

Research on the Development of a New Loose-Leaf Textbook Based on the Integration of Post Course Competition and Certification under the Background of the 1+X Certificate System

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Keywords: Loose-leaf textbook, Post course competition certification, 1+x certificate system

Abstract: Textbooks serve as instrumental tools in the realization of education, their reform being paramount to the evolution of vocational training. In the context of the 1+X certificate system, this article suggests an innovative approach to the development of loose-leaf textbooks. It aims to enhance the adaptability of these resources by aligning them more closely with enterprise job standards. In response to curriculum reform requirements, we propose improvements to the textbook structure. By juxtaposing the textbook's objectives with new technical competition standards, we aim to optimize its targets. Incorporating the X certificate standard into the textbook's content will enhance its systematic coherence, thereby further deepening textbook reform.

1. Introduction

The creation of textbooks in vocational education possesses unique laws and features, as determined by the distinct nature of vocational education compared to traditional education. Over the past three years, research on loose-leaf textbooks has escalated annually, yet there remains substantial scope for further study. Using the automotive field as an illustration, out of 107,771 automotive textbooks, a mere 299 are loose-leaf. This means automotive loose-leaf textbooks represent a scant 0.27% of all automotive textbooks. Most vocational institutions continue to rely heavily on traditional textbooks. Thus, the question of how to construct vocational education textbooks under the backdrop of the 1+X certificate system requires comprehensive study and practical experimentation. By analyzing the fragmentation in existing loose-leaf textbooks, this paper outlines key considerations for loose-leaf textbook compilation from a structural theory perspective[1-2].

2. Fragmentation of the Structure of the Existing Loose Leaf Textbooks

2.1 Adaptation

Despite the adoption of the term “loose-leaf textbooks,” many of these resources simply alter the binding format of conventional textbooks and persist in adhering to disciplinary logic, leaving them

ill-equipped to meet the evolving demands of vocational education. The content and textbook structure remain largely unchanged amid the reform of three education systems[3].

2.2 Goal Attainment

The synergistic integration of objectives, courses, competitions, and certification is tenuous at best, and the naturally formed system of books and posts lacks cohesion. Most loose-leaf textbooks employ job positions to derive a capabilities list, proceed through teaching processing, and compile the textbooks. True job integration remains elusive. In light of curriculum reform, current loose-leaf textbooks, mostly composed according to modules, lack enough shared courses. The integration of competition standards and certificate standards is insufficient, with certificate preparation still being handled separately. Consequently, the intended goal is yet to be realized[4].

2.3 Integration

The textbook's structure failed to unify effectively. Some loose-leaf segments appear markedly inferior. Employing job demand research and analysis, a talent training plan is devised and a list of professional capabilities procured. Driven by the professional abilities outlined in the list, a modular curriculum system is restructured and modular courses designed. Guided by the module course content in the system and supplemented by X certificate standards, teaching standards, industry standards, and competition standards, theoretical technical knowledge, practical technical knowledge, and knowledge to boost learning and development are arranged, leading to the creation of loose-leaf textbooks. Some textbooks have added modules for goal guidance and evaluation feedback, realizing overall goals like work cases, goal guidance, theoretical knowledge (digital resource knowledge), operational guidelines, and evaluation feedback. Loose-leaf notes and functional illustrations have been incorporated into some textbooks, transforming them into resource materials. Nevertheless, the fragmentation hinders the integrity of the textbook as a whole[5-6].

2.4 Latent Pattern Maintenance

Loose-leaf textbooks struggle to maintain continuous updates. The initial goal of loose-leaf textbooks was to adapt to market requirements and changes based on academic conditions. Currently, published loose-leaf textbooks have a protracted publication cycle and lack continuous updates. A professional team providing ongoing training, guidance, follow-up services, and textbook research, along with a standardized quality monitoring mechanism, can offer stable support for revising and improving textbooks[7].

3. The Structure of Integrated Loose Leaf Textbooks

3.1 Enhancing Textbook Adaptability

Construct a comprehensive list of professional capabilities. Deconstruct the original curriculum to identify skill points, and screen suitable skills through the alignment with job groups. These skills points are then supplemented, reinforced, and expanded according to pertinent standard requirements to develop a host of new skill points. These collections of new skill points form professional abilities, and multiple professional abilities constitute a comprehensive list of professional abilities[8].

3.2 Refining Textbook Structure

Create a module course using professional abilities from the professional abilities list as fundamental units, categorize and allocate them according to work module requirements in job tasks, completing the restructuring of professional abilities. These restructured professional abilities serve as the matching ability standards for a specific job position, meeting the technical theoretical knowledge required to satisfy these ability standards. Technical practical knowledge and knowledge that fosters learning and development can be processed into modular courses through teaching, and broken down into modular courses following professional laws and work logic[9].

