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# Improvement and Practice of Electrical Training Teaching in Secondary Vocational and Technical Colleges

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***Abstract:*** *Practical training in teaching plays a crucial role in cultivating students' basic operations and practical skills, ensuring that students apply theoretical knowledge to solve real-world problems and gain sufficient practical experience. In the electrical teaching of secondary vocational and technical colleges, teachers should adopt a long-term perspective, actively engage in practical training, and continually improve based on students' needs, aligning with the future trends of the electrical profession. Through practical activities, comprehensive development of students' inquiry spirit, innovation consciousness, and practical abilities is achieved, inheriting the spirit of excellence and cultivating versatile professionals with the skills and professional qualities demanded by society. This article starts by discussing the importance of improving and practicing electrical practical training in secondary vocational colleges, analyzes the practical difficulties in practical training, proposes improvement and practice measures, actively summarizes and looks forward, aiming to enhance the overall quality and effectiveness of electrical practical training.*

***Keywords:*** *secondary vocational and technical colleges; electrical practical training; practical teaching; practice strategies*

## 1. Introduction

In the new educational environment, secondary vocational and technical colleges, in their pursuit of substantive development, actively engage in practical training to guide students in accumulating practical experience and enhancing practical skills through hands-on operations. This prepares them with the necessary professional skills and qualities to enter the workforce, providing strong impetus for industry development. With a focus on students' growth and talent development, secondary vocational colleges and educators emphasize the implementation of electrical practical training. Approaching it from a holistic perspective, they strive to improve practical training, ensuring alignment between practical content and actual job requirements. This helps students understand industry trends, clarify technical demands, actively participate in practical training activities, and enhance their practical skills, enabling them to quickly and effectively adapt to the evolving needs of the electrical industry. Therefore, discussing the improvement and practice of electrical practical training in secondary vocational and technical colleges is essential and holds practical significance.

## 2. The Significance of Improvement in Electrical Practical Training Teaching in Secondary Vocational Colleges

### *2.1 Cultivating Practical Skills*

During the implementation of electrical practical training teaching, students are able to flexibly apply the theoretical knowledge of electrical engineering, ensuring smooth completion of practical tasks and further enhancing their skill levels. Teachers, recognizing the evolving needs of student growth, improve practical training by incorporating diverse activities to help students gain a deeper understanding of theoretical knowledge and develop a fresh perspective on electrical development. In the improved practical training, students acquire more experience and knowledge, preparing them to address real-world challenges in their future work. This equips them with sufficient practical abilities, instilling problem-solving skills and a spirit of bold innovation as they enter the workforce.

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### *2.2 Enhancing Comprehensive Qualities*

Electrical practical training is a primary means of improving students' operational proficiency and practical abilities in electrical technology. It not only comprehensively elevates students' technical literacy but also fosters strong hands-on capabilities, teamwork, and communication skills. Teachers optimize and improve practical training based on the development of the times and the ongoing needs of student growth, meeting their continuous development and all-round growth requirements. With the improvement of electrical practical training, students can explore various methods to solve practical problems, accurately and efficiently completing tasks of varying difficulty, contributing to the sustained development of their comprehensive qualities.

### *2.3 Strengthening Occupational Competitiveness*

Through the improvement of electrical practical training, teachers integrate classroom teaching content with the design of practical training programs, optimizing training plans based on job requirements. They clarify training processes and guidance plans, assisting students in completing various practical tasks. Teachers provide timely feedback on students' practical performance and operations, guiding them to identify and address shortcomings, allowing for targeted improvement. As a result, students' occupational competitiveness is comprehensively enhanced. Under the framework of practical training teaching, students can enter the workforce with high-level technical skills and ample practical experience, meeting diverse new requirements set by enterprises. They can quickly adapt to new work environments, possessing strong occupational competitiveness to realize personal value and ultimately drive further development in the electrical industry.[1]

