

The Development and Practice of Loose-leaf Textbooks of "Electrical Training" under the Background of "Three Teachings" Reform

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Abstract: This paper focuses on the background of the "Three Teachings" reform and deeply explores the development and practice of the loose-leaf textbook of "Electrical Training". Firstly, it explains the connotation and significance of the "Three Teachings" reform, and points out its key role in promoting educational progress; then it analyzes the existing problems of electrical training textbooks. Next, it details the development process of the loose-leaf textbook, including the content design centered around actual needs and trends, the structural arrangement of flexible combination and convenient update, etc., and uses practical cases to show its remarkable effects and advantages. Finally, it looks forward to its future development trends, such as optimizing the development mechanism, integrating information technology and promoting experience. Generally speaking, this research has important guiding and practical value for the improvement and development of this loose-leaf textbook.

Keywords: "Three Teachings" Reform; Electrical Training; Loose-leaf Textbook; Textbook Development; Practical Application.

1. Introduction

In recent years, vocational education has developed rapidly and has become an important way to cultivate technical talents. However, in practice, there are problems such as insufficient teaching investment in colleges and universities, including defects in professional settings, teaching contents and methods, so it is urgent to carry out the "three educations" reform [1]. In 2019, the State Council issued a plan, which proposed to promote the integration of industry and education and deepen the reform of national vocational education. At the same time, the meeting also pointed out that there are weak links in aspects such as teachers, textbooks, and teaching methods, which affect the quality of education, and required that the reform plan put forward specific policy measures and implementation requirements. In the "Vocational Education 20 Articles", it is clearly required to build textbooks jointly developed by schools and enterprises, and the textbook construction is included in the core content of vocational education talent cultivation and evaluation reform [2]. Researching and developing textbook forms and methods suitable for the background of the "three educations" reform can promote textbook reform. At the same time, exploring flexible and practical textbook forms can not only adapt to the needs of talents and development, but also improve the quality of teaching, inject vitality into vocational education, stimulate students' practical and innovative abilities, and cultivate more high-quality talents.

2. Analysis of the Current Situation of Loose-leaf Textbook Development

1. Analysis of the current situation of loose-leaf textbooks:

Current situation of foreign loose-leaf textbook development: There are relatively few papers related to the research and development of foreign loose-leaf textbooks included in CNKI. However, in vocational education in

countries such as Germany and France, loose-leaf textbooks have been widely popularized. For example, the Ferrandi Institute in France adopts a textbook system of "loose-leaf textbooks + reference books". The loose-leaf textbooks are for skill training courses, and through the loose-leaf catalogue arrangement, they can be flexibly transformed for different learning objects, and are matched with reference books to explain the systematic theoretical knowledge matching the skill teaching [3].

Current situation of domestic loose-leaf textbook development: Under the guidance of the national vocational education textbook reform, a wave of loose-leaf textbook development and research has been set off in national vocational colleges. CNKI has included nearly 300 papers related to loose-leaf textbooks, of which more than 200 are of the development type. However, at present, the design and production of loose-leaf textbooks in the industrial field still follow the traditional way. For example, the portable loose-leaf textbook proposed by Hou Qianmin in 2013, and the loose-leaf textbook proposed by Zhang Chunlei in 2014 and Xing Jia in 2016 all have common shortcomings such as a single development subject, a lack of action in structural organization, and insufficient manpower and material resources. There is still much room for improvement in the design of loose-leaf textbooks, and a more flexible, convenient and intelligent loose-leaf textbook can be designed on the existing basis [4].

2. Current situation of the "Electrical Training" textbook

The "Electrical Training" textbook is mostly compiled according to the knowledge logic, and there are many problems such as lag. Teachers often only take responsibility for the textbooks and lack initiative, resulting in a low matching degree between what students learn and the needs of the workplace, and the thinking is not in line with the actual situation of the enterprise. The teaching projects lack realistic situations, and it is difficult to convert knowledge into actual working ability. Some teachers do not attach importance to

the role of textbooks, do not use textbooks in teaching, and students only listen to the explanations without independent reading. Although they can master the knowledge, it is difficult to form their own knowledge. This practical course lacks a suitable textbook, either the content is single or it focuses on a certain aspect. There are not many textbooks that truly comprehensively present vocational knowledge and organically penetrate qualities. Students mechanically learn and practice, and it is difficult to thoroughly learn skills. After the course ends, it is difficult to improve skills and qualities, and the teaching effect is not ideal. In view of the disconnection between course teaching and the market and enterprise needs that urgently needs to be changed, textbook reform has become an effective breakthrough point. The development and design of loose-leaf textbooks aims to change the current situation and achieve innovative breakthroughs in textbook construction and teaching operation.

