooperation. In the power industry, these requirements are specifically reflected in the "three-integration" goals: the integration of professional teaching and industrial needs, the integration of skill training and professional qualities, and the integration of knowledge teaching and value guidance. To achieve these goals, three key areas of reform need to be promoted: First, constructing a modular curriculum system oriented to job-related abilities to break through the traditional knowledge-indoctrination model; second, deepening the school-enterprise co-construction of training bases and the training mechanism for dual-qualified teachers to ensure that teaching content is updated in line with enterprise technical standards; third, establishing a full-chain psychological support system covering academic planning, skill training, and employment guidance to address the low self-efficacy of students caused by academic pressure and vague professional identity.

2.2. Main problems and challenges currently faced

Power-related higher vocational education faces challenges in multiple aspects during implementation. At the cognitive level, 78% of students think that professional courses are boring and abstract, and only 18% of students can actively analyze professional ethics issues, reflecting the problems of ideological and political education in courses being mere formalism and social cognitive biases in vocational education. In terms of ability cultivation, there are significant individual differences among students (20% have innovative potential, and 25% have a weak foundation). However, homogeneous teaching leads to 42% of students having difficulty completing practical tasks, and the single evaluation method, mainly based on written examinations (accounting for 50%), suppresses students' innovative potential. In practical teaching, there is a dual dilemma of insufficient training resources and a lack of real-world projects. Only 12% of colleges and universities carry out in-depth school-enterprise cooperation, and most cooperation remains at the level of visit-based internships. In terms of psychological support, only 39% of students are confident in performing their jobs, and 85% of students think that career-planning guidance courses are empty and ineffective, forming a vicious cycle of "anxiety-avoidance-inefficiency-more anxiety." These problems highlight the systematic challenges faced by power-related higher vocational education in improving the quality of talent cultivation.

3. Construction of the four-dimensional subjective initiative stimulation system

3.1. Framework of the four-dimensional subjective initiative stimulation system

Based on the existing problems in power-related higher vocational education, a four-dimensional subjective initiative stimulation system is constructed, including ideological and political education in courses as the guide, stratified teaching as the foundation, integration of industry and education as the driver, and psychological empowerment as the support. In terms of ideological and political education in courses, the focus is on developing three major theme case libraries of "safety responsibility", "team cooperation", and "innovation and problem-solving." The "four-step penetration method" of case introduction → value conflict → ethical discrimination → behavior internalization is adopted to integrate the cultivation of professional value into the whole teaching process, and restructure the evaluation system, raising the right of professional attitude examination to 10%. In stratified teaching, based on Vygotsky's "zone of proximal development" theory, a "diagnosis-stratification-adaptation" dynamic mechanism is established. Students are divided into different ability zones through a three-dimensional diagnostic scale, and differentiated teaching tasks are designed and dynamically adjusted. In the integration of industry and education, emphasis is placed on constructing a "teaching-research and development-application" closed-loop, and in-depth school-enterprise cooperation is achieved through real-job rotation training, dual-teacher collaboration, and project incubation. The psychological empowerment system constructs a "three-stage and six-dimension" support model covering the entire cycle of academic planning, skill training, and employment preparation.

3.2. Implementation paths and innovative measures of the system

At the specific implementation level, each dimension has been designed with innovative measures. In ideological and political education courses, a contextual teaching strategy is adopted. For example, role-playing of "substation mis-tripping accidents" is used to strengthen the awareness of safety responsibility. In stratified teaching, differentiated teaching tools such as the "protection configuration clearance game" and AR-assisted teaching are developed, and an advancement reward mechanism is established. In the integration of industry and education, the focus is on building a "teaching substation" real-scene platform, implementing the full-process training of "protection device wiring → debugging", and introducing real-world enterprise projects into the classroom. The psychological empowerment system integrates technological means such as professional profiling tools, stress-fusing mechanisms, and HRV monitoring, and innovatively conducts situational simulation training such as "power protection accident hearings." The coordinated effect of each dimension forms a complete closed-loop for stimulating students' subjective initiative: Value guidance clarifies the development direction, stratified teaching consolidates the ability foundation, the integration of industry and education strengthens practical innovation, and psychological support ensures sustainable development, jointly promoting the improvement of the quality of talent cultivation in power-related higher vocational education.

4. Case of the "Relay Protection Technology" curriculum design

4.1. Implementation paths of ideological and political education in courses and stratified teaching

In ideological and political education in the "Relay Protection Technology" course, the teaching design mainly focuses on the main line of "value guidance-action internalization". By introducing the deeds of model workers and real-world accident cases, such as the "ice-disaster-resistance and power-grid-protection" incident and

the wind-farm protection misoperation accident, and using forms such as video interviews and technical debates, students are guided to analyze problems from multiple dimensions such as technology, economy, and society, deepening their professional value cognition. In the implementation of stratified teaching, a three-level progressive task system is adopted: the basic group focuses on understanding protection principles and basic skills of parameter setting; the improvement group strengthens standardized operation ability and is required to complete practical tasks such as relay disassembly and assembly; the innovation group focuses on cultivating innovative abilities such as fault diagnosis and improvement suggestions. Through the design of differentiated tasks, it is ensured that students at all levels can improve based on their own ability levels.

4.2. Practical innovations in the integration of industry and education and psychological empowerment

The integration of industry and education is carried out through real projects, such as intelligent substation debugging. Through demand docking, scheme formulation, dual mentor review, and enterprise acceptance, it achieves deep integration between the teaching process and enterprise needs. Taking real-world projects such as intelligent substation commissioning as the carrier, through links such as demand docking, plan formulation, dual-tutor review, and enterprise acceptance, the in-depth connection between the teaching process and enterprise needs is achieved. At the same time, a "Relay Protection Maker Workshop" is established to promote the transformation of achievements. The psychological empowerment in this course constructs a "prevention-intervention-development" support system, implements the dual-tutor system, and the "monthly goal card" tracking mechanism. Through tools such as the "Relay Protection Work Competence Self-evaluation System" and "21-day Protection Log", students can clarify their career positions and enhance their psychological resilience. This system integrates new technologies such as AI emotion analysis into mental health counseling to achieve full-process and precise support for students' growth.

5. Conclusion and prospect

Based on the strategic requirements of the "Double-high plan" for the high-quality development of vocational education, this article takes the "Relay Protection Technology" course as the research object and constructs the theoretical framework of a four-dimensional collaborative stimulation system of "ideological and political education in courses as the guide-stratified teaching as the foundation-integration of industry and education as the driver-psychological empowerment as the support." Starting from the core contradictions existing in power-related higher vocational education, this study systematically demonstrates the theoretical rationality and practical feasibility of the four-dimensional collaborative mechanism. By integrating the value-guiding function of ideological and political education in courses, the differential adaptation logic of stratified teaching, the practical-driving path of the integration of industry and education, and the full-process support mechanism of psychological empowerment, this article proposes, for the first time, a model for stimulating the subjective initiative of power-related higher vocational students, making up for the theoretical limitations of traditional single-dimension reforms. The four-dimensional system directly addresses the deep-seated contradictions of insufficient learning motivation among power-related higher vocational students, such as the lack of professional value recognition, homogeneous ability cultivation, virtualized practical scenarios, and fragmented psychological support. Through the coordinated action mechanism, it realizes the closed-loop

training logic of "value shaping → ability adaptation → practical strengthening → psychological escort." From an interdisciplinary perspective integrating pedagogy, psychology, ethics, and engineering, it provides a new methodological framework for vocational education research.

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Disclosure statement

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