3.3 Streamlining Textbook Objectives

Loose-leaf textbooks should mirror the requirements and standards of contemporary skills competitions, guiding the development direction of vocational education and reflecting the latest technology in vocational education. The integrated loose-leaf teaching material should assimilate the standards and key points of vocational skills competitions, process them in a teaching-oriented manner, and incorporate them into each module. This will optimize the talent cultivation objective of fostering comprehensive technical skills talents in the teaching material.

3.4 Bolstering the Systematic Nature of Textbooks

The goal is not merely to insert the “work field and task” from the X certificate standard as a standalone module into the new textbook, but to incorporate them into the relevant content based on the microstructure and mesostructure characteristics of the new textbook. If necessary, the interface of the original new textbook should be modified to ensure smooth and seamless integration. Based on skill requirements and related professional abilities, as well as the requirements for fostering moral character in the X certificate standard, analyze and select corresponding knowledge points according to the requirements of being “necessary, sufficient, and moderate”. This includes declarative knowledge points, procedural knowledge points, and strategic knowledge points, and analyzing and determining their appropriate depth and breadth.

4. Development Process of Integrated Loose Leaf Textbooks

4.1 Charting the Development Path of Loose Leaf Textbooks

Build talent training plans based on job demand research and analysis, and obtain a list of professional abilities; Guided by the professional abilities in the list, restructure the modular curriculum system and design modular courses; The module course content in the system, supplemented by pertinent standards such as the X certificate standard, organizes technical theoretical knowledge, technical practical knowledge, and knowledge to stimulate learning and development, culminating in the creation of loose leaf textbooks.

4.2 Defining the Composition Content of Loose Leaf Textbooks

It is evident from the development path of the textbook that the crucial basis for the content standard of the loose-leaf textbook is the modular curriculum standard. This is constructed by teaching the professional abilities required to complete work module tasks. The professional abilities list and modular courses directly impact the textbook content, and there exists an intrinsic logical relationship between the professional abilities list and modular courses. The module course is the

teaching vessel of the professional ability list after instruction, thus the content composition of the textbook needs to accomplish the following tasks.

4.3 Assembling a Writing Team for Loose Leaf Textbooks

As the textbook content originates from module courses, which serve as the teaching vehicles for job professional abilities, it is crucial to have an accurate understanding and grasp of professional abilities. Hence, the textbook writing team should comprise industry and enterprise experts, university academics, and firm teachers. This writing team should possess rich teaching experience and a deep understanding of industry enterprise needs, demonstrating the benefits of different types of teachers, sharing work, and effectively achieving the integration of theory and practice in the textbook, offering maximum benefits for textbook users.

4.4 Designing the Development Process of Loose Leaf Textbooks

Using the development process of loose leaf textbooks for the automotive repair major as a model, the design of loose leaf textbooks is accomplished through job demand research and analysis, analysis of primary job positions, analysis of typical work tasks, division of common work modules, determination of learning tasks, formation of learning work pages, and formation of loose leaf textbooks, resulting in a teaching material development process with process monitoring characteristics.

5. Principles of Integrated Loose Leaf Teaching Materials

5.1 Principle of Preservation

Augment and enhance corresponding knowledge points, skills points, abilities points, and ideological and political elements of the curriculum without altering the structural framework, functional areas, and ideological and political themes of the new teaching materials. This ensures that the unique innovation and characteristics of the new teaching materials, which emphasize the traits of vocational education, are fortified.

5.2 Principle of Decentralized Integration

Instead of inserting the “work field and task” from the X certificate standard as a whole module into the new textbook, the aim is to incorporate them into the relevant content based on the microstructure and mesostructure characteristics of the new textbook. If necessary, the interface of the original new textbook should be adapted to ensure seamless and smooth integration.

5.3 Principles of Knowledge Point Selection

Predicated on the skill requirements, relevant professional abilities, and the mandate for fostering moral character in the X certificate standard, analyze and select corresponding knowledge points based on the requirements of being “necessary, sufficient, and moderate”. Include declarative knowledge points, procedural knowledge points, and strategic knowledge points, while analyzing and determining their suitable depth and breadth.

5.4 Principles of Learning Objective Adjustment

After transitioning to the loose leaf format, necessary adjustments, additions, and enhancements should be made to the modular curriculum learning objectives, each module curriculum learning objective, and corresponding learning outcomes of the new textbook. For each anticipated learning outcome requirement, each design provides 2-4 specific learning outcomes that can be chosen by the instructing teacher.

6. Conclusion

As Caster stated, we have entered the network society. This society, characterized by its flexibility and personalization and an increased number of small-scale enterprises, calls for a shift in the employment structure. Vocational education is required to cultivate multifaceted talents with comprehensive abilities. Textbooks, as educational mediums, hold a pivotal role and must undergo structural modifications to facilitate the integration of job courses, competitions, and certifications.

Acknowledgement

This research was financially supported by the Special Project on Education and Teaching Reform at Tianjin Vocational University (Grant NO. JGZX2023123/JGZX2023107) and the 2022 Tianjin Education Science Planning Project (Grant NO.CJE220061).

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