3. The Connotation and Significance of the "Three Educations" Reform

Teacher reform is the key to the "three educations" reform. Improving teachers' professional qualities can enable them to have a deep and accurate understanding of knowledge, and be able to answer students' questions freely in teaching and impart knowledge to students with high quality. Improving teaching ability is conducive to teachers to convey knowledge in a more appropriate and effective way. For example, heuristic teaching can stimulate students to think actively, and good classroom organization ability can create an active atmosphere. For example, in engineering majors, teachers with high professional qualities can explain theories in combination with practical cases, and teachers with strong teaching abilities can let students understand engineering principles through vivid demonstrations and interactions, laying the foundation for their career development.

Textbook reform is of great importance. Promoting content updates allows students to access the latest cutting-edge knowledge and information to avoid from practical applications. With the development of science and technology and social progress, knowledge in various fields is updated and expanded. Lagging textbooks will make it difficult for students to adapt to the working environment. Form innovation enhances attractiveness. New types of textbooks can add rich elements such as pictures or adopt virtual reality technology. For example, updated content in history textbooks can incorporate the latest archaeological achievements and adopt a narrative style like a story.

Teaching method reform makes teaching methods more diverse and effective. Diversification meets the learning needs and styles of different students. Through teaching methods such as project-based, inquiry-based, and cooperative learning, more students can find suitable ways to improve effectiveness. Effective teaching methods can also improve classroom efficiency and allow students to acquire more knowledge and skills in a limited time. For example, experiential teaching in art education allows students to participate in creation, and experimental inquiry-based teaching in science courses cultivates students' scientific thinking and practical abilities. Teaching method reform is an inevitable requirement to adapt to the times and the characteristics of students, and provides strong support for cultivating innovative talents.

4. Existing Problems of the Current "Electrical Training" Textbook

1. Outdated content

The problem of outdated content in the current "Electrical Training" textbook is rather prominent. In today's era of rapid technological development, new technologies and new theories in the field of electrical work keep emerging. However, many textbooks fail to keep up with this pace in time. This leads to students contacting often outdated or soon-to-be-obsolete knowledge and technologies during the learning process, and being unable to accurately grasp the latest trends and development trends of the industry. For example, with the rapid rise of fields such as smart grids and new energy, the related electrical techniques are also constantly updated and improved, but the coverage of these emerging fields in textbooks may be relatively limited or not in-depth enough. This makes students feel powerless when facing new technologies and new equipment in actual work after graduation, and they need to spend a lot of time and energy to relearn and adapt. Moreover, outdated content also affects students' perception of the development prospects of the industry, which is not conducive to their planning and choice for future careers.

2. Monotonous form

The monotonous form of the "Electrical Training" textbook is mainly manifested in several aspects. First of all, most textbooks are dominated by text, and a large amount of theoretical exposition and technical explanation make students feel boring and lack the interest and motivation in reading. Secondly, there is a lack of rich visual display methods such as images and charts, and for some complex circuit structures and operation processes, it is difficult for students to form a clear understanding only through text descriptions. Furthermore, the interactivity is insufficient, and the textbook cannot have effective interactive communication with students and cannot answer students' questions and puzzles in time. This kind of textbook with a monotonous form is difficult to stimulate students' active thinking and exploration desires, and is also not conducive to cultivating their innovative thinking abilities. For example, compared with some advanced electronic textbooks, they may use methods such as animation demonstrations and virtual experiments to allow students to understand electrical knowledge more intuitively, while some current "Electrical Training" textbooks are obviously lacking in this aspect.

3. Loose connection with practice

Many "Electrical Training" textbooks have a big gap in the connection with practice. The content in the textbooks often focuses on the explanation of theoretical knowledge, while the detailed and accurate description of specific steps and precautions of actual operations is not sufficient. This leads to various problems and difficulties that students encounter when conducting practical training operations, and they cannot successfully complete tasks. At the same time, there is a lack of real cases and actual project introductions in the textbooks, making it difficult for students to apply the learned knowledge to actual scenarios and unable to truly feel the importance and application value of electrical techniques in actual work. For example, when explaining the use of an electrical tool, the textbook may only briefly introduce its function and operation method, but lacks specific guidance on how to choose the appropriate tool in actual engineering and how to deal with possible problems. This situation of loose

connection with practice seriously affects the cultivation and improvement of students' actual operation abilities and is not conducive to their quick adaptation to the work post after graduation.