## 3. Real Challenges in Electrical Practical Training Teaching in Secondary Vocational Colleges

### *3.1 Limited Diversity in Teaching Content*

Some practical training courses in secondary vocational colleges have relatively singular content, lacking diversity and innovation. This fails to keep up with the demands of contemporary development, hindering the fulfillment of students' personalized growth and continuous development needs. In some cases, teachers have not innovated teaching methods promptly, continuing to use traditional rote methods to impart foundational knowledge and theoretical content. This prevents students from taking a central role in the classroom, making it challenging to enhance their learning outcomes. Thus, the lack of innovation in teaching content and methods presents a significant challenge in electrical practical training.[2]

### *3.2 Student Ideological Constraints*

The influence of traditional teaching models has led students to prioritize the memorization of theoretical knowledge over practical learning. Many students allocate limited enthusiasm for practical activities, with some approaching practical training with a negative attitude, resisting its implementation. This is due to students' own conceptual limitations, especially the lack of social experience and competitive awareness, inhibiting the release of their potential and hampering innovative thinking. Faced with a competitive job market, many students fail to timely plan their careers, leading to unclear learning objectives that affect their study outcomes and hinder the conversion of practical training results.

### *3.3 Limitations in Teaching Conditions*

The facilities used by many secondary vocational colleges are somewhat outdated, particularly in the slow updating of electrical engineering teaching facilities. Issues such as imprecise experimental equipment, delayed updates to damaged training room facilities, and the lack of integration of information technology teaching equipment and high-end facilities pose significant challenges. The insufficient facilities increase the difficulty of implementing practical training, limiting students' opportunities to apply theoretical knowledge and impeding the improvement of their practical skills. Additionally, some electrical practical training courses may be disconnected from the work content of industry positions, lacking practical applicability and hindering students' skill development. Therefore, improving teaching conditions presents another formidable challenge in the improvement and practice

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of practical training teaching.[3]

### *3.4 Restriction of Conceptual Content*

In electrical practical training, the modern development philosophy of vocational education emphasizes the spirit of craftsmanship, highlighting the unique content and application value of electrical expertise through practical training. However, students may fail to embrace the spirit of craftsmanship, potentially affecting their future growth. Technical skills lacking spiritual content cannot achieve long-term development. Consequently, the conceptual content constrains teaching practices and innovation. Only by integrating the spirit of craftsmanship into every teaching segment and thematic objective can patient, rigorous, and professional electrical talents be cultivated. Nevertheless, practical training in electrical engineering that lacks conceptual content is confined to superficial skills transfer and fails to inherit the ideological content bestowed upon the electrical profession by contemporary development.

## 4. Improvements and Practical Measures in Electrical Practical Training Teaching in Secondary Vocational Colleges

### *4.1 Clearly Define Teaching Content to Cultivate Core Competencies*

Vocational education has always emphasized the development of students' technical abilities and the enhancement of practical skills, focusing on the construction of students' professional knowledge to ensure a solid foundation for their future growth and development. In the improvement and practice of electrical practical training teaching in secondary vocational colleges, it is crucial to determine practical training content around the enhancement of students' core vocational competencies. This involves aligning with the actual development of enterprises, specific job requirements, and industry trends to construct a talent training system. For instance, in the course objectives, students should master electrical technology knowledge, apply it practically, and collaborate within a team to complete tasks such as electrical equipment installation and repair. Therefore, the practical training content should be aligned with course objectives, incorporating job requirements, including electrical equipment installation and repair, equipment maintenance, and electrical drawing reading and creation. Through well-defined electrical practical training plans, teachers can select appropriate training projects, meet the demands of enterprises for talents, allocate sufficient time, and determine training periods based on the difficulty of the projects. This ensures that students have enough time and space to grasp and apply electrical professional skills. For example, in the training of motor control circuitry, the teacher aims to enhance practical skills and highlight skill development. By emphasizing hands-on training, using a combination of experiments and practical activities, students gain firsthand experience and apply knowledge and skills under the understanding of theoretical knowledge, thus developing core vocational competencies.[4]

### *4.2 Instill Correct Ideologies to Promote Autonomous Learning*

In the current job market, which is highly competitive, secondary vocational colleges need to guide students to develop correct perspectives on growth, learning, and employment through various means such as curriculum and practical training. This involves helping students understand the genuine demands of the electrical industry, fostering positive attitudes towards various training activities. Teachers, from the perspective of student development, guide them in understanding their new position in the societal development process. They encourage students to shift from passive learning to acquiring new knowledge and technologies through personal practice, bold innovation, and continuous exploration, achieving true autonomous learning. Therefore, secondary vocational schools and teachers, taking into account the uniqueness of the electrical profession, should explore and improve electrical practical training. By incorporating engineering studies, students can experience a real work atmosphere and participate in actual production processes. It is essential to ensure that learning and job requirements are closely aligned, achieving a seamless connection between teaching and real-life experiences. Teachers need to focus on establishing correct ideologies in students, helping them build a comprehensive and systematic knowledge network, optimizing their cognitive structures for a deeper understanding of conceptual content. Simultaneously, teachers should enhance practical training based on foundational knowledge transfer, guiding students to apply knowledge and skills independently. For example, teachers can divide students into small groups, promoting collaborative learning through

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mutual assistance in hands-on practices to achieve common training goals. Teachers should also organize subject competitions, encouraging active participation to elevate students' self-learning and innovation capabilities.[5] This allows students to acquire more advanced technical skills through practical training and subject competitions. Students develop a sense of teamwork and inherit team spirit, laying a solid foundation for adapting to work environments and intensities.

### *4.3 Emphasize Base Construction to Provide Exercise Opportunities*

The construction of practical training bases is foundational and essential for strengthening the comprehensive abilities and professional qualities of applied electrical technology talents. Thus, secondary vocational colleges must emphasize the construction of experimental training bases to ensure they meet the practical training needs of electrical engineering. During the construction and management process, it is crucial to align equipment and technology with the actual conditions of frontline electrical production, creating a highly realistic production environment for more effective cultivation of students' technical application capabilities and the establishment of new training models. Additionally, secondary vocational colleges should actively collaborate with enterprises to jointly build off-campus practical training bases, providing sufficient space and opportunities for improvement and practice in practical training. This expansion of practical training broadens its scope and introduces novel approaches. Successful coordination between practical training and production enterprises, guided by the principles of mutual benefit and shared development, enhances students' participation in real production practices, further elevating their practical skills. For example, in the practical training of PLC programming applications, the teacher, aiming at capability development, guides students in specific projects within the training base, focusing on program design, debugging, and maintenance to effectively cultivate their practical skills. Teachers also consider the connection between course content and practical training, promptly adjusting practical training based on specific enterprise needs to ensure a true alignment with industry demands.[6]

### *4.4 Strengthen Teacher Training to Ensure Practical Effectiveness*

To enhance the effectiveness of electrical practical training teaching in secondary vocational colleges, a dual-teacher model should be established. This ensures an adequate number of theoretical teachers while also providing qualified guidance from practical and highly skilled training instructors. This approach ensures not only high-level theoretical teaching but also strong guidance in electrical practical training, synchronously improving the quality and effectiveness of practical training. Therefore, when enhancing the quality of electrical professional teachers in secondary vocational colleges, it is advisable to encourage teachers to flexibly use their spare time. They can participate as auditors alongside electrical engineering students, engaging in various practical training activities, allowing teachers to consolidate their theoretical knowledge comprehensively and accumulate practical experience. Teachers should actively communicate with enterprises, understanding the cutting-edge technologies and equipment used by businesses. They can impart advanced concepts, high-end technologies, and theoretical knowledge with the goal of enhancing practical experience. This involves inspiring students in the most straightforward and effective manner, prompting deep thought and the ability to analyze and solve practical problems encountered during training operations. Secondary vocational colleges, based on the growth needs of teachers, should expand the scope of training, establish teacher performance assessments, and implement incentive measures to fully stimulate teachers' enthusiasm for engaging in teaching improvements and practical work. Moreover, considering the needs of constructing a professional teacher team, secondary vocational colleges can invite experienced and morally upright industry experts and outstanding enterprise employees to serve as practical training instructors. Encouraging technical personnel from enterprises to participate in teacher training activities further elevates the practical guidance capabilities of teachers.