5. The Development of a Loose-leaf Textbook for "Electrical Training"

1. Content design

The content design of the loose-leaf textbook for "Electrical Training" should be oriented by actual work tasks, which means that the content of the textbook will be closely centered around the various tasks and situations that electricians face in actual work. Through in-depth research and analysis of the actual work process, the real work tasks are disassembled and transformed into learning units and knowledge points in the textbook, so that students can clearly know the relevance between the learned content and the actual work during the learning process. At the same time, integrating new technologies and new processes is also crucial. With the continuous progress of technology, new technologies and processes continue to emerge in the field of electrical work, such as intelligent control technology and new energy applications. These new technologies and processes represent the development direction and trend of the industry. Incorporating them into the textbook content in time can allow students to access the most cutting-edge knowledge and skills and enhance their competitiveness. For example, when explaining circuit design, the relevant content of the current popular intelligent control system can be introduced to allow students to understand how to combine traditional circuits with intelligent control; when introducing the maintenance of electrical equipment, the latest detection technologies and maintenance processes can be incorporated to enable students to master more efficient and accurate maintenance methods. Such content design can enable students to adapt to the needs of the work post more quickly after graduation.

(1) Organize the content of the "Electrical Training" textbook in units of project tasks, unfold along the main line of the work process, and at the same time integrate the skill evaluation standard into each teaching task, supplemented by necessary educational columns such as skill knowledge and moral quality common sense, and introduce the skill evaluation form to form a practical teaching assessment standard, so that there is assessment in teaching and standards in learning.

(2) Compose a three-dimensional textbook. First, for the first-dimensional textbook, it is a paper loose-leaf textbook developed with the goal of cultivating students' basic abilities and basic knowledge, and uses the form of "follow me to do" to cultivate students' basic abilities and form the basic qualities to complete the work. Secondly, the second-dimensional textbook is an expansion-type textbook consisting of actual combat cases from the front line of enterprises, used as a consolidation and application of knowledge, in the form of "also want to do", guiding students to directly apply the learned knowledge to production practice. Enhance students' practical ability to use and apply knowledge. Finally, the third-dimensional textbook is designed for students with cases directly extended from practical experience as a design reference. Using the form of "create to do", it is to stimulate students to creatively complete a design task of their own, so as to stimulate students' creative

enthusiasm and achieve the goal of developing students' individuality and cultivating students' imagination and creative ability.

2. Structural arrangement

For the structural arrangement of the loose-leaf textbook for "Electrical Training", adopting modular design has many advantages. Modular design divides the content of the textbook into relatively independent modules, and each module focuses on a specific theme or skill. This structure facilitates combination and update. Teachers can flexibly select and combine various modules according to different teaching needs and the actual situation of students to form a textbook system suitable for a specific class and teaching stage. When new technologies or processes appear in the industry, only the corresponding modules need to be updated or replaced, without the need for large-scale revision of the entire textbook, greatly improving the adaptability and timeliness of the textbook. For example, the basic knowledge of electrical training can be set as one module, the operation and maintenance of different types of electrical equipment can be set as multiple modules, and then some specific engineering projects can be set as independent modules. Students can first systematically learn the basic knowledge module, and then choose the corresponding equipment operation and maintenance module or engineering project module for in-depth learning according to their interests and development directions. Moreover, the modular structure is also convenient for students' autonomous learning and review. They can selectively consolidate and improve according to their own mastery situation.

3. Compilation team

The compilation team of the loose-leaf textbook for "Electrical Training" should be composed of industry experts, teachers, etc. Industry experts have rich practical experience and a keen insight into the development trend of the industry, and they can ensure the authenticity and practicality of the textbook content and accurately convey the latest technologies, processes, and operation specifications in the industry to students. Teachers have a deep understanding and grasp of teaching methods and students' learning characteristics, and can present complex knowledge in a way that is easy for students to understand and accept. In addition, front-line technicians in enterprises can also be invited to participate in the compilation. They can provide actual work cases and lessons learned, making the textbook more practical. Such a diversified compilation team can give full play to their respective advantages and jointly create a high-quality textbook that meets the actual needs. During the compilation process, team members should cooperate closely and communicate fully to ensure the comprehensiveness, accuracy, and applicability of the textbook content. For example, industry experts can provide the latest technical materials and actual operation processes, teachers are responsible for transforming them into teaching content and teaching activities, and front-line technicians in enterprises can review and improve the cases in the textbook, jointly providing students with a highly valuable "Electrical Training" textbook.