## 5. Summary and Outlook on Electrical Practical Training Teaching in Secondary Vocational Colleges

### *5.1 Summary and Reflection on Teaching Achievements*

Continual improvements and practical initiatives in electrical practical training teaching at secondary vocational colleges have resulted in a comprehensive enhancement of students' overall qualities. Not only have their professional skills developed, but they also possess strong teamwork

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abilities and have successfully cultivated innovative thinking, achieving progress in various aspects. In terms of teaching quality, teachers have consistently summarized theoretical and practical teaching experiences, innovated and improved teaching methods, effectively raising teaching quality through competitions, games, and case studies. This meets the specific needs of talent cultivation in the new era. In terms of competitiveness in employment, higher vocational colleges actively collaborate with enterprises. Through practical training and activities, students in electrical majors enhance their personal values, boost their industry competitiveness, and create more possibilities for employment, thus contributing to an increase in employment rates. However, there are still some shortcomings in the improvement and practice of practical training teaching. It is necessary to establish a timely teaching evaluation and feedback mechanism to ensure that secondary vocational colleges can understand students' learning situations promptly. Therefore, it is essential to establish a comprehensive and sound teaching evaluation and feedback mechanism. In this mechanism, firstly, attention should be paid to the selection of evaluation methods, such as project assessment, verbal expression, exams, and daily quizzes, providing a comprehensive understanding of students' actual learning situations. Secondly, a student evaluation system should be established, encouraging active student participation in evaluations throughout the teaching process, guiding improvements in practical training teaching, and providing crucial insights into practical teaching. Thirdly, active involvement of parents and industry representatives in the teaching evaluation process should be encouraged, ensuring mutual attention to the improvement of teaching quality. Thus, with collaborative efforts, the level of electrical practical training teaching can be elevated to new heights.

### *5.2 Future Development Directions and Goals*

In the context of modern vocational education development, ongoing reforms in secondary vocational electrical practical training teaching must align with the requirements of the era and the new curriculum reform. The teaching process should also align with modern educational perspectives to ensure inclusivity for all secondary vocational students. This approach promotes personalized development, guides students in completing practical training tasks through patient encouragement, and comprehensively nurtures their innovation consciousness and practical abilities, passing on the true spirit of craftsmanship. Therefore, in the future development process, secondary vocational electrical practical training teaching should: firstly, comprehensively enhance the teaching capabilities of teachers to adapt to the developmental demands of vocational education in a new environment. Secondly, deepen the integration of industry and education by engaging in in-depth communication and cooperation with enterprises. This collaboration aims to jointly develop courses and integrate teaching resources, cultivating electrical talents that meet the demands of enterprises, societal development, and industry requirements. Thirdly, expand international cooperation by seeking collaboration with multiple schools, particularly strengthening connections with internationally advanced vocational schools. This allows advanced vocational education concepts to be introduced into Chinese secondary vocational colleges and brings innovative teaching methods from international vocational education to elevate the teaching quality and level of electrical majors. Fourthly, optimize practical training teaching around students' innovative and entrepreneurial abilities. Actively cultivate students' innovative spirit, enabling them to possess entrepreneurial capabilities to adapt to the constantly changing social environment and the increasing demands of industry competitiveness. Teachers should pay attention to details, help students establish a respectful attitude toward their professions, and ensure that students can perform at their best in internships and future job positions. Thus, students learn to emphasize details, inheriting the spirit of excellence. Consequently, vocational education should not only impart knowledge and skills but also incorporate contemporary ideological connotations, striving to secure a promising employment future for secondary vocational students.

## 6. Conclusion

In the face of advancing technology, continuous improvements in secondary vocational electrical practical training teaching are essential. The content of practical training should be enriched and aligned with the needs of the times, and the facilities should be updated to ensure the effective application of theoretical knowledge, advanced technology, and innovative consciousness in practical training. Secondary vocational colleges, educators, enterprises, and society should collaborate to elevate the practical and innovative capabilities of electrical talents through the construction of practical training bases, the formation of dual-teacher teams, and the establishment of correct ideologies. This collaborative effort will synchronize the improvement of practical skills and

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innovation capabilities, meeting the evolving needs of the electrical industry.

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