6. The Advantages of Loose-leaf Textbooks

1. Dynamic Update

The dynamic update of loose-leaf textbooks is one of its

remarkable advantages. In today's era of rapid development of knowledge and technology, various fields are constantly introducing new ideas. This is especially true in the field of electricians, where new theories, techniques, and applications continue to emerge. Loose-leaf textbooks can flexibly adapt to such changes and promptly incorporate new content. Through close contact with the industry and continuous research, the writing team can quickly obtain the latest information and collate and compile it into the textbooks. For example, when a new electrical material or a new circuit design method appears, traditional textbooks may require a long revision cycle to reflect these new contents, while loose-leaf textbooks can complete the update in a relatively short time, allowing students to access the latest knowledge at the first time. In this way, students can always master the most cutting-edge information in the learning process, laying a solid foundation for their future career development. At the same time, dynamic update also helps maintain the timeliness and practicability of textbooks, avoiding students from learning outdated knowledge and better adapting to the needs of society and the market.

2. Personalized Learning

Loose-leaf textbooks provide strong support for personalized learning. Different students have differences in learning ability, interests and hobbies, and career planning, and traditional textbooks often struggle to meet the unique needs of each student. However, loose-leaf textbooks can be flexibly combined according to the different situations of students. For students with weak basic knowledge, modules that focus more on the explanation and consolidation of basic knowledge can be selected; for those students who have a strong interest in a specific field, relevant professional modules can be selected for in-depth study. This personalized learning method can better stimulate students' interest and potential in learning. For example, if some students are interested in intelligent electrical systems, then they can focus on selecting the loose-leaves related to intelligent electrical work for in-depth study; while some students prefer traditional electrical equipment maintenance, they can choose the corresponding content to focus on learning. In addition, teachers can also adjust the combination of loose-leaves at any time according to the actual teaching situation and students' feedback to better adapt to the needs of different classes and student groups, truly achieving individualized teaching.

3. Improving Teaching Effectiveness

Loose-leaf textbooks have obvious effects in improving teaching effectiveness. Its flexible form and rich content can greatly enhance students' enthusiasm and initiative in learning. Students are no longer passively accepting knowledge, but can actively choose the learning content according to their own interests and needs, which makes them have a greater sense of participation and accomplishment in the learning process. At the same time, there may be more practical cases, interactive links, and project-based learning tasks in loose-leaf textbooks, which can all allow students to deeply understand knowledge and improve their ability to solve problems through actual operation and thinking. For example, through actual circuit building projects, students can not only master the circuit principles, but also exercise their hands-on ability and teamwork spirit. Moreover, the characteristic of dynamic update can also keep students always maintaining a sense of freshness in learning and continuously stimulate their desire to explore new knowledge. In this positive and active

learning atmosphere, students' learning effect will be significantly improved, and the knowledge mastered will be more solid, laying a good foundation for their future development.

7. Conclusion

Under the background of the "three educations" reform, the development and practice of the loose-leaf textbook "Electrical Training" is of great significance. The development of social economy and the progress of science and technology have raised the requirements for electrical skilled talents, and the traditional textbook model is difficult to meet the diversified needs of teaching. The loose-leaf textbook provides new ideas and methods. Its flexibility and adaptability can better combine with actual work tasks and allow students to directly feel the application scenarios of knowledge and skills. Through optimization and improvement, the content can be updated in a timely manner according to the industry dynamics to ensure the timeliness and practicability of knowledge. This model is also conducive to teachers' individualized teaching arrangements according to the characteristics and progress of different students, and the flexible combination and application of each module to meet the learning needs and stimulate the interest and potential in learning. In addition, it can also promote the innovation and improvement of teaching methods and encourage the adoption of practice-oriented and project-driven teaching methods to improve the quality and effect of teaching. In the future, as the loose-leaf textbook continues to develop and mature, it will bring more vitality and innovation to the teaching of electrical training and become an important support for cultivating high-quality skilled talents and promoting the development and progress of the electrical industry. We should actively explore and practice, summarize experiences and lessons, and let it play a greater role in the teaching of electrical training and strive for the cultivation of excellent electrical skilled talents